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SURVEILLANCE OF SEXUALLY TRANSMISSIBLE DISEASE IN QUEENSLAND, 1988 TO 1993

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Introduction

This paper describes the basic epidemiological features of sexually transmissible diseases (STD) in Queensland during the years 1988 to 1993, as revealed by the notifications system of Queensland Health. It identifies trends in the number of notified cases of sexually transmissible disease in Queensland during the reference period. It also identifies areas and age groups which may benefit from future health program interventions. In addition, within the limits of the notification system, these data provide information on the impact of previous health promotion and health service strategies directed towards improving the sexual health of the population.

This information is derived from notifications of STDs reported to the Communicable Diseases Branch and the AIDS Medical Unit of Queensland Health. The information requested on notification forms included basic demographic information about the patient, details of ethnic origin, the source of infection and details of the notifying doctor and laboratory. A system of laboratory based notification has been in place in Queensland since 1988. The only exception is that initial episodes of genital herpes infection have been notified by the attending doctor rather than laboratory sources since 1991 (John Sheridan, personal communication).

The Communicable Diseases Branch of Queensland Health distributes a weekly report to Local Authorities on the number of reported cases of notifiable diseases by Local Authority Area (LAA). However, for reasons of confidentiality, only the Queensland totals for sexually transmissible diseases are included in these reports. Within this present form of information distribution there is little opportunity to calculate, understand or address the issues of sexually transmissible disease at a local level.

There are certain unquantifiable biases which affect these notification data. These relate to the patients' symptoms and knowledge of disease, as well as their opportunities to access and utilise health care services. Notifications are also dependent upon a medical practitioner's decision to test for the disease. In addition, there is inadequate information on the frequency of testing of individuals, multiple notification of cases, the collection site, the clinical stage of the disease and whether the test was requested for screening or clinical purposes. In many cases, observed increases in notification rates may have arisen from the recent shift to laboratory based notification procedures. The system is also dependent upon laboratories' compliance in notifying positive test results.

The completeness and accuracy of the information provided on request or notification forms is vital to the validity of the notification data. However, the usefulness of notification information is limited when request forms are not fully completed. Details on variables such as ethnic origin are frequently incomplete and are not useful in analysis for this reason. Information is also limited by factors such as patients' use of pseudonyms and the reluctance of some notifiers to include identifying information for sexually transmissible diseases.

There are other limitations to the interpretation of STD notifications due to the nature of the available diagnostic tests. Reagin tests for syphilis are subject to biological false positive results, while treponemal tests may remain positive for years after successful treatment. In such instances, follow up testing of treated cases may result in a second notification of a case of syphilis.

During this period in Queensland, hepatitis B notifications were recorded on the basis of positive results for hepatitis B surface antigen, and hepatitis C on the basis of positive tests for hepatitis C antibody. It is not possible to use these results to distinguish between acute, chronic and previous infections of these diseases. Therefore, accurate calculation of incidence was not possible and the notifications could only be interpreted in terms of prevalence and the frequency of testing.

Thus, it is possible to place too great a reliance on the actual numbers involved in this paper so caution should be exercised in interpreting the data. In fact, given such an imperfect system, the numbers in this paper probably reflect the 'tip of the iceberg' of sexually transmissible disease in Queensland. With this *caveat* in mind, statistical analysis has been confined to age adjusting rates within the populations. There has been no attempt to prove that one particular area is significantly different from another, although in some cases the differences may be self evident.

Information contained in this paper includes trends in notification rates of each disease for the Queensland population during the period 1988 to 1993, presented in graphical form; and the 1993 age adjusted notification rates for the Queensland Health regions (based on the postcode of residence of the patient), presented in maps. Age group specific rates for males and females for 1993 are presented in graphical form for the Queensland population.

Chancroid

This disease is the result of an infection by the organism *Haemophilus ducreyi* and is relatively rare in Australia[1]. During the period 1988 to 1993 there were two notifications of chancroid in Queensland. This compares with

Figure 1. Unadjusted rate of notification of chlamydia per 100,000 population, Queensland, 1988 to 1993, by year and sex

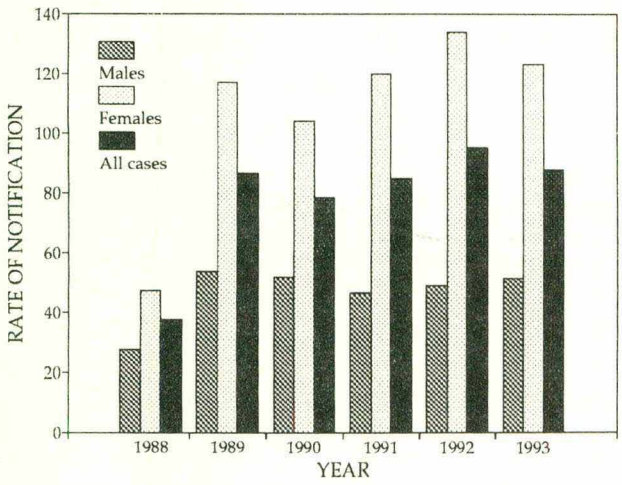
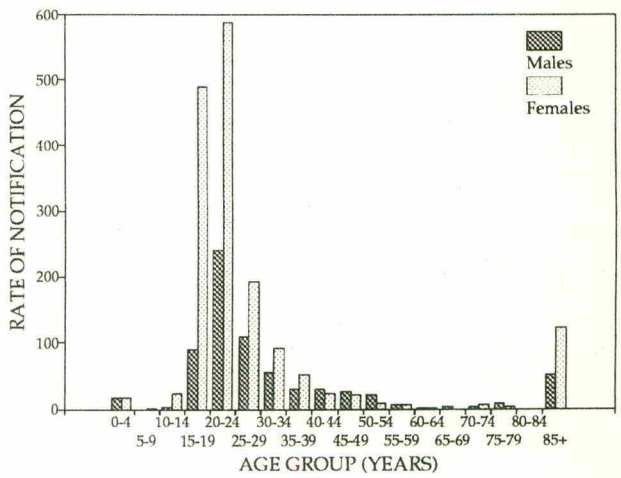


Figure 3. Rate of notification of chlamydia per 100,000 population, Queensland, 1993, by age group and sex



five notified infections in 1992 in Australia[2] and one in 1993[3].

Chlamydia

Infection with *Chlamydia trachomatis* is one of the most commonly reported sexually transmissible diseases in both Australia[2] and the United States[4] and may result in serious complications including pelvic inflammatory disease, infertility, ectopic pregnancy and neonatal infections. The rate of notification of chlamydial infection to the National Notifiable Diseases Surveillance System (NNDSS) in 1993 was 55.8 per 100,000 population[3]. The notification rate for chlamydial infection in Queensland in 1993 was 87.6 cases per 100,000. The higher notification rate for chlamydial infection in Queensland partially reflects differing notification practices and case definitions of the Australian States and Territories[2].

