

Victorian Infectious Diseases Bulletin

Hepatitis C: Enhancing Routine Surveillance in Victoria

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The Department of Human Services is introducing a range of new measures to enhance hepatitis C surveillance in Victoria. A review of hepatitis C notifications in Victoria for the period 1997 to 2000 is presented, followed by an outline of the new enhanced surveillance activities being undertaken this year.

According to the most current modelling of hepatitis C virus (HCV) infection in Australia, an estimated 190 000 people were living with the infection in 1997.¹ Modelling also estimates 11 000 acute infections each year, with 91 per cent exposed through injecting drugs.

The most recent national notification data indicate that there were 21 058 notifications in 1999, of which 385 (1.8 per cent) were identified as being acute infections (Personal communication, J Spencer). HCV notifications from Victoria represented approximately 29 per cent of the national notifications in 1999, with less than one per cent of infections identified as being acute. The disparity between HCV incidence estimates obtained through modelling and those made from notification data highlights the gap in our understanding of the epidemic of HCV infection in Australia.

PASSIVE HCV SURVEILLANCE IN VICTORIA, 1990-2000

HCV was made a notifiable disease in Victoria in 1990, coinciding with the availability of commercial assays to test for HCV infection. All laboratories and medical practitioners are required to notify the Department of Human Services of HCV diagnoses within five days.

For surveillance purposes, the Department

classifies HCV notifications as 'acute hepatitis C' or 'hepatitis C, not further specified'. Acute infections are defined as:

- The demonstration of seroconversion to HCV where the most recent negative specimen was within the past 12 months,

or

- The demonstration of a positive HCV antibody test or a positive polymerase chain reaction (PCR) test for HCV, and a clinical illness consistent with acute hepatitis within the past 12 months where other possible causes of acute hepatitis have been excluded.

HCV infections associated with a positive HCV antibody or PCR test in the absence of a negative test in the previous 12 months and with no clinical evidence of an acute hepatitis illness are classified as 'hepatitis C, not further specified'. If a previously unreported positive HCV antibody or PCR test is identified, then the case is further classified as prevalent.

HCV NOTIFICATIONS FOR 1997-2000

During the four-year period 1997-2000, the Department received a total of 23 619 notifications of hepatitis C infection. Although the proportion of acute cases has risen since 1997, acute notifications still represented less than one per cent of all notifications in 2000.

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	1997	1998	1999	2000	1997–2000
Hepatitis C—acute	11	54	76	78	219
Hepatitis C—not further specified	4 977	6 299	6 279	5 845	23 400
Hepatitis C—total	4 988	6 353	6 355	5 923	23 619

The Department divides Victoria into four Melbourne metropolitan regions (Northern, Southern, Eastern and Western) and five non-metropolitan regions (Barwon South-West, Gippsland, Grampians, Hume and Loddon Mallee). Notifications of HCV are more common in metropolitan regions than in non-metropolitan regions, with the Southern Metropolitan region contributing the highest total number of notifications. The Western Metropolitan region had the highest cumulative notification rate per 100 000 population for the period 1997–2000 for both males and females (Figure 1). Almost two thirds (62 per cent) of all hepatitis C notifications in the four-year period were for males—a proportion that was consistent for all regions.

In the same four-year period, 219 notifications were defined as acute infections, or approximately one per cent of all HCV notifications. Approximately 80 per cent of acute notifications were of cases in metropolitan regions, with the highest notification rates also in the Western Metropolitan region. These findings should be interpreted with caution, given the small numbers of cases involved.

Focusing on 2000, 67 (86 per cent) acute cases in that year gave a history of intravenous drug use (either current or in the past), six cases denied intravenous drug use, and the risk factor status of five cases was unknown. Two of the six acute cases who denied a history of intravenous drug use reported having either nose piercing or tattooing in the previous 12 months. Infection control investigations were conducted in two linked premises, nominated by the two acute cases, that perform tattoos and/or nose piercing. No infection control deficiencies were identified. Exposure information is usually ascertained from the reporting doctor rather than from the patient directly, so infection was possibly related to unreported risk factors.

Of the remaining four cases who denied a history of intravenous drug use, one case reported having had unprotected sexual intercourse overseas in the previous 12 months and another case was associated with a needlestick injury. One case appears to have resulted from vertical transmission. No risk factor could be identified for one further case.

Of the 78 HCV notifications identified as acute infections in 2000, 57 (73 per cent) were first notified by the testing laboratory, with the remainder first notified by the treating doctor. Of the same 78 HCV notifications, 57 (73 per cent) met the case definition for documented HCV antibody seroconversion alone, 11 (14 per cent) met the case definition for a positive HCV antibody or PCR test and a clinical illness consistent with acute hepatitis alone, and 10 (13 per cent) met both case definitions.

ENHANCED HCV SURVEILLANCE IN 2001

The Department has committed to a national strategy to improve surveillance of HCV infection. This strategy recommends establishing routine systematic assessment of all new hepatitis C diagnoses to identify incident cases, and developing a standardised protocol for collecting more detailed data on incident cases.² The strategy aims to:

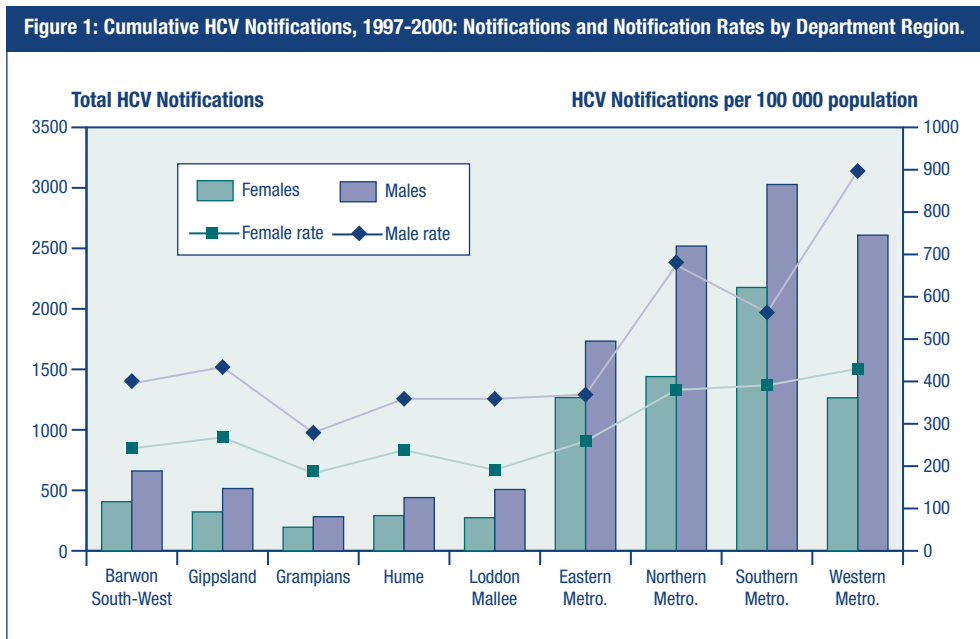
- Ensure collection of up-to-date information on the epidemiology of HCV infection.
- Detect outbreaks of HCV infection.
- Detect novel modes of transmission.
- Identify those at risk to target prevention and control strategies appropriately.
- Evaluate prevention and control strategies.

The previous passive hepatitis C surveillance system has been relatively insensitive in detecting acute infections, being wholly dependent on the notifying doctor or laboratory. As a result, many acute infections are likely to have been misclassified as 'hepatitis C, not further specified'.

Identification of cases who constitute an occupational risk of transmission or who may have acquired the infection through nosocomial or novel forms of transmission are highly dependent on the notifying doctor indicating this transmission risk.

Although the Department's passive HCV surveillance strategy has had some notable achievements, it has been difficult to make use of the great bulk of the surveillance data, given the problem of determining the proportion of notifications that represent acute infections. This information is vital to understanding the changing epidemiology of the disease and evaluating prevention strategies.

A short pilot study conducted in 2000, involving intensive follow-up of all notifications, found that



approximately four per cent of notifications could be confirmed as acute infections, compared with less than one per cent identified through the conventional methods.

Routine follow-up of all of the approximately 6000 HCV notifications received each year would be extremely resource intensive and inefficient, so a variety of alternative strategies are being developed to enhance the HCV surveillance system. Aimed at improving our understanding of the routinely collected HCV surveillance data, these strategies include the following measures.

CONDUCTING RANDOM SAMPLING OF HCV NOTIFICATIONS FOR INTENSIVE FOLLOW-UP

From February 2001 the Department has undertaken intensive follow-up of routine HCV notifications by selecting each week a random sample of 10 per cent of the weekly notifications. No weighting is given to groups at higher risk of acute infection, so as to maintain the capacity to generalise the results to the non-sampled notifications.

To date, six per cent of sampled notifications have been identified as acute infections, with a further 15 per cent identified as prevalent infections. The remainder cannot be classified as either acute or prevalent, given the available information.

INCREASING LABORATORY REPORTING OF PREVIOUS HCV TEST RESULTS

While only a few laboratories report previous HCV test results, almost half of all HCV notifications identified as being acute in 2000 (36 of 78) were identified because a laboratory indicated that they had a record of a previous negative HCV antibody test in the previous 12 months. The Department will consult both public and private laboratories to increase the reporting of previous negative HCV testing when laboratories notify the Department of a positive HCV result.

Infectious Diseases News

CHANGES TO THE HEALTH (INFECTIOUS DISEASES) REGULATIONS

To ensure consistency with the list of nationally notifiable diseases, the following diseases are now notifiable in Victoria under the Health (Infectious Diseases) Regulations 2001, which came into effect on 16 May 2001: Japanese Encephalitis, Invasive Pneumococcal Disease, Influenza (laboratory confirmed), Lyssavirus (Australian Bat Lyssavirus and other lyssaviruses), Cryptosporidiosis, Hepatitis D and Hepatitis E.

Diseases which have been removed from the list are: Primary amoebic meningo-encephalitis, Typhus, Amoebiasis, Hydatid Disease, Taeniasis (tape worm infections), Yersiniosis, Chancroid and *Lymphogranuloma venereum*.

The regulations prioritise the notification requirements, identifying some diseases as group 'A' which require

IMPROVING LIAISON WITH ORGANISATIONS THAT PERFORM SERIAL TESTING

Organisations such as the Red Cross Blood Bank, prisons and correctional centres, and sexual health clinics perform repeated HCV testing of clients. The Department will seek to work more closely with these organisations to use previous testing results to help classify notifications as acute or prevalent.

MODIFYING THE 'NOTIFICATION OF INFECTIOUS DISEASE' FORM

Following the introduction of the new Health (Infectious Diseases) Regulations 2001, the Department will change the 'Notification of Infectious Disease' form used by doctors and laboratories to include a choice under the hepatitis C category of 'acute or 'non-acute'. The form offers this option currently for only hepatitis B notifications.

SUMMARY

The combined applications of these strategies is likely to increase significantly the utility of the HCV surveillance data collected to help us understand the epidemiology of HCV infection in Victoria. The silent nature of many HCV infections means there is a continuing need to supplement this enhanced surveillance data with the innovative research by some research institutions (in Victoria and other States) of populations at higher risk of HCV infection.

As we collect better information we paint a more complete picture of HCV infection in Victoria. This assists the development of more effective prevention strategies and allows for more appropriate services for those who carry the infection and suffer its complications.

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urgent notification upon initial diagnosis (presumptive or confirmed) by telephone or facsimile, followed by written notification within **five** days. Written notification of all diseases should occur within **five** days of diagnosis. New notification forms are available at <http://www.dhs.vic.gov.au/phd/0002003/index.htm>, and information sessions for stakeholders will be conducted in each of the regions. For further information please contact the Communicable Diseases Section on (03) 9637 4126.

SCRATCHING FOR ANSWERS?

Head lice are an age-old problem—10 000 years old in fact. After reviewing the often conflicting literature regarding the control and management of head lice infections (pediculosis), the Communicable Diseases Section is undertaking a community-wide head lice education and

awareness program. Its primary objective is to debunk the myths regarding the treatment of head lice.

A pamphlet distributed for families contains new information on how to adopt a head lice management strategy that is effective, safe and inexpensive. Head lice treatment has moved in a new direction and much of the previous information is outdated, unnecessary and inaccurate. Combing a child's dry hair once per week with ordinary hair conditioner will contain the head lice problem for many households.

Important changes introduced in the pamphlet include the use of treatment options other than insecticides. Australian and international research suggests cleaning or treating household or classroom environments is unnecessary.

As part of the awareness program the Department of Human Services has set up a new web site (www.dhs.vic.gov.au/phd/headlice) about the management and control of head lice. It provides information for schools, parents and Local Government.

UPCOMING CONFERENCES

The annual Public Health Association (PHA) Conference will be held on 23–26 September 2001 in Sydney and the Australasian Epidemiological Association (AEA) Conference will be held on 27–28 September 2001 in Sydney. You can obtain further information and registration details at the following web sites respectively:

- http://www.pha.org.au/conferences/frame_conferences.html (PHA conference)
- <http://som.flinders.edu.au/fusa/index.htm> (AEA conference).

OZFOODNET-ENHANCING FOODBORNE DISEASE SURVEILLANCE ACROSS AUSTRALIA

The Commonwealth Department of Health and Aged Care (DHAC) has funded all States to conduct enhanced food-borne disease surveillance, in a project called 'OzFoodNet—Enhancing Food-borne Disease Surveillance Across Australia'. The main aims of OzFoodNet are to estimate the incidence and burden of food-borne disease in Australia, and to identify causes, risk factors and opportunities for disease prevention.

OzFoodNet—Victoria was established in November 2000. The Communicable Diseases Section of the Department of Human Services will manage this two-year project, which Department staff Nittita Prasopa-Plaizier and Joy Gregory will implement.

The focus of the first three months of the project has been on:

- Establishing the project and setting specific aims and objectives.
- Networking with stakeholders, (general practitioners, environmental health officers).
- Cooperating with counterparts in other States.
- Reviewing data on potential food-borne diseases.
- Evaluating existing food-borne disease surveillance systems.

The next stage will be the implementation of national and statewide case control studies for specific diseases, including salmonellosis, campylobacteriosis and listeriosis.

You can obtain further information about the project by contacting Joy Gregory (03 9737 5897; joy.gregory@dhs.vic.gov.au) or Nittita Prasopa-Plaizier (03 9637 4839; nittita.prasopa-plaizier@dhs.vic.gov.au).

DNA Fingerprinting Analysis of Australian *Mycobacterium tuberculosis* Strains Using Gelcompar™

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Tuberculosis is caused by the bacterium Mycobacterium tuberculosis (M.tb) and developments in molecular technology have enabled M.tb strains to be DNA fingerprinted. Through fingerprinting, transmission of strains can be tracked by comparison of their individual genetic profiles. Comparison of strains has now become simpler with the use of a computer software program – Gelcompar. We describe the use of Gelcompar and its value in enhancing our understanding of the epidemiology of tuberculosis in Australia.

BACKGROUND

Worldwide, tuberculosis is a disease of major public health concern. The main causative agent of tuberculosis is *Mycobacterium tuberculosis* (*M. tb*), which is a member of the genus *Mycobacterium* of the *Mycobacteriaceae* family. The incidence of tuberculosis in Australia is relatively low, with three to four cases notified per 100 000 population each year. Since the mid-1980s, approximately 700 new bacteriologically confirmed cases are reported each year.^{1,2,3,4}

Since 1991, the Mycobacterium Reference Laboratory

within the Victorian Infectious Diseases Reference Laboratory (VIDRL) has been performing restriction fragment length polymorphism (RFLP) analysis on *M. tb* strains from around Australia. This project, originally known as the Australian Tuberculosis Project, was established to help our understanding of the epidemiology of tuberculosis within Australia.

RFLP TYPING OF *M. TB* STRAINS

The aim of RFLP typing is to produce patterns of DNA fragments—known as DNA fingerprints of bacteria—

within the same species so they can be compared.

RFLP typing involves three main steps:

1. Restriction enzyme digestion of extracted chromosomal DNA.
2. Electrophoresis of the digested DNA.
3. Southern blot hybridisation using probes to produce a pattern of bands.