The Queensland data show increasing notification rates for chlamydial infection in the period 1988 to 1993 (Figure 1). The total number of notifications increased from 1090 to 2546 over the six year period under study. More women were notified with the condition; the male:female rate ratio was 0.44/1.00 for the six year period. Given the often asymptomatic nature of chlamydial infection in women, these figures may reflect diagnoses in asymptomatic women being screened for the disease[1].

Notification rates for chlamydial infection for the Queensland Health Regions in 1993 are presented in Figure 2. Notification rates increased in all regions from 1988 to 1993, but were consistently highest in the Peninsula and Torres Strait Region during this period.

Age group and sex specific rates for chlamydia notifications in 1993 for the Queensland population are presented in Figure 3. There were high rates of notification of chlamydial infection throughout the 15 to 29 years age groups. The highest age group specific rate in the Queensland population occurred in females in the 20 to 24 years age group (587 cases per 100,000 population) in 1993. This compares with a peak Australian rate in 20-24 year old females of 366.1 per 100,000 population[3].

Queensland rates of chlamydial infection notification increased during the period 1988 to 1992, decreasing slightly in 1993. It is not possible to determine from these data whether this represented an

Figure 2. Age adjusted rate of notification of chlamydia per 100,000 population, Queensland, 1993, by health region

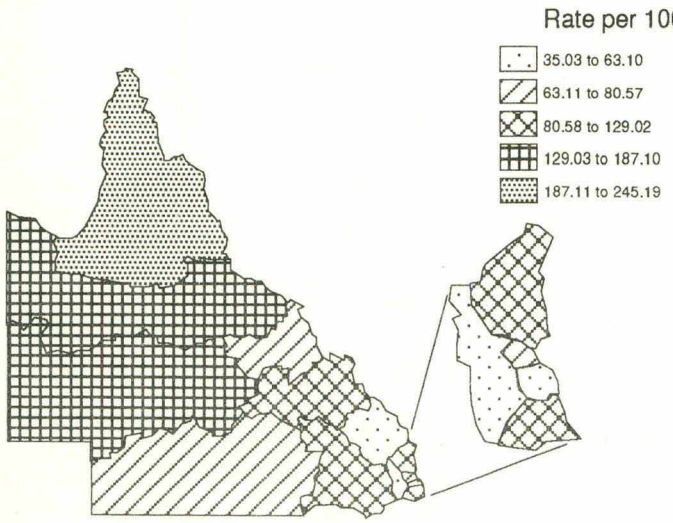


Figure 4. Unadjusted rate of notification of donovanosis per 100,000 population, Queensland, 1988 to 1993, by year and sex

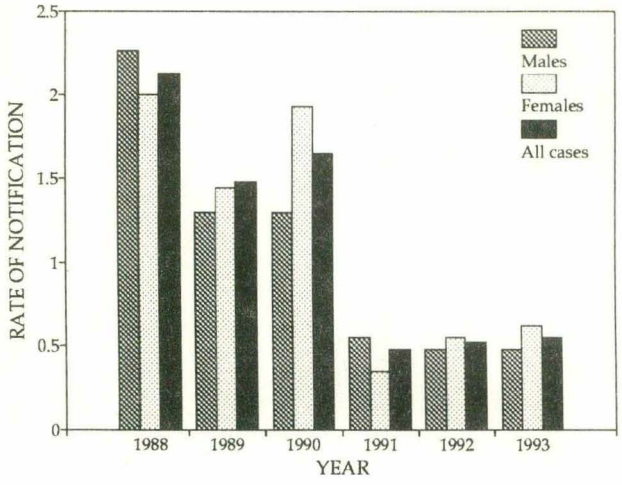
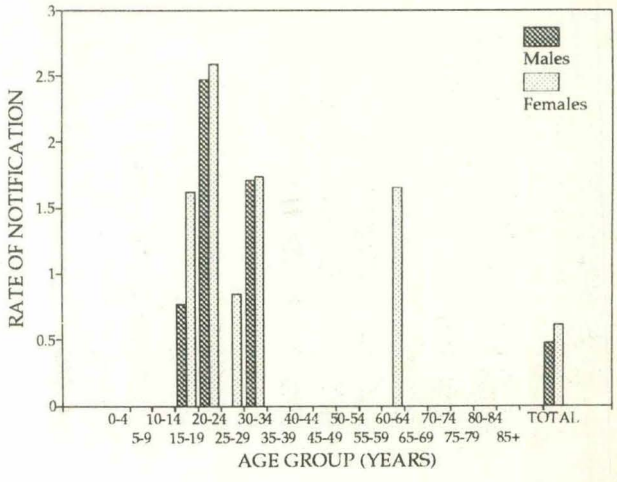


Figure 6. Rate of notification of donovanosis per 100,000 population, Queensland, 1993, by age group and sex



actual increase in incidence of the disease, or improved screening and notification procedures. Both factors may be responsible for the increase in notification rates. There is certainly no evidence of a large decline in chlamydial notifications in Queensland during this period. This disease thus remains an important issue for sexual health and public health practitioners.

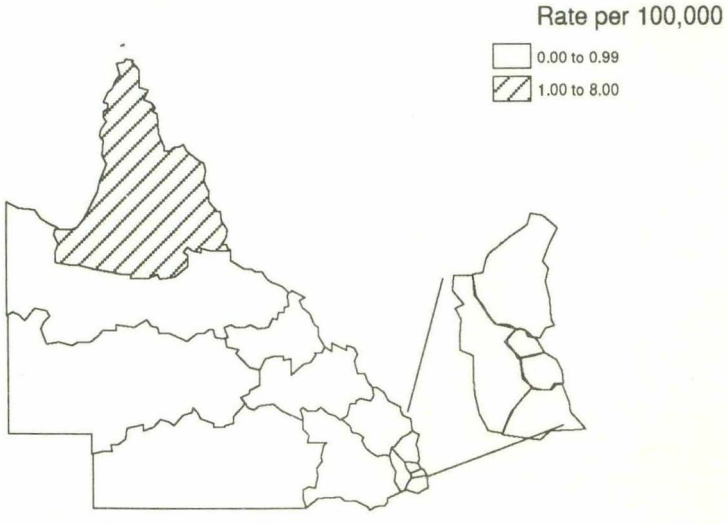
Donovanosis

Donovanosis (granuloma inguinale) is a progressive, destructive disease caused by *Calymmatobacterium granulomatis*. It is uncommon in Australia overall but is endemic among the indigenous population of the northern part of the country. Clinically, it presents as painless ulcers on the genitalia which may become infected and lead to scarring[1]. In 1993 the NNDSS notification rate for this infection was 0.7 per 100,000 population[3]. In comparison, the notification rate for this condition in Queensland in 1993 was 0.55 per 100,000 population.