RFLP typing techniques based on the position within the genome of the mobile insertion sequence IS6110⁵ or a repetitive element *pTBN12*⁶ have provided molecular methods to distinguish strains of *M. tb*. The insertion sequence IS6110 is present only in the genome of the *M. tb* complex usually between six and fifteen copies; however, some strains have only a few copies or lack any copies. These strains do not generate sufficient polymorphism to be readily distinguished via IS6110 so it is necessary to use a second probe—*pTBN12*.

The cloned repetitive element within the plasmid *pTBN12* is distributed within the genome of *M. tb* as well as other mycobacterial species such as *M.kansasii*, *M.gastri*, *M.szulgai*, *M.ulcerans* and *M.gordonae*.⁶ It is present in at least 30 copies per genome.

M. tb strains with very similar or identical RFLP patterns are considered to be genetically related and are then placed into a cluster.⁷ Isolates with five or fewer copies of IS6110 are not grouped into a cluster, because these results do not provide sufficient discrimination. Typing with *pTBN12* offers more discrimination between such strains because there are more copies of this element in the genome.⁸

COMPARISON OF PROFILES

Following RFLP typing of the *M. tb* strains, the profiles generated are compared. Prior to 1998 we had received approximately 3700 *M. tb* strains for RFLP analysis. Initial comparisons were performed by eye. Of these, we identified 86 different clusters of genetically related strains of *M. tb*, including a cluster in homeless men and their associates (which has been called the Homeless or H+ strain).⁹ We also recognised some *M. tb* strains of Vietnamese origin that have no copies of IS6110 within their genome but do contain the *pTBN12* repetitive element.¹⁰

Currently, we have over 4800 *M. tb* strains for comparison. Eye comparison with such a large group of strains is no longer a feasible option. Thus, we assessed software that could perform the comparisons and then subsequently store the information generated, creating an electronic database of *M. tb* RFLP profiles.

GELCOMPAR™ SOFTWARE PROGRAM

The Gelcompar (Applied Maths, Kortrijk, Belgium) software program is able to compare electrophoretic banding patterns and enables patterns to be stored in a central location. Before Gelcompar is applied, the southern blots with the chromosomal DNA that has been electrophoresed to produce a characteristic banding pattern are scanned with either a flatbed scanner or a densitometer. The image generated is stored as a TIFF file (tagged image file format), which Gelcompar can then analyse. Two important steps prepare the scanned image

for comparison prior to analysis.

1. A conversion program converts and defines each of the RFLP profiles on the southern blot into individual tracks that Gelcompar can recognise.
2. A normalisation program normalises the raw track data generated from the conversion program. When DNA samples are electrophoresed to obtain fingerprints, distortions are observed between and within gels, even in the most reproducible conditions. Normalisation compensates for these distortions. An external molecular weight marker, consisting of a mixture of both small and large DNA fragments, is placed at regular intervals on each gel and labelled as a reference track. To enable comparison of images from different gels, a standard reference track pattern is pre-defined. The bands in the reference tracks are stretched or compressed to match each other relative to the pre-defined standard, thus enabling the non-reference tracks to be aligned accordingly at the same time. Because the reference tracks from every gel are aligned to a standard reference pattern, all gels are then compatible with each other. This enables us to generate pattern databases.

Following conversion and normalisation of the scanned images, it is then possible to perform profile comparisons and cluster analysis. Gelcompar offers a number of different clustering methods for track comparison. We used a combination of the UPGMA (unweighted pair group method using arithmetic averages) clustering algorithm and the Jaccard coefficient. This method of clustering is more suitable for comparisons based on the position of the bands within each track. The percentage similarity calculated between the tracks is then expressed as a dendrogram.

Once an RFLP profile has been defined as a Gelcompar track, and the band positions have been marked, the track can be compared with all of the existing tracks on the database. Thus, it is possible to compare an RFLP track with other profiles collected across Australia or with only a subset (for example, RFLP types obtained from Victoria only) of the existing tracks stored.

RFLP TYPING PROTOCOL

Our current protocol for typing is to type every first *M. tb* isolate received (that is, no repeat isolations from the same patient) with IS6110. All isolates that have a percentage similarity of greater than 90 per cent with IS6110,¹¹ including those with 100 per cent similarity, are typed with the secondary *pTBN12* probe. In addition, all isolates with five or fewer copies of IS6110 are re-typed with *pTBN12*. This protocol correlates with the typing procedures currently used overseas.

GELCOMPAR ANALYSIS

We have been able to further identify 13 clusters of genetically related strains of *M. tb*, making a total of 99 clusters determined Australia wide. An extra five homeless (H+) strains have been added to the list, which now has 77 cases defined in this cluster (which spans five Australian states and one Territory). The number of new clusters is expected to rise as the number of profiles increases on the RFLP typing database.

SUMMARY

It is envisaged that Gelcompar data will be routinely used to confirm clusters that are suspected epidemiologically or to detect previously unrecognised potential epidemiological links. The software may detect significant profiles in a given ethnic or social population (for example, the homeless strain) or it may identify specific strains with unique properties (such as drug resistance). It will also enable rapid comparison with a given RFLP type, and allow us to compare strains from different geographic areas and track the movement of individual strains. Given that the DNA fingerprints of *M. tb* strains will be more readily available, the software's contribution to our understanding of the epidemiology of tuberculosis in Australia will be invaluable.

ACKNOWLEDGMENTS

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Sequential Transmission of Norwalk Virus at a Holiday Camp

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The Communicable Diseases Section of the Department of Human Services was notified on 16 March 2001 of an outbreak of gastrointestinal illness at a holiday camp. Investigations revealed that seven different groups were affected by Norwalk-like virus gastroenteritis, over a three-week period. This report summarises the outbreak investigation and discusses the implications for the control of diseases in these settings.

INTRODUCTION

Norwalk-like virus (NLV) is highly infectious and causes a usually mild and self-limiting gastroenteritis. Known routes of transmission include person-to-person contact, ingestion of contaminated food or water, fomites, aerosols and exposure to contaminated environments.¹ In Victoria, gastroenteritis outbreaks due to NLV have occurred in a variety of settings including guesthouses, hospitals, schools, recreational camps and nursing homes.¹

Little is known about the survival of NLV particles in the environment or the disinfection procedures necessary to remove them from contaminated settings.² Here, we report consecutive outbreaks of NLV gastroenteritis in a holiday camp and discuss the implications for controlling disease in these settings.

BACKGROUND

On 16 March 2001 the Communicable Diseases Section was notified of an outbreak of gastrointestinal illness at a holiday camp. A school group (group D) at the campsite

had reported symptoms of vomiting, abdominal cramps and diarrhoea.

Investigations revealed that three other groups had used the campsite in the preceding week and all reported participants with a similar illness. Two were school groups (groups A and B) and the third was a church group (group C). A fifth group (group E—a support group for siblings of disabled children) entered the campsite on the evening of 16 March.

While clean-up procedures as per Department of Human Services guidelines had been implemented on 16 and 17 March, illness was reported on 26 March in two further groups (Groups F and G—a school group and a church group respectively) who had attended the campsite after the initial interventions.

METHODS

SETTING

The duration of each camp ranged from 2.5 to 3.5 days. Campers were accommodated in dormitory-style

bedrooms, with between 4 and 15 beds per room. Camp staff prepared meals, which were served in a common dining room. Depending on a group's length of stay, 128–165 foods were served over 11–14 meals, with similar menus for all groups. A range of activities was conducted on site. The facility has two communal bathrooms consisting of toilets, handbasins and showers.

EPIDEMIOLOGICAL INVESTIGATION

A probable case was defined as a person who had attended the camp between 5 March and 25 March 2001 and who had had a gastrointestinal illness consisting of vomiting and/or diarrhoea. Cases were confirmed if NLV was detected in a faecal specimen.

Cohort studies of students and staff attending the camp from groups A, B and D were conducted. Staff and students completed a questionnaire in a classroom setting. Groups C and E did not complete questionnaires because organisers did not provide attendance lists; however, information was collected on the number of attendees who had been ill.

Given that groups F and G were identified later in the investigation, and that a food source was not suspected, information on ill persons only was collected for these groups. This information included the rooms in which they had been accommodated at the campsite.

Incubation periods were calculated from the date and time the groups arrived at the camp to the onset of either vomiting or diarrhoea.

Local Government Environmental Health Officers implemented inspection and clean-up procedures at the camp, including collecting samples and collating operational information. Faecal and water samples were submitted to the Microbiological Diagnostic Unit and Victorian Infectious Diseases Reference Laboratory for analysis.

RESULTS

DEMOGRAPHIC PROFILE AND ILLNESS HISTORIES

The available demographic and illness profiles for all seven groups are outlined in Table 1. No cases were

hospitalised or died.

All groups had had a similar pattern of illness, with a median incubation period of approximately 48 hours after exposure at the campsite. Some participants from groups A, B, D and E reported that either they or family members had been ill before the camp. Two students from group A had been ill on the evening they arrived at the camp and one had been ill the previous day. Additional information collected by Local Government Environmental Health Officers indicated that the staff at the campsite had also been ill with gastroenteritis symptoms in the week that the first groups attended.

Analysis of food and activity histories revealed no association with illness in any group.

ENVIRONMENTAL INVESTIGATION

The premises was instructed to undergo a supervised clean-up on 16 March as per the Department of Human Services Guidelines for the Investigation of Gastrointestinal Illness. No leftover food samples were obtained. Six water samples from various locations around the camp were submitted for analysis.

After the initial clean-up it was revealed that the carpeted areas within the campsite had been cleaned with only hot soapy water because chemicals bleach carpet. Vomiting was reported to have occurred in at least two of the carpeted dormitories, with one being used as a sick room to house ill camp attendees before sending them home. Three of the ill persons in groups F and G had been accommodated in these 'sick rooms'. All carpets within the premises were subsequently steam-cleaned, as this is the only suitable cleaning method for carpets contaminated by viral particles.²

LABORATORY INVESTIGATIONS

Water samples collected from the camp were found to be of potable quality and no bacterial pathogens were isolated. A total of 15 stool specimens (from groups D, F and G) were submitted for analysis. Twelve specimens were positive for NLV by reverse transcriptase multiplex polymerase chain reaction (RT-PCR), three of which were also positive by electron microscopy. Of these positive

Table 1: Demographic and Illness Profiles of Seven Camp Groups

	Group A	Group B	Group C	Group D	Group E	Group F	Group G
Camp dates	5–7 March	7–9 March	9–12 March	13–16 March	16–18 March	21–23 March	23–25 March
Total attendees	88	88	92	68	12	28	39
Ill attendees	19	48	20	35	2	5	4
Attack rate	22%	55%	21%	51%	17%	18%	10%
Vomiting	68%	85%	–	87%	100%	100%	100%
Diarrhoea	42%	50%	–	63%	–	60%	75%
Abdominal pain	74%	63%	–	71%	–	40%	75%
NLV detected	–	–	–	6	–	3	3
Median age	13 (12–14)	13 (12–45)	–	12 (11–13)	–	10	11 (11–17)
Median incubation period (hours)	36 (4–120)	56 (4–84)	Approx. 48 hours	48 (32–144)	–	Approx. 48 hours	Approx. 48 hours
Median duration of illness (days)	2.5 (1–6)	2 (1–6)	–	2 (1–5)	–	1 (1–3)	1 (1–2)

specimens, six were from group D and three each from groups F and G. No bacterial pathogens were isolated. Sequencing of a 342 nucleotide segment in Open Frame 1 of the genome found that 11 of the sequences were identical. The strain identified shows 94 per cent nucleotide identity of the Mexico strain of NLV (a less common strain in Victoria). This suggests that one virus had been introduced to the camp, stayed there and infected all groups from which faecal samples were collected. One faecal sample did not test positive for NLV until after the sequencing had been conducted.

DISCUSSION

This investigation indicated that NLV gastroenteritis had affected seven different groups at a holiday camp over a three-week period. It is likely this was a result of widely contaminated and inadequately cleaned environments, particularly carpeted areas. While NLV was only detected in 12 faecal samples from three of the groups, the consistent pattern of illness among groups suggests the same pathogen affected all groups. This is supported by the identical sequences for 11 NLV samples, the known stability and infectivity of NLV, and the known use of dormitory rooms as 'sick rooms' where vomiting had occurred.

NLVs are stable, virulent viruses, which can persist in the environment for prolonged periods. Routine cleaning procedures such as warm soapy water and vacuuming do not destroy these viruses.³ Rather, killing the pathogens requires a high concentration of chlorine (1000 ppm freshly constituted granular hypochlorite or 5000 ppm pre-reconstituted hypochlorite solution) or high temperatures.² The Norwalk virus surrogate feline calicivirus (FCV) is known to survive in the dry state for 21–28 days at room temperature.²

This investigation highlights the need to implement vigilant clean-up measures and protocols during an outbreak investigation. It demonstrates that carpets

represent a hazard, because they are able to harbour viable virus particles for an extended period.³ Importantly, all areas within premises should be adequately assessed for the most appropriate methods of cleaning and the practicalities of application. Alternative mechanisms need to be implemented if areas are unable to be cleaned with traditional chemical methods. Attack rates for the latter groups at the campsite (groups F and G) were significantly lower than for the earlier groups, which suggests that contamination within the campsite was present but probably limited to specific areas.

CONCLUSION

This outbreak supports evidence that reservoirs of infectious virus in closed settings can result in prolonged or recurring outbreaks.^{1,4} It identified the need to establish more detailed guidelines to remove NLV particles from a contaminated setting. In particular, we have identified the need for more specific clean-up guidelines for settings such as holiday camps, where multiple opportunities exist for the transmission of viral and bacterial pathogens, and subsequent outbreaks of disease.

ACKNOWLEDGEMENTS

Thanks to the staff of the participating councils for their assistance and support in this investigation.

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Immunisation Update

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Data cited in this report are based on the Australian Childhood Immunisation Register (ACIR) Coverage Report. The ACIR report measured immunisation coverage at 31 March 2001 for children who were aged 12–<15 months and for children aged 24–<27 months at 31 December 2000. Only vaccines administered before 12 months of age were included in the coverage calculation for the former age group and only those vaccines administered before 24 months of age were included in the coverage calculation for the latter age group.

Table 1 groups immunisation coverage by Local Government Area for the two birth cohorts. For a copy of the ACIR report listing immunisation coverage against individual vaccines, contact Michele Sands (michele.sands@dhs.vic.gov.au).

Congratulations to all immunisation providers in the municipalities that achieved coverage of 95 per cent or higher for children at 12 months of age. Ararat, Moira,

Northern Grampians and Yarriambiack achieved coverage of over 95 per cent for children at 24 months of age.

No areas had coverage below 80 per cent for children at 12 months of age. Overall, coverage in Victoria of children at 12 months of age was 92 per cent over the three-month period. Coverage of children aged 24 months remained stable at 85 per cent. Measles–mumps–rubella (MMR) coverage was 93 per cent.

Table 1: Childhood Immunisation Coverage, by Local Government Area (LGA)—Victoria, 2001