The Queensland data reveal an overall decline in the notification rates for donovanosis in the period 1988 to 1993 (Figure 4). The annual number of notifications fell from 62 to 16 cases during that time. The notifications were approximately equally distributed between the sexes with a male:female rate ratio of 0.93/1.00 for the six year period.

Donovanosis was notified in several of the Queensland Health Regions in the period 1988 to 1993. As in 1993 (Figure 5), most of the notifications were from Peninsula and Torres Strait Region.

Figure 5. Age adjusted rate of notification of donovanosis per 100,000 population, Queensland, 1993, by health region



Age group specific rates for donovanosis notifications in Queensland in 1993 are depicted in Figure 6. These infections were notified mainly among the 15 to 34 years age groups. The highest age specific rates occurred in 20 to 24 year old females in 1993 (2.47 per 100,000). However, the small numbers involved make this difficult to interpret.

These data show that there was a decline in notifications of donovanosis infection in Queensland during the period 1988 to 1993. However, it is important to consider the influence of the biases inherent in notification data before hastening to the conclusion that these data represent an actual decline in cases of donovanosis. It is not possible to quantify these biases, hence this paper is unable to interpret these data as representative of a real decline in case numbers of donovanosis. This

Figure 7. Unadjusted rate of notification of genital herpes per 100,000 population, Queensland, 1988 to 1993, by year and sex

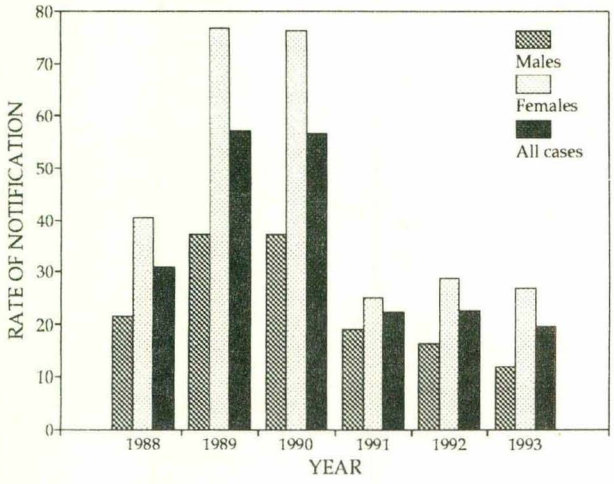
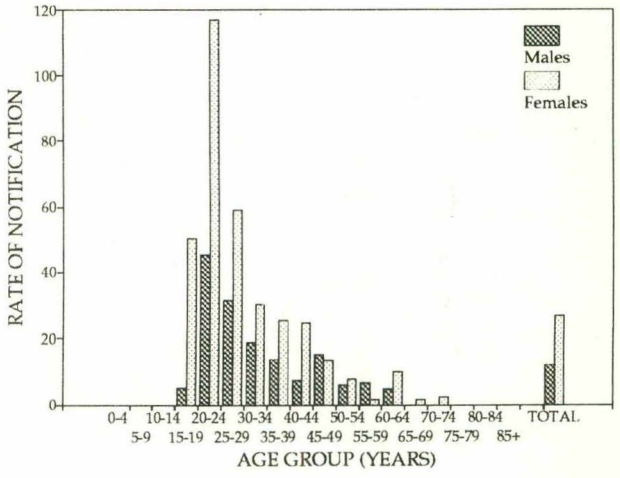


Figure 9. Rate of notification of genital herpes per 100,000 population, Queensland, 1993, by age group and sex



disease remains an important sexual health problem, particularly in the Peninsula and Torres Strait Health Region.

Genital herpes

Genital herpes is a common sexually transmissible disease caused by herpes simplex virus (HSV) types 1 and 2. Infection is characterised by painful vesicular lesions on the genitalia. Recurrence of these lesions is a common and disabling feature of the disease. Neonatal transmission of HSV is associated with high morbidity and mortality[1]. Asymptomatic infection may occur, hence notification rates for this disease will underestimate the true rates in the community. Genital herpes notifications are not compiled nationally for Australia, so there are no national notification rates for comparison.

The Queensland data showed a decline in the notification rates for genital herpes during the period 1988 to 1993 (Figure 7). Notifications fell during this time from 901 to 564 cases. This may be explained by the change in policy regarding the reporting of initial infections, which have been notifiable only from medical practitioners, rather than laboratories, since 1991. More females than males were notified with genital herpes during the six year period; the male:female rate ratio was 0.53/1.00.

Regional notification rates of genital herpes in 1993 are depicted in Figure 8. Low rates of notification were reported in the Peninsula and Torres Strait Region, which contrasts with that region's rates for other STDs. High rates of notification of genital herpes in the Brisbane North region may be explained by the presence of a large sexual health clinic in the region.

Figure 8. Age adjusted rate of notification of genital herpes per 100,000 population, Queensland, 1993, by health region

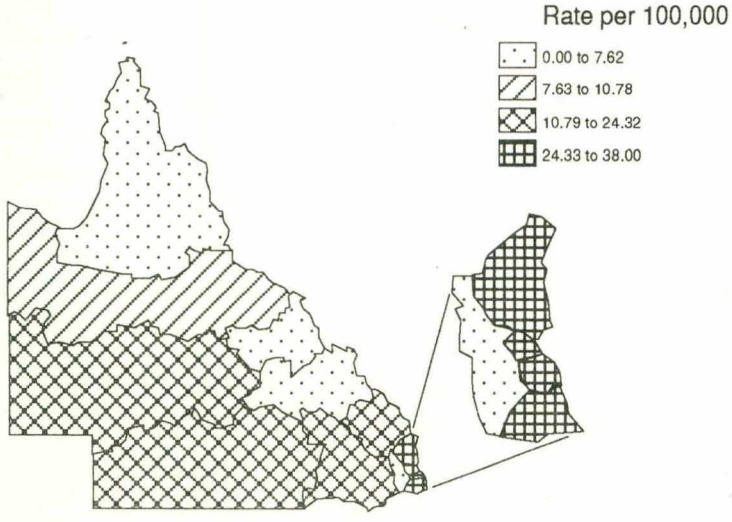


Figure 9 depicts the age group and sex specific rates for genital herpes notifications in 1993. The majority of cases were notified from the 15 to 29 years age groups. In 1993 the highest age specific rate in the Queensland population occurred in females aged 20 to 24 (116.7 cases per 100,000 population; an increase from 92.5 cases per 100,000 population in 1992).

Genital herpes is an important STD in Queensland. Although notification rates fell during the period 1988 to 1993, this may be explained by changes in notification policy. It is not possible to identify a reduction in the incidence of this condition from these data.