Age Group	% Fully Immunised	Local Government Area (LGA)	Total LGAs (% LGAs)
12-<15 months	95%+	Ararat (RC), Central Goldfields (S), Colac-Otway (S), Glenelg (S), Indigo (S), Loddon (S), Macedon Ranges (S), Melton (S), Murrindindi (S), Northern Grampians (S), South Gippsland (S), Southern Grampians (S), Whittlesea (C), Wodonga (RC), Yarriambiack (S)	15 (19%)
	90-94%	Ballarat (C), Banyule (C), Bass Coast (S), Baw Baw (S), Bayside (C), Brimbank (C), Buloke (S), Campaspe (S), Cardinia (S), Casey (C), Corangamite (S), Darebin (C), Delatite (S), Gannawarra (S), Glen Eira (C), Golden Plains (S), Greater Dandenong (C), Greater Geelong (C), Greater Shepparton (C), Hobsons Bay (C), Horsham (RC), Hume (C), Knox (C), La Trobe (S), Maribyrnong (C), Maroondah (C), Mildura (RC), Mitchell (S), Moira (S), Moonee Valley (C), Moorabool (S), Moreland (C), Mount Alexander (S), Moyne (S), Nillumbik (S), Stonnington (C), Strathbogrie (S), Surf Coast (S), Swan Hill (RC), Warrnambool (C), Whitehorse (C), Wyndham (C), Yarra (C), Yarra Ranges (S)	44 (56%)
	85-89%	Alpine (S), Boroondara (C), East Gippsland (S), Frankston (C), Greater Bendigo (C), Hindmarsh (S), Kingston (C), Manningham (C), Melbourne (C), Monash (C), Mornington Peninsula (S), Pyrenees (S), Queenscliffe (B), Wangaratta (RC), Wellington (S), West Wimmera (S)	16 (21%)
	80-84%	Hepburn (S), Port Phillip (C), Towong (S)	3 (4%)
	<80%	Nil	
24-<27 months	95%+	Ararat (RC), Moira (S), Northern Grampians (S), Yarriambiack (S)	4 (5%)
	90-94%	Alpine (S), Campaspe (S), Corangamite (S), Delatite (S), Hindmarsh (S), Indigo (S), Moorabool (S), Pyrenees (S), Towong (S), Wangaratta (RC)	10 (13%)
	85-89%	Ballarat (C), Banyule (C), Bass Coast (S), Baw Baw (S), Casey (S), Colac-Otway (S), East Gippsland (S), Frankston (C), Glenelg (S), Golden Plains (S), Greater Bendigo (C), Greater Geelong (C), Greater Shepparton (C), Hepburn (S), Horsham (RC), Kingston (C), Knox (C), Macedon Ranges (S), Maroondah (C), Melton (S), Mildura (RC), Mitchell (S), Moonee Valley (C), Mornington Peninsula (S), Moyne (S), Nillumbik (S), Southern Grampians (S), Strathbogrie (S), Surf Coast (S), Swan Hill (RC), Warrnambool (C), Wellington (S), Whitehorse (C), Whittlesea (C), Wodonga (RC), Wyndham (C), Yarra (C)	37 (47%)
	80-84%	Bayside (C), Boroondara (C), Brimbank (C), Buloke (S), Cardinia (S), Darebin (C), Gannawarra (S), Glen Eira (C), Greater Dandenong (C), Hobsons Bay (C), Hume (C), La Trobe (S), Loddon (S), Melbourne (C), Moreland (C), Murrindindi (S), Stonnington (C), Yarra Ranges (S)	18 (23%)
	<80%	Central Goldfields (S), Manningham (C), Maribyrnong (C), Monash (C), Mount Alexander (S), Port Phillip (C), Queenscliffe (B), South Gippsland (S), West Wimmera (S)	9 (12%)
State/Territory/National (% Fully Immunised)			
12-<15 months	Australian Capital Territory, Tasmania (93%); Victoria (92%); Queensland, South Australia, New South Wales, Australia (91%); Western Australia (90%); Northern Territory (89%).		
24-<27 months	Tasmania (90%); Australian Capital Territory, Queensland, South Australia (88%); Victoria, Australia (85%); Western Australia, New South Wales (83%); Northern Territory (79%).		

Surveillance Report

The Department of Human Services receives notifications of infectious diseases from medical practitioners and laboratories. These notifications prompt investigation and action to control infectious diseases in Victoria. For some diseases, investigation is initiated on the basis of clinical suspicion in the absence of laboratory confirmation. Prompt notification of infectious diseases is an integral component of prompt public health action. **Please do not delay. To notify, call 1300 65 1160 or fax 1300 65 1170.**

This section includes a summary of infectious disease notifications received until 31 March 2001. The report has been produced by the Communicable Diseases Section, Department of Human Services, in cooperation with the Victorian Infectious Diseases Reference Laboratory and the Epidemiology and Social Research Unit of the Macfarlane Burnet Centre for Medical Research. We gratefully acknowledge the contribution of the Microbiological Diagnostic Unit, University of Melbourne; the Melbourne Sexual Health Centre; and the Victorian Collaborative Group on HIV and AIDS Surveillance.

Table 11 includes historical comparisons of selected diseases with 2000 data at both the State and regional level. Summary data at local government level for the diseases listed in table 4 are available from Greg Mathews, Communicable Diseases Section, Department of Human Services (03 9637 4108). There have been no notifications of anthrax, Australian arbo encephalitis, diphtheria, leprosy, plague, poliomyelitis, rabies, primary amoebic meningo-encephalitis, viral haemorrhagic fevers, yellow fever, tetanus, hepatitis D or hepatitis E.

For comments or queries related to data for sexually transmissible diseases contact Jane Hocking or Dr Nick Crofts, Epidemiology and Social Research Unit, Macfarlane Burnet Centre for Medical Research (03 9282 2290) or the Communicable Diseases Section, Department of Human Services (03 9637 4126).

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

OUTBREAKS OF GASTROINTESTINAL ILLNESS

For the first quarter of 2001, 26 outbreaks of gastrointestinal illness were reported to the Department's Communicable Diseases Section (Table 1).

Table 1: Outbreaks of Gastrointestinal Illness, 1 January – 31 March 2001

Setting	Outbreaks	Persons Affected	Pathogen/Toxin (Number of Outbreaks)
Restaurant/reception/ other food premises/ specific food	10	160	<i>Salmonella</i> (1) Norwalk virus (4) Ciguatera (1) Unknown (4)
Aged/disability/health care institution	11	196	Norwalk virus (4) Suspected viral (6) Results pending (1)
Recreation/holiday/ camp	3	136	Cryptosporidiosis (1) Norwalk virus (2)
Children's service/school	2	15	Unknown (2)
TOTAL	26	505	Norwalk virus (10) Suspected viral (6) Ciguatera (1) <i>Salmonella</i> (1) Cryptosporidiosis (1) Unknown (6) Results pending (1)

A CHRISTENING FUNCTION

A Local Government Environmental Health Officer reported an outbreak of gastroenteritis among 159 guests who had attended a Christening function at a restaurant. Given the size of the cohort, a random sample only of 72 guests were interviewed to facilitate timely identification of possible sources of the illness. Sixty-two (86 per cent) interviews were completed. The attack rate in the study cohort was 52 per cent (95 per cent CI 39–63). Of the 49 faecal specimens collected, 31 (63 per cent) tested positive for Norwalk-like virus.

Forty-two different foods had been served buffet style on platters. The risk of illness was marginally higher for those who ate the smoked sausages (RR 1.95, 95 per cent CI 1.01–3.79, $p=0.05$). No association with any other foods was identified. No bacterial pathogens were isolated in any foods sampled from the restaurant.

Dips and food served on platters present a high risk for the transmission of viral pathogens because they provide an opportunity for a guest to contaminate food. Food contaminated by an infectious person was the likely mode of transmission in this outbreak and would account for the attack rate of 41 per cent among attendees. Viral pathogens such as Norwalk-like virus are virulent and have a low infectious dose. Two people were reported to have been ill with diarrhoea before attending the function and one infant had vomited during the evening.

A second outbreak at the same premises was reported in guests who had attended another Christening function one week later. Twenty-four of 56 guests were reported ill with gastroenteritis after attending the function. It was not possible to obtain a guest list for interviews; however, three faecal specimens were obtained and Norwalk-like virus was isolated. The menu for this function was the same as that for the earlier Christening. After this outbreak, the premises voluntarily closed for two days for thorough cleaning and sanitising.

The Victorian Infectious Diseases Reference Laboratory conducted sequencing analysis on the Norwalk-like virus

specimens collected from these two outbreaks to determine whether they were identical. Although the two outbreaks were only a week apart, the sequencing data indicated that a slightly different variant of the Camberwell strain of Norwalk-like virus was involved in each outbreak, suggesting the two events were not related.

CORAL TROUT AND CIGUATERA POISONING

A Local Government Environmental Health Officer reported an outbreak of ciguatera fish poisoning in 17 people who had consumed a 12-kilogram coral trout purchased from a local fresh fish shop. The cases developed symptoms consistent with ciguatera fish poisoning two hours after consuming the fish. The family, not knowing that the symptoms were related to consumption of the fish, continued to consume the leftovers over the next four days. All of the twelve people interviewed had a consistent illness history. The fish had been cooked in soup and the head had also been consumed. Advice on ciguatera poisoning was given to local fish shop proprietors.