Figure 10. Unadjusted rate of notification of gonorrhoea per 100,000 population, Queensland, 1988 to 1993, by year and sex

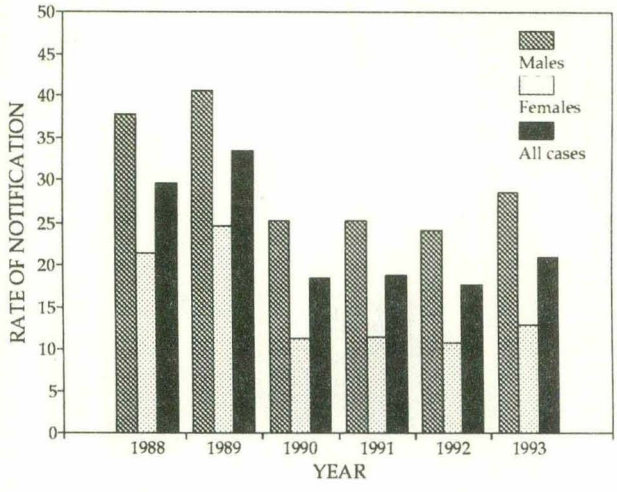
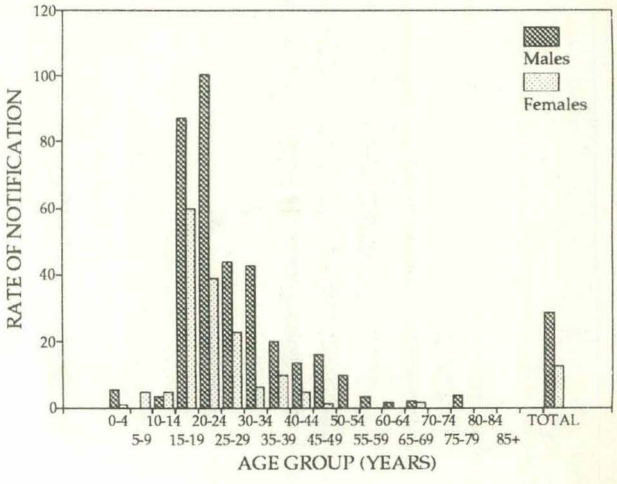


Figure 12. Rate of notification of gonorrhoea per 100,000 population, Queensland, 1993, by age group and sex



Gonorrhoea

Gonorrhoea is a common sexually transmissible disease which mainly affects the mucosal and glandular structures of the genital tract. Infection may involve the oropharynx, rectum and conjunctiva and the disease may spread systemically to joints and skin[1].

In 1993 the Australian adjusted notification rate for gonorrhoea was 15.9 cases per 100,000 population[3]. The Queensland data showed an overall decline in gonorrhoea notifications from 864 in 1988 to 606 in 1993 (Figure 10). However, the 1993 Queensland notification rate of 20.9 cases per 100,000 population, was an increase from the 1992 figure of 17.6 cases per 100,000. Gonorrhoea was notified more often in males than females during the six year period, with a male:female rate ratio of 1.98/1.00.

Notification rates of gonorrhoea infection for the Queensland Health Regions in 1993 are depicted in Figure 11. The Peninsula and Torres Strait Region consistently reported the highest rates of gonorrhoea during this period. The Northern Region also demonstrated consistently high rates. Although notification rates fell in some regions, a number of other regions (South West, Darling Downs, South Coast, Wide Bay and Brisbane South) had minor increases in notification rates.

Queensland age group and sex specific notification rates for 1993 are described in Figure 12. The highest age specific notification rate occurred in 20 to 24 year old males (100.4 cases per 100,000 population; an increase from the 1992 figure of 89.7 cases per 100,000 population).

A decline in gonorrhoea notification rates was noted in Queensland during the years 1988 to 1992. However, the decline was reversed in 1993 with a rise in notification rates for this disease. Gonorrhoea remains an important sexually transmissible disease in Queensland.

Figure 11. Age adjusted rate of notification of gonorrhoea per 100,000 population, Queensland, 1993, by health region

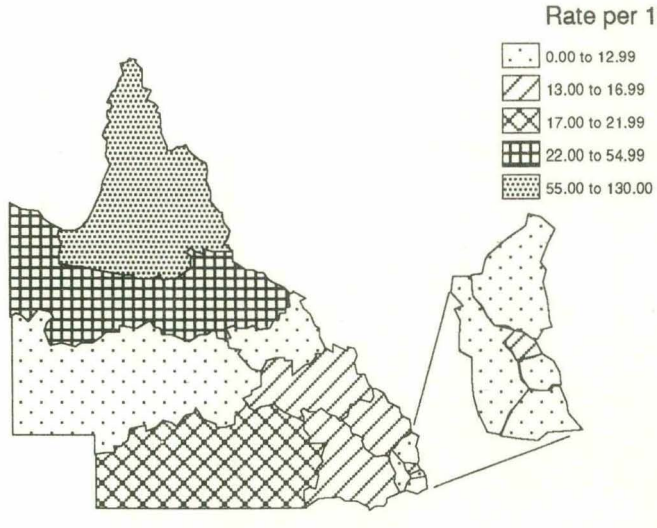


Figure 13. Unadjusted rate of notification of hepatitis B per 100,000 population, Queensland, 1988 to 1993, by year and sex

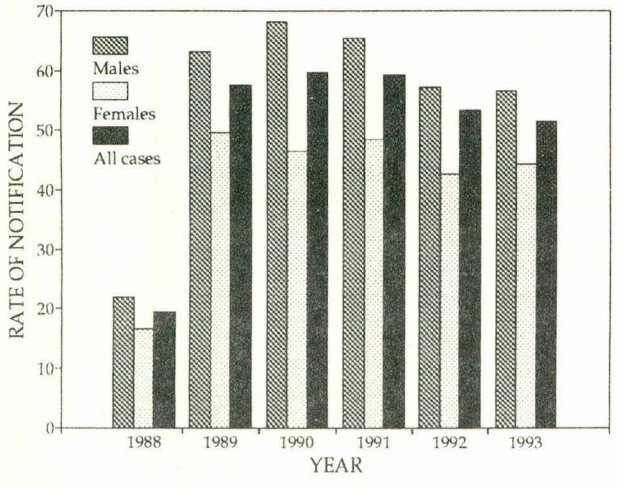
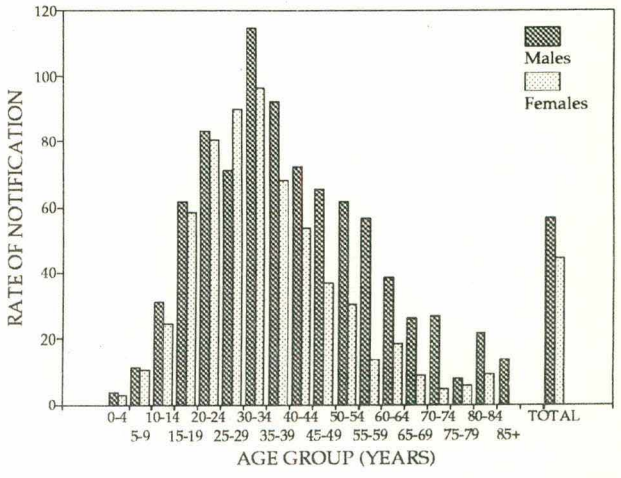