BOTULISM

One case of infant botulism in a 5-month-old child was reported during the quarter. Prior to admission, the child had had a three-day history of poor feeding, constipation, ptosis, difficulty in swallowing, loss of head control and weakness. She was admitted to intensive care and spent a total of 33 days in hospital.

The infant was breast fed and had tried solid foods on only a few occasions in the month before the onset of illness—namely, rice cereal, mashed potato, mashed avocado and commercially made fruit gel. The child regularly had a dummy and had had boiled water on a few occasions. There were various possible exposures, including dust ingestion. A sample of rice cereal obtained from the child's house was negative for *Clostridium botulinum* spores. No source for this child's illness could be determined.

LEGIONELLOSIS

The Department was notified of 36 confirmed cases and one possible case of legionellosis in Victoria between January and March 2001. Thirty of these cases (83 per cent) were male. One case was an overseas visitor who had acquired his infection in Melbourne. Three live and work in nonmetropolitan areas, while 32 (89 per cent) live and work in metropolitan Melbourne.

Of the 36 confirmed cases, one was *Legionella longbeachae*, 32 (89 per cent) were *Legionella pneumophila* 1 and the remaining three were ungrouped. Diagnosis was confirmed by culture in five (14 per cent) cases, by seroconversion in five (14 per cent) cases, and by urinary antigen in 31 (86 per cent) cases. Five cases were confirmed by multiple methods: one seroconversion to *L. pneumophila* 1 and four *L. pneumophila* 1 culture-positive cases were first identified by urinary antigen. Two culture positive cases were confirmed as PFGE pattern 1:2 and two were confirmed as 15:97, which is a strain not previously identified in Victoria.

During January–March, there were two outbreaks in the Melbourne central business district. Two confirmed cases, who survived, were people working at the same premises, one of whom was culture positive. The two cooling towers at the site were sampled and disinfected. Both cooling towers were positive for *L. pneumophila* 1.

The second outbreak involved five people (including two who died) who worked or visited the same area of the city during their incubation times. Two cases were culture

positive, yielding the new PFGE pattern strain. All cooling towers within a defined area were sampled and disinfected over a two-day period.

MEASLES

Between 1 January and 31 March 2001, 55 cases of measles were notified to the Communicable Diseases Section. Fifty-one cases were identified in an outbreak (50 laboratory confirmed and one epidemiologically linked to a laboratory-confirmed case), of which 26 were PCR positive for a novel measles genotype. One additional laboratory-confirmed case acquired infection while on holidays in the United States. (In this case, genotyping confirmed that infection was due to a different strain from that in the outbreak cases.) Three cases had a clinically compatible illness but no epidemiological links to other cases.

The first case was notified on 1 February 2001 and two more cases were reported the following day. All three were young adults who had been admitted to hospital. The age of cases ranged from 10 months to 34 years, with 46 (90 per cent) aged 15–34 years. Twenty-seven cases (53 per cent) were male. Twenty-two cases (43 per cent)—all over 15 years of age—were hospitalised. Four cases (all over 15 years of age) had a documented history of measles vaccination, each having had received a single dose at approximately 12 months of age.

The index case was a 19-year-old male (New South Wales resident) who had recently returned from India and had spent four days in Melbourne during his infectious period. During this time he visited restaurants, nightclubs and shopping centres, and travelled on trams and trains. Direct links to this person were identified for eight cases and probable links were identified for a further nine. There appeared to be four waves of transmission, with epidemiological links established between 37 cases. Rash onset in the last case was 12 March 2001.

Control measures included: the isolation of infectious cases and their unimmunised contacts; identification of and prophylaxis for susceptible contacts; providing recommendations regarding who should be vaccinated; a media release to inform the public and encourage vaccination; and communications with hospitals and doctors to be alert for the disease and to notify promptly on clinical suspicion.

CRYPTOSPORIDIOSIS

Cryptosporidiosis is an acute enteric infection caused by the parasite *Cryptosporidium*. Until 16 May 2001, surveillance for cryptosporidiosis was via a voluntary

laboratory-based reporting scheme. Cryptosporidiosis has recently been added to the list of notifiable diseases in the Health (Infectious Diseases) Regulations 2001.

From 1 January to 31 March 2001, the Department received 119 notifications of cryptosporidiosis, compared with 29 for the same time period in 2000. One hundred of these (84 per cent) were for metropolitan Melbourne residents.

Illness history and exposure information was obtained for 84 cases. Onset of illness in these cases was from early December 2000, peaking in early March. Sixty-nine cases (82 per cent) reported exposure to public swimming pools in the two weeks before the onset of their illness, some of whom continued to swim while they were infectious. Of those cases who had had no exposure to pools, five reported other risk factors for illness, including travel, contact with pets and farm animals, and family members who had been ill.

The high proportion of cases who had been exposed to public swimming pools suggested a community-wide outbreak of disease, facilitated by a hot summer and increases in pool use. Control measures included: circulating a media release; advising cases about personal hygiene and avoiding swimming while they have diarrhoea; informing doctors and laboratories of the outbreak; and advising pools with two or more linked cases about how to minimise the risk of further transmission of disease.

The Communicable Diseases Section would like to thank the Cooperative Research Centre for Water Quality and Treatment for their assistance with this investigation.

SEXUALLY TRANSMISSIBLE DISEASES

ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

There were 19 cases of AIDS notified during the first quarter of 2001—18 males and one female. Sixty-three per cent of cases were men who reported male-to-male sexual contact. Only three individuals were diagnosed with AIDS during this quarter.

Although 80 individuals were notified with AIDS during the 12 months from April 2000 to March 2001 (75 males, four females and one transgender individual), only 40 (50 per cent) had been diagnosed with AIDS within this period. The remainder had been diagnosed before April 2000.

From 1983 to the end of March 2001, 1889 people were notified with AIDS—1805 males, 76 females and eight transgender individuals. Over 85 per cent of all males notified reported male-to-male sexual contact.

Table 2: Notifications of AIDS in Victoria, January–March 2001, April 2000–March 2001 and Cumulative Total (1983–March 2001)

	Jan 2001 – Mar 2001		Apr 2000 – Mar 2001		Cumulative Total to Mar 2001		
	Male	Female	Male	Female	Male	Female	Total*
Male homosexual/bisexual	12	–	54	–	1539	–	1544
Male homosexual/bisexual and injecting drug user	2	–	3	–	98	–	101
Injecting drug user	0	1	2	1	22	12	34
Heterosexual	1	0	3	2	60	48	108
Person from specified country*	0	0	3	1	15	7	22
Haemophilia/related disorder	0	0	3	0	39	1	40
Transfusion recipient	0	0	0	0	8	5	13
Other	0	0	0	0	1	1	2
Unavailable	3	0	7	0	23	2	25
Total	18	1	75	4	1805	76	1889

Includes eight persons for whom sex was reported as transgender.

* Persons from countries with a high prevalence (>1%) of HIV.

Six deaths following either an HIV or AIDS diagnosis were notified during the first quarter of 2001—five males and one female. Over the previous 12 months, 40 deaths were

notified, leading to a total of 1582 deaths recorded since 1983. Of these 1582 individuals, 1441 (91 per cent) had been previously diagnosed with AIDS.

Table 3: Notifications of Deaths Following HIV/AIDS Diagnosis in Victoria, January–March 2001, April 2000–March 2001 and Cumulative Total (1983–March 2001)

	Jan 2001 – Mar 2001		Apr 2000 – Mar 2001		Cumulative Total to Mar 2001		
	Male	Female	Male	Female	Male	Female	Total*
Male homosexual/bisexual	4	–	27	–	1286	–	1291
Male homosexual/bisexual and injecting drug user	1	–	1	–	87	–	90
Injecting drug user	0	1	2	2	22	9	31
Heterosexual	0	0	1	0	34	39	73
Person from specified country*	0	0	1	0	7	3	10
Haemophilia/related disorder	0	0	2	0	39	1	40
Transfusion recipient	0	0	0	0	7	5	12
Other	0	0	0	0	0	1	1
Unavailable	0	0	4	0	28	2	34
Total	5	1	38	2	1510	60	1582

Includes eight persons for whom sex was reported as transgender and four persons for whom gender was not specified.