Figure 15. Rate of notification of hepatitis B per 100,000 population, Queensland, 1993, by age group and sex



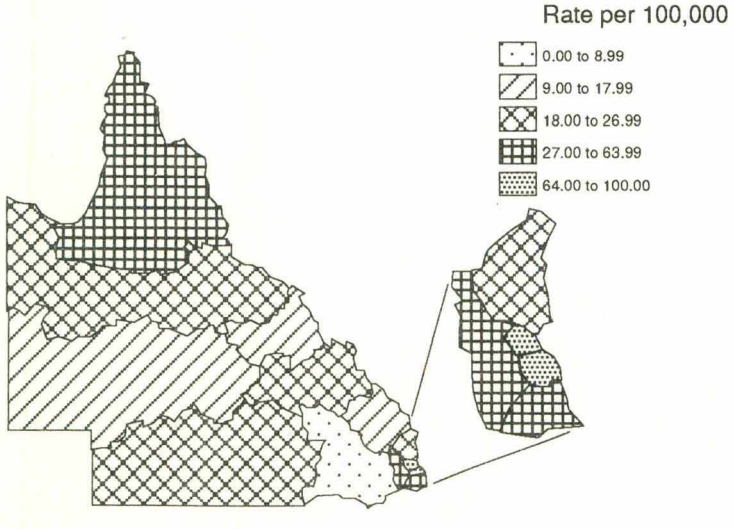
Hepatitis B

Hepatitis B virus infection is transmissible through sexual intercourse and exposure to blood or body fluids, for example by sharing needles for injecting drug use. Transmission from mother to infant in the perinatal period and by close personal contact also occurs. The sequelae of hepatitis B infection can be serious and include chronic hepatitis, cirrhosis and hepatocellular carcinoma. In Australia about 5% of the Caucasian population has markers of previous hepatitis B infection and up to 0.3% are chronic carriers of the disease. The rates are higher in the Aboriginal, Torres Strait Islander and South-East Asian-born populations with up to 90% having had hepatitis B infection and up to 30% being carriers of the disease[1].

Queensland Health's notification system recorded those patients identified as having positive serology for hepatitis B surface antigen. There were no records maintained on results of tests for acute hepatitis B. Consequently, it was not possible to distinguish incident cases from other cases and the majority of these notifications probably reflect prevalence of and testing patterns for the disease. Hence, fluctuations in notification rates may reflect altered rates of testing for the disease, rather than changes in incidence.

The 1993 NNDSS notification rate for hepatitis B infection (unspecified as to whether the case was an incident, chronic or past infection) was 38.8 cases per 100,000 population[3]. In comparison, the 1993 Queensland notification rate was 51.6 cases per 100,000 population. The Queensland data show a slight decline in notification rates for hepatitis B infection in recent years after an initial sharp rise (Figure 13). The total number of notifications of hepatitis B rose from 561 in 1988 to 1733 in 1990 and fell to 1499 cases in 1993. There were higher rates of males notified with the disease with a male:female rate ratio of 1.35/1.00 for the six year period.

Figure 14. Age adjusted rate of notification of hepatitis B per 100,000 population, Queensland, 1993, by health region



Notification rates of hepatitis B for the Queensland Health Regions in 1993 are mapped in Figure 14. From 1988 to 1993, Brisbane North, Brisbane South, and the Peninsula and Torres Strait Regions had consistently high notification rates for this disease.

Figure 15 describes the age group and sex specific rates for hepatitis B notifications in the Queensland population for 1993. The highest rate was among 30 to 34 year old males (114.7 cases per 100,000 population).

Notification rates for hepatitis B rose substantially and then declined marginally in the Queensland population in recent years. It is difficult to place any interpretation upon

Figure 16. Unadjusted rate of notification of hepatitis C per 100,000 population, Queensland, 1988 to 1993, by year and sex

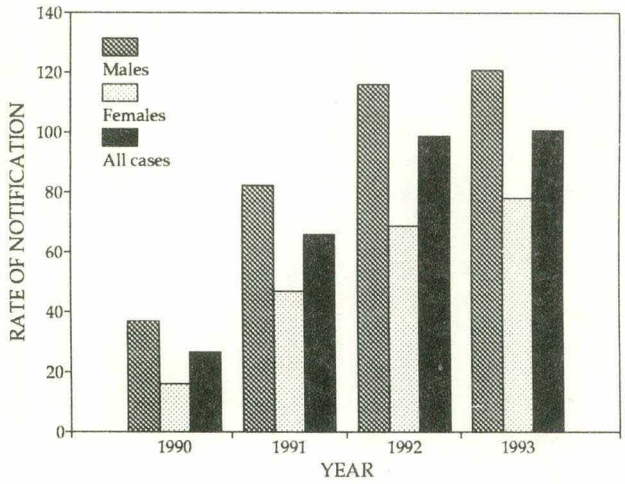
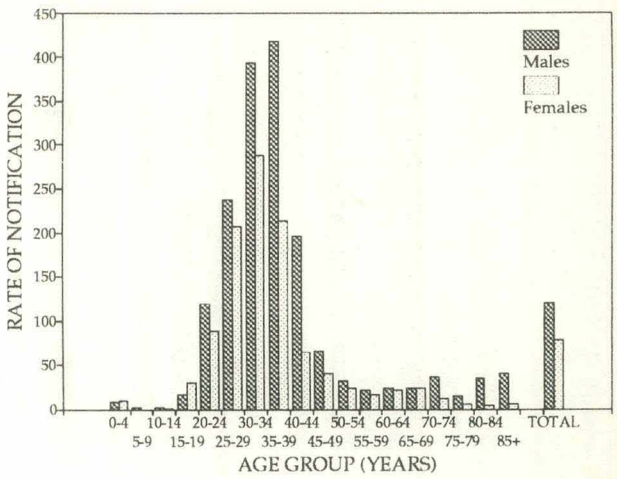


Figure 18. Rate of notification of hepatitis C per 100,000 population, Queensland, 1993, by age group and sex



these data as they are more likely to reflect the prevalence of the disease and testing patterns than they are to reflect incidence.

Hepatitis C

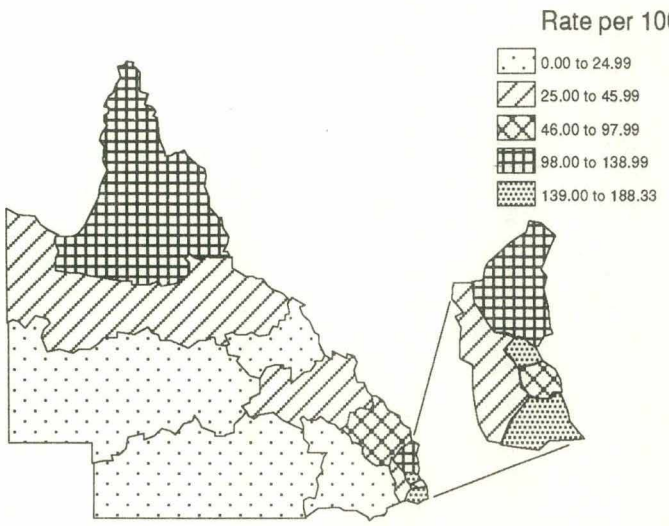
The hepatitis C virus is readily transmissible through blood and blood products. Those at risk of hepatitis C infection include injecting drug users and persons who received blood products prior to the introduction of screening of blood donations for the virus. The risk of transmission through sexual intercourse is thought to be low in most situations, but can be higher if the person carrying HCV is also infected with HIV or is in the early stages of HCV infection or has very active HCV liver disease[5].

Queensland notification data for hepatitis C are available from 1990. Hepatitis C infection was notified on positive test results for hepatitis C antibody, thus incident cases have not been able to be distinguished from prevalent cases. Hence, it is most likely that the majority of these notifications reflect prevalence of and testing patterns for the disease. Consequently, increases in notification rates probably reflect increased testing for the disease[2].

Hepatitis C (unspecified) had the highest notification rate of any disease notified to the NNDSS in 1993[3], of 73.9 cases per 100,000 population. The Queensland rate in 1993 was 100.7 cases per 100,000 population. The male:female rate ratio for the period 1990 to 1993 was 1.7/1.00. The number of notified cases increased from 765 in 1990 to 2928 in 1993 (Figure 16).

Notification rates increased in most Queensland Health Regions in the period 1990 to 1993, probably reflecting increased testing for the disease. The 1993 regional rates indicate a higher prevalence of infection and/or testing in the Brisbane North, South Coast and the Peninsula and Torres Strait Regions (Figure 17).

Figure 17. Age adjusted rate of notification of hepatitis C per 100,000 population, Queensland, 1993, by health region



Queensland age group and sex specific notification rates for hepatitis C infections in 1993 are depicted in Figure 18. The age group specific rates began to increase in the 15 to 19 years age group. These rates increased substantially in the 20 to 24 years age group and peaked in the 30 to 39 years age groups. A similar pattern was noted for age group specific Australian notification rates[3]. In 1993, the Queensland rates for the 30 to 34 years age group were almost twice the Australian rates of 232.8 per 100,000 males and 138.3 per 100,000 females[3].

Hepatitis C is an increasingly recognised public health problem in Queensland. However, notification

Figure 19. Unadjusted rate of notification of HIV infection per 100,000 population, Queensland, 1988 to 1993, by year and sex

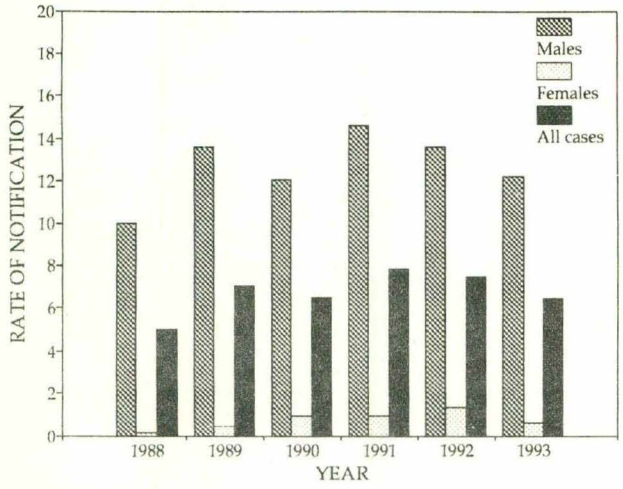
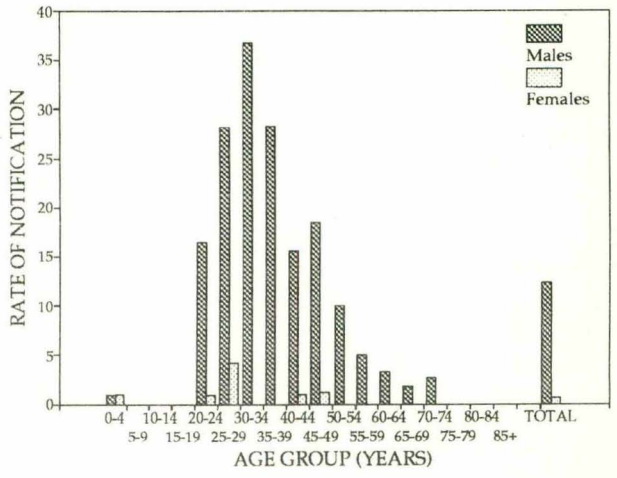


Figure 21. Rate of notification of HIV infection per 100,000 population, Queensland, 1993, by age group and sex



data for this condition are difficult to interpret and at best may give some indication of the prevalence of the disease in communities. However, the tendency for these data to reflect the frequency of testing for the disease cannot be over-emphasised.

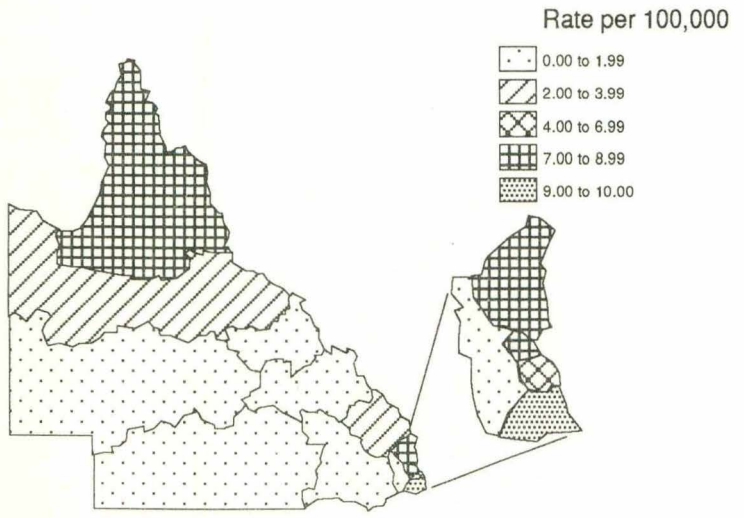
Human immunodeficiency virus

Human immunodeficiency virus (HIV) notification data are maintained by the AIDS Medical Unit of Queensland Health. Information published in this paper is based on the first notification of the condition in Queensland; the data may include patients previously notified in other States. This paper does not quantify the impact of interstate migration on these notification rates.