* Persons from countries with a high prevalence (>1%) of HIV.

HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION

Fifty new HIV diagnoses were notified during the first quarter of 2001 (44 males, five females and one transgender individual), compared with 51 notified during the same quarter in 2000. The average age of those notified was 37 years (range: 22–57 years), with males being older on average (37

years compared with 32 years for females). Eighty-two per cent of notified males reported male-to-male sexual contact.

During the 12 months from April 2000 to March 2001, there were 197 HIV notifications in Victoria: 175 (89 per cent) males, 21 (10 per cent) females and one transgender individual. This number is consistent with the 198 notifications reported for the previous 12 months.

Table 4: Notifications of HIV in Victoria, by Age Group, January–March 2001, April 2000–March 2001 and Cumulative Total (1983–March 2001)

Age Group	Jan 2001 – Mar 2001		Apr 2000 – Mar 2001		Cumulative Total to Mar 2001		
	Male	Female	Male	Female	Male	Female	Total#
0–12	0	0	0	0	34	10	44
13–19	0	0	3	0	105	11	117
20–29	8	3	46	11	1506	103	1624
30–39	20	0	69	7	1481	63	1552
40–49	14	2	38	2	638	27	667
50+	2	0	19	1	316	24	341
Unavailable	0	0	0	0	101	1	117
Total	44	5	175	21	4181	239	4462

Includes 16 persons for whom sex was reported as transgender and 26 persons for whom sex was not specified.

Table 5: Notifications of HIV in Victoria, by Exposure Category, January–March 2001, April 2000–March 2001 and Cumulative Total (1983–March 2001)

Exposure Category	Jan 2001 – Mar 2001		Apr 2000 – Mar 2001		Cumulative Total to Mar 2001		
	Male	Female	Male	Female	Male	Female	Total*
Male homosexual/bisexual	36	–	131	–	3398	–	3412
Male homosexual/bisexual and injecting drug user	2	–	9	–	201	–	204
Injecting drug user	0	0	6	1	116	36	155
Heterosexual	3	4	13	10	168	139	307
Person from specified country*	2	1	9	10	69	37	106
Haemophilia/related disorder	0	0	0	0	100	1	101
Transfusion recipient	0	0	0	0	20	15	35
Other	0	0	0	0	4	9	13
Unavailable	1	0	7	0	105	2	129
Total	44	5	175	21	4181	239	4462

Includes 16 persons for whom sex was reported as transgender and 26 persons for whom sex was not specified.

* Persons from countries with a high prevalence (>1%) of HIV.

Those with newly acquired HIV or incident infection provide a picture of who is presently affected by the HIV epidemic. Such individuals are identified on the basis of a previous negative HIV test and/or a seroconversion illness within the 12 months preceding HIV diagnosis. Twenty individuals were notified with incident HIV

infection during the first quarter of 2001—19 males and one female. During the previous 12 months, 66 individuals fulfilled the criteria of incident infection. These numbers are consistent with the 62 individuals reported with incident HIV infection during 2000.

Table 6: Notifications of HIV in Victoria, by Time since Last Negative Test or Seroconversion Illness, January–March 2001 and April 2000–March 2001

Time between HIV Diagnosis and Negative Test and/or Seroconversion Illness	Cases Diagnosed Jan 2001 –Mar 2001			Cases Diagnosed Apr 2000– Mar 2001		
	Male	Female	Total#	Male	Female	Total#
Less than 1 year	19	1	20	62	4	66
1 year to less than 3 years	8	0	8	23	3	26
3 or more years	4	1	6	31	2	34
No previous negative test or seroconversion illness	13	3	16	59	12	71
Total	44	5	50	175	21	197

* Includes one person for whom sex was reported as transgender.

CHLAMYDIA INFECTIONS

The Department was notified of 960 cases of *Chlamydia trachomatis* in the first quarter of 2001, which was a 23 per cent increase from the previous quarter's total of 781 and

a 17 per cent increase from the total (n=819) for the same period in 2000. The age and sex distribution of cases remained unchanged, with most cases occurring in young people aged 20–29 years.

Table 7: *C. trachomatis* Notifications in Victoria, by Age and Sex, January–March 2001 and Cumulative Total for April 2000–March 2001

Age Group	Jan 2001–Mar 2001				Apr 2000–Mar 2001			
	Male	Female	Unknown	Total	Male	Female	Unknown	Total
0–12 years	5	6	0	11	9	18	0	27
13–19 years	21	102	0	123	66	371	1	438
20–29 years	207	322	2	531	722	1206	11	1939
30–39 years	119	93	2	214	424	299	4	727
40–49 years	29	25	0	54	143	76	1	220
50+ years	17	9	0	26	59	22	0	81
Unavailable	0	1	0	1	1	1	1	3
Total	398	558	4	960	1424	1993	18	3435

GONORRHOEA INFECTIONS

During the first quarter of 2001, 189 cases of gonorrhoea were notified. 193 were confirmed by culture and 14 by polymerase chain reaction (PCR)-based detections of *N. gonorrhoea*. A small proportion of cases were diagnosed from positive samples from more than one site or by more than one method.

Quarterly gonorrhoea notifications remained at the high level that has continued since the increase in early 1998. Men aged 20–49 years comprised 85 per cent of all cases. Compared with the last quarter of 2000, in the first quarter of 2001 there was a slight increase in cases among heterosexual men and a slight decrease among homosexual and bisexual men. The most commonly reported source of infection was a local casual sexual partner (data not shown).

Table 9: Notifications of Gonorrhoea, by Age Group, Victoria, January–March 2001

Age Group	Male	Female	Total	(%)
0–12 years	0	1	1	1
13–19 years	9	2	11	6
20–29 years	68	4	72	38
30–39 years	65	3	68	36
40–49 years	27	2	29	15
50+ years	8	0	8	4
Unknown	0	0	0	0
Total	177	12	189	100

Table 8: Notifications of Gonorrhoea, by Sexual Orientation and Sex, Victoria, January–March 2001

		Site of infection						Total
		Urethral	Vaginal	Cervical	Rectal	Pharyngeal	Urine (PCR)	
Heterosexual	Male	61			0	0	1	62
	Female	0	3	3	0	1	1	8
Homosexual/bisexual	Male	63			14	10	0	87
	Female	0	0	0	0	0	2	2
Not known	Male	17			1	0	6	24
	Female	0	3	1	0	0	0	4
	Total	141	6	4	15	11	10	189

* Other (blood, eye).

SYPHILIS INFECTIONS

There were 57 notifications of syphilis in the first quarter of 2001—three of which were reported as infectious syphilis. All infectious cases were aged 41–45 years and two were male.

TUBERCULOSIS

The Mycobacterium Reference Laboratory at the Victorian Infectious Diseases Reference Laboratory prepared this report. Given the slow-growing nature of *Mycobacterium* spp, the report is limited to the fourth quarter of 2000. Most specimens (both primary and referred) and isolates are from Victorian patients. The majority of non-Victorian specimens

originate in the Northern Territory and the Solomon Islands.

COMMENTS

- *M. kansasii* was isolated from sputum specimens from two males aged 64 years and 78 years and from a 68-year-old female.
- *M. xenopi* was isolated from the bronchial washings of a 66-year-old male.
- *M. ulcerans* was isolated from a leg ulcer of a 22-year-old male residing in the Melbourne area.
- *M. haemophilum* was isolated from the blood and skin of a 75-year-old female.