The notification data show an increase in the number of new HIV diagnoses reported annually in Queensland during the last six years (Figure 19). The total number of notifications rose from 147 in 1988 to 227 in 1991 and declined to 187 in 1993. The condition was predominantly notified among males with a male:female rate ratio of 16.5/1.00 for the six year period. However, a small increase in notifications of HIV infection occurred in females in Queensland during this time period.

Notification rates for the Queensland Health Regions in 1993 are presented in Figure 20. The highest notification rates were reported from Peninsula and Torres Strait, South Coast and Brisbane North Regions. Notification rates increased in most regions during the period 1988 to 1993. The highest regional notification rate for the total period 1988 to 1993 was 12.8 per 100,000 population in the Peninsula and Torres Strait Region.

Figure 20. Age adjusted rate of notification of HIV infection per 100,000 population, Queensland, 1993, by health region



There is some evidence that a proportion of this increase in HIV notifications is the result of migration of HIV positive patients from interstate and that notifications of infections acquired in Queensland are decreasing[3]. However, the rise in new notifications probably does represent an increase in the number of persons living with HIV infection in the Queensland community. As such, it represents an important future cost in terms of health services in this State and an important issue for further preventative education. Although the notifications of HIV infection have fallen recently, the notification rates in Queensland have increased since 1988 and with it the potential for transmission in the Queensland community.

Age group and sex specific notification rates for HIV infection in the Queensland population for 1993 are depicted in Figure 21. The highest age specific notification rate was in the 30 to 34 year old male population (36.8 per 100,000). The trend over the last five years has been towards an increase in notification rates in most age groups, with the greatest increases occurring in the 25 to 34 years age group. There has been a smaller, recent rise in the 20 to 24 year age group. This may reflect a change in the age groups affected or it may reflect a shift in the age at first notification.

HIV infection is the most serious of the sexually transmissible diseases currently affecting our society. At present, the only option available to combat this disease is to emphasise the importance of prevention. The notification data for HIV infection in Queensland over the last five years suggest that new infections are continuing to occur.

Lymphogranuloma venereum

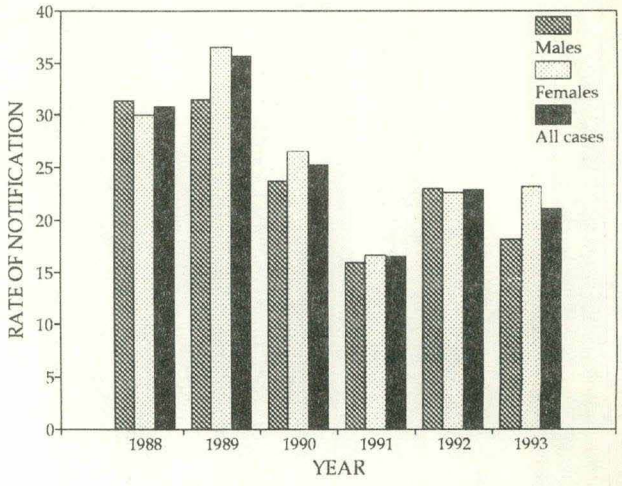
This is a condition caused by serotypes L1, L2, L3 of *Chlamydia trachomatis*, usually encountered in the tropics[1]. It begins as a small painless vesicle and can result in inguinal lymphadenopathy and rectal strictures. There were no cases of this infection notified to Queensland Health in the period 1988 to 1993. The National Health and Medical Research Council notes that the condition may be under-reported and misdiagnosed because of the minor, transient initial symptoms and a low index of suspicion for the disease among practitioners[1].

Syphilis

Syphilis is a sexually transmissible disease caused by the spirochaete *Treponema pallidum*. It has three clinical stages, but is mainly identified in Australia from the primary lesion (chancre) or through syphilis serological testing conducted for screening or clinical purposes[1]. Reference has been made to the serological problems in notifications of syphilis and the bias towards multiple notifications. However, Queensland Health's case definition of a titre greater than 1/8 tends to select cases with recently acquired infection (J Patten, personal communication). The Queensland data do not give an indication of the clinical stage of the disease, which is an important limitation to consider in interpretion.

The 1993 NNDSS notification rate for syphilis was 13.1 cases per 100,000 population[3]. This compares with the 1993 Queensland rate of 21.1 cases per 100,000 population. The Queensland data showed a decline until 1991, followed by a recent rise in notification rates between 1991 to 1993 (Figure 22). The total number of notifications fell from 1034 in 1989 to 480 in 1991, rising again to 614 in 1993. Slightly more women than men were notified with the disease; the male:female rate ratio for the period 1988 to 1993 was 0.93/1.00.

Figure 22. Unadjusted rate of notification of syphilis per 100,000 population, Queensland, 1988 to 1993, by year and sex



Syphilis notification rates for the Queensland Health Regions for 1993 are presented in Figure 23. The Peninsula and Torres Strait Region consistently had the highest notification rates for syphilis during this period. Although notification rates fell by 44% in the Peninsula and Torres Strait Region over the six years from 1988 to 1993, the rate in this region remained more than eight times the national rate in 1993. Notification rates increased in Northern, Wide Bay, Darling Downs, Sunshine Coast, South Coast, West Moreton and Brisbane South Regions during the six years. Therefore,

Figure 23. Age adjusted rate of notification of syphilis per 100,000 population, Queensland, 1993, by health region