Table 10: Specimens Submitted to the Mycobacterium Reference Laboratory, by Month, October–December 2000

Primary Specimens	<i>M. tb</i> Isolates	New Victorian <i>M. tb</i> Isolates	Non <i>M. tb</i> isolates	Negatives	Total
October	21	4	6	438	465
November	13	7	12	379	404
December	12	7	14	363	389
Referred Specimens	<i>M. tb</i> Isolates	New Victorian <i>M. tb</i> Isolates	Non <i>M. tb</i> isolates	Total	
October	29	15	34	63	
November	39	14	52	91	
December	27	19	40	67	
Total	141	66	158	1180	1479

Figure 2: New *M. tuberculosis* Isolates from Victorian Residents, by Age and Gender, October–December 2000

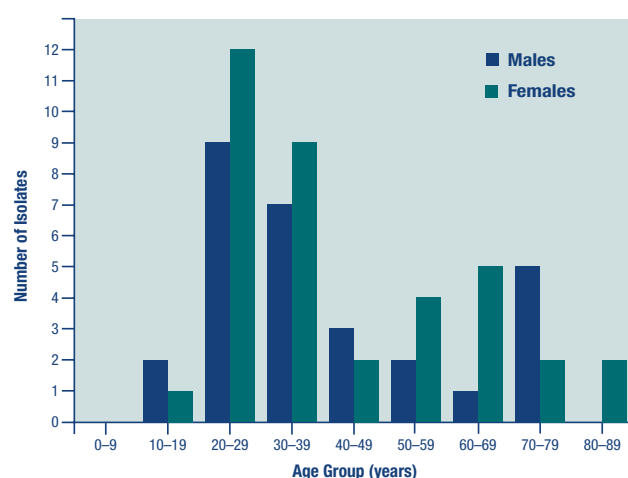


Table 11: Extra-pulmonary *M. tuberculosis* Isolates and Resistant Isolates, by Month, October–December 2000

	October	November	December
Pulmonary site	15	13	16
Extrapulmonary site	4	8	10
Extrapulmonary site details	Lymph node (3) Arm abscess (1)	Lymph node (4) Retroperitoneal abscess (1) Neck aspirate (1) Skin biopsy (1) Small bowel (1)	Lymph node (5) Chest wall bx (1) Psoas abscess (1) CSF (1) Neck swab (1) Pelvic mass (1)
Resistance	Resistance to Isoniazid and Streptomycin (2)	—	Resistance to Rifampicin and Rifabutin (1); resistance to Isoniazid, Streptomycin and Ethambutol (1)

ERRATUM

In *Victorian Infectious Diseases Bulletin*, vol. 4, no. 1, summary data on notifications of invasive meningococcal disease for 2000 were omitted. There were a total of 162

notifications for that year, compared with 137 notifications in 1999. Notifications of *N. meningitidis* group C accounted for the majority of the increase.

Table 12: Notifications of Infectious Diseases, by Department of Human Services Region, Victoria, 1 January–March 2001 and Historical Comparisons

Disease	Barwon		South Western		Gramplains		Loddon–Mallee		Hume		Gippsland		Western Metropolitan		Northern Metropolitan		Eastern Metropolitan		Southern Metropolitan		Unknown		Victoria		
	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	2001ytd	2000ytd	
Blood-borne diseases																									
Hepatitis B—acute	0	1	0	1	1	2	0	0	0	0	1	0	0	9	2	4	4	7	4	7	6	1	2	30	22
Hepatitis B—chronic/unknown	2	3	0	4	8	2	2	4	7	2	122	107	84	99	103	116	116	30	35	443	457	2	2	2 094	2 094
Hepatitis C—incident	1	4	0	0	0	1	0	0	3	6	4	4	4	7	5	2	1	1	1	22	29	1	1	29	78
Hepatitis C - Unspecified	72	66	32	40	60	58	36	64	65	197	434	215	306	174	207	281	399	194	196	1 326	1 831	0	0	5 842	5 842
Hepatitis D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Enteric diseases																									
Amoebiasis	0	3	0	0	0	0	1	1	0	2	4	6	7	1	2	8	4	0	1	18	22	0	1	18	89
Botulism	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Campylobacter infection	63	60	46	43	46	49	79	40	76	154	144	180	166	282	284	319	290	41	40	1 286	1 187	0	0	5 135	5 135
Food/water/environmental																									
—Cryptosporidium	2	0	1	0	2	3	5	5	6	33	3	19	3	30	6	18	4	2	1	118	29	2	1	118	118
—Other	9	0	0	4	13	8	17	8	12	33	31	44	29	47	60	48	65	4	8	242	242	0	0	866	866
Giardiasis	19	15	5	9	9	8	17	8	12	33	31	44	29	47	60	48	65	4	8	242	242	0	0	866	866
Haemolytic uraemic syndrome	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Hepatitis A	2	6	0	3	0	3	1	0	1	5	3	13	6	9	4	12	8	25	0	3	25	0	3	25	79
Listeriosis	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	2	1	0	6	2	1	0	6	2
Paratyphoid	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	2	0	0	0	5	2	0	0	5	2
Salmonellosis	22	38	14	11	25	14	22	18	23	31	51	55	48	73	48	76	73	11	11	382	322	11	11	1 009	1 009
Shigellosis	1	1	0	1	0	0	0	0	0	6	3	13	2	3	7	4	7	2	0	29	21	0	0	29	21
Typhoid	0	0	0	1	0	0	1	0	0	0	1	4	2	1	0	1	0	1	0	6	7	0	0	6	7
Verotoxin-producing E. coli	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	0	3	0	0	0	3	0
Yersiniosis	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	2	3	0	1	2	3
Other infectious notifiable diseases																									
Invasive meningococcal disease	6	1	1	1	0	0	1	0	2	2	1	6	5	6	4	10	13	0	0	31	28	0	0	31	162
Legionellosis	0	2	1	0	1	0	1	0	0	10	5	9	17	6	9	8	7	1	0	37	40	0	0	37	40
Tuberculosis	1	1	0	2	1	1	1	0	0	21	23	14	11	16	8	28	19	0	2	82	67	0	2	82	293
Vaccine-preventable diseases																									
Haemophilus influenzae type b	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	2	1
Invasive pneumococcal disease	0	0	3	0	6	0	0	0	3	0	0	1	0	0	6	0	3	0	0	19	0	0	19	0	14
Masles	0	0	2	0	1	0	1	0	0	7	1	8	1	17	1	18	2	0	0	55	5	0	0	55	19
Mumps	2	0	2	0	0	0	0	0	1	1	2	2	2	4	1	2	2	0	1	13	9	0	1	13	43
Pertussis	5	12	8	22	3	16	16	15	17	12	31	21	32	36	30	33	39	6	5	157	214	6	5	157	733
Rubella	0	0	0	0	1	0	3	1	1	0	3	4	2	1	4	7	3	0	0	17	13	0	0	17	66
Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Vector-borne diseases																									
Arbovirus—Barmah Forest	0	1	0	0	1	1	5	2	0	0	0	0	0	1	0	1	0	0	0	10	7	0	2	10	18
Arbovirus—Flavivirus	0	0	0	0	0	1	0	1	0	0	0	0	2	1	2	0	2	0	0	1	1	0	1	1	13
Arbovirus—not further specified	0	1	0	0	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	4	8	0	2	4	16
Arbovirus—Ross River	6	1	9	14	90	58	56	12	37	4	9	0	12	16	3	22	6	15	33	272	132	0	33	272	316
Malaria	0	0	2	1	1	0	1	3	1	2	3	5	1	4	4	12	5	5	5	30	32	0	5	30	119
Zoonoses																									
Brucellosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Hydatid disease	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
Leptospirosis	4	3	0	0	3	2	1	2	4	1	0	0	0	0	0	0	1	0	0	12	10	0	1	12	36
Psittacosis	1	0	4	0	3	0	2	0	1	0	4	1	4	3	8	4	1	2	0	28	14	0	0	28	14
Q fever	0	0	1	0	2	2	0	0	0	1	0	1	1	0	0	0	0	0	0	5	3	0	0	5	23
Taeniasis	0	0	0	0	0	0	0	0	0	1	1	2	1	0	0	2	1	0	0	7	3	0	0	7	12
Total	220	220	132	153	275	227	253	178	190	673	894	726	765	842	824	1 062	1 099	364	361	4 810	4 902	4 810	4 902	18 169	
Population	333 003	333 003	203 546	203 546	285 977	285 977	243 493	243 493	233 094	610 252	610 252	764 712	764 712	973 689	973 689	1 118 090	1 118 090	476 856	476 856	4 810	4 902	4 810	4 902	18 169	

Notes
 1 The data are preliminary figures only and may be subject to revision.
 2 ABS estimated resident population data—June 2000 (preliminary).
 3 Reporting of invasive pneumococcal disease commenced in December 2000 under a voluntary laboratory-based scheme.

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