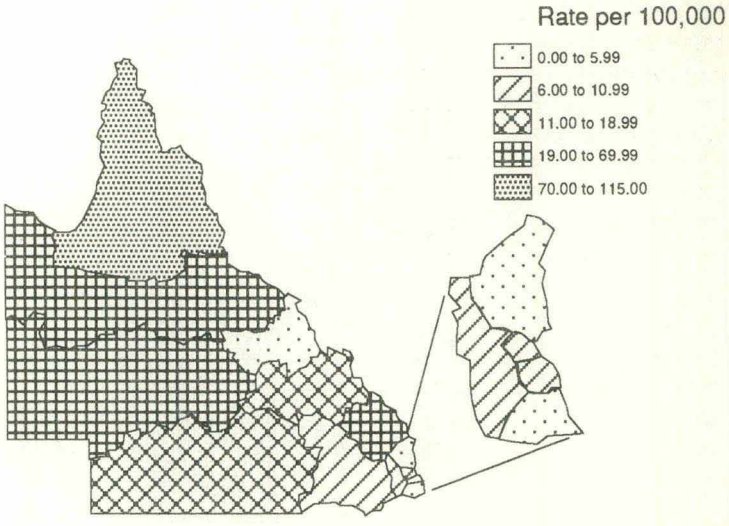
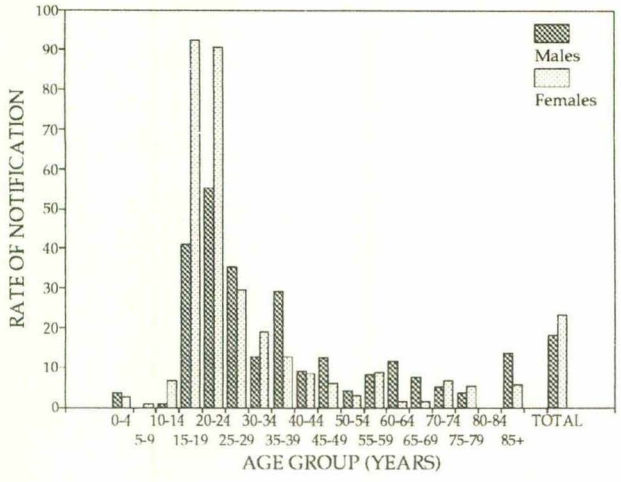


Figure 24. Rate of notification of syphilis per 100,000 population, Queensland, 1993, by age group and sex



when examining the overall Queensland figures, it is important to realise that the large reduction in notification rate in the Peninsula and Torres Strait Region obscures the increased rates in many other regions.

Queensland age group and sex specific notification rates for syphilis in 1993 are depicted in Figure 24. The highest rate in 1993 was in 15 to 19 year old females (92.4 cases per 100,000 population).

Queensland syphilis notifications decreased during the years 1988 to 1993. There are considerable difficulties in interpreting syphilis notification data and there is no encouraging evidence from these data of an overall sustained improvement in syphilis incidence. Syphilis remains an important public health problem in Queensland.

Conclusion

This paper presents the available surveillance notification data for sexually transmissible diseases in Queensland during the years 1988 to 1993. Despite their limitations, notification data are the only readily available source of information for the assessment and planning of public health interventions in the area of communicable diseases. As such they are a useful aid to assessing present programs and planning future strategies. Although the knowledge of STDs in Queensland remains incomplete, owing to the lack of information on pelvic inflammatory disease, human papilloma virus and trichomoniasis, this paper raises many issues of concern for public health professionals.

The sexual health of the Queensland population has shown few encouraging signs of improvement during the last six years, with most STDs showing signs of recent or sustained increases in notification rates, possibly not all attributable to increased, efficient surveillance and laboratory notification mechanisms. Sexual health education and preventive campaigns have been motivated by the threat of HIV and AIDS and have focussed upon the risk behaviours which are associated with the acquisition of the human immunodeficiency virus. The pattern of increases in HIV notification rates over the six year period and recent increases in gonorrhoea and syphilis notification rates emphasise the need to focus and continually reinforce the preventive education aspect of sexual health.

Analysis of notification data for the separate Health Regions in Queensland demonstrated that notifications of sexually transmissible diseases were not evenly distributed throughout the State. During the period of this study the Peninsula and Torres Strait Health Region consistently had the highest notification rates for chlamydia, donovanosis, gonorrhoea and syphilis, usually several times higher than the comparable Queensland and Australian rates. In 1992 the Peninsula and Torres Strait Health region also had the highest notification rate for HIV infection in Queensland. There is considerable evidence from these data that sexually transmissible diseases constitute an important public health problem in this Region.

In order to reduce the spread of sexually transmissible diseases and the potential effect of HIV infection on the Queensland community, specific age groups and populations should be targeted by enhanced community based forms of sexual health education. Such campaigns should aim to increase the public profile and awareness of all sexually transmissible diseases as well as to improve screening of at risk groups.

The quality of the notification data and the reliability of the information derived from them may be improved in a number of ways:

1. requesting and reporting authorities should be encouraged to provide more complete patient details and the information on the clinical stage of the disease,
2. information should also be included on whether the test was performed for acute clinical illness or for screening purposes. This will allow more reliable comments to be made on incidence than is presently possible,
3. ease of comparison of notification rates between Queensland and other areas in Australia would be facilitated by the use of nationally agreed case definitions, and
4. sexual health clinics should improve their capacity for data collection and analysis of information relating to the sexual orientation and risk behaviours of their clients. This would enhance the local targeting and optimum use of scarce resources.

Surveillance data for sexually transmissible diseases should be routinely and regularly reviewed as part of a continuing assessment of public health interventions in this area.

Acknowledgments

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Dr J Patten, Sexual Health Services, Brisbane North Region;
Dr J Scott, Communicable Diseases Branch, Queensland Health;
Dr J Sheridan, Communicable Diseases Branch, Queensland Health;
Dr A Wilson, Dept of Social and Preventive Medicine, University of Queensland.

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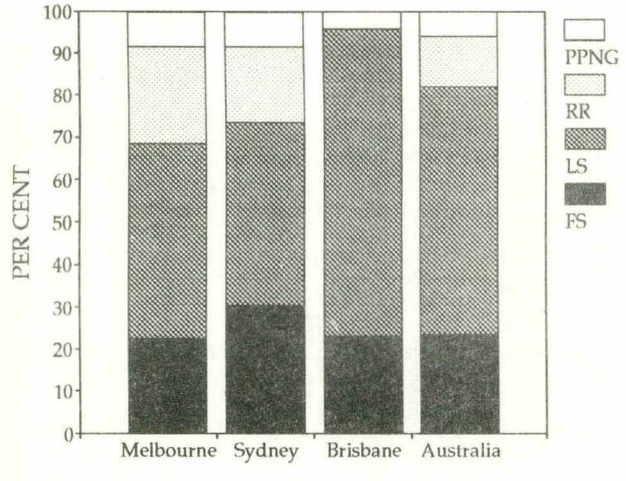
GONOCOCCAL SURVEILLANCE, AUSTRALIA, 1 JULY TO 30 SEPTEMBER 1994

Derived from the Australian Gonococcal Surveillance Programme - AGSP. Coordinator, JW Tapsall, The Prince of Wales Hospital, Sydney

The sensitivities of 459 isolates of *Neisseria gonorrhoeae* were examined in participating laboratories in the third quarter of 1994. All strains were examined for their sensitivity to penicillin and 409 for susceptibility to ceftriaxone, spectinomycin and ciprofloxacin and for high level resistance to tetracycline (TRNG).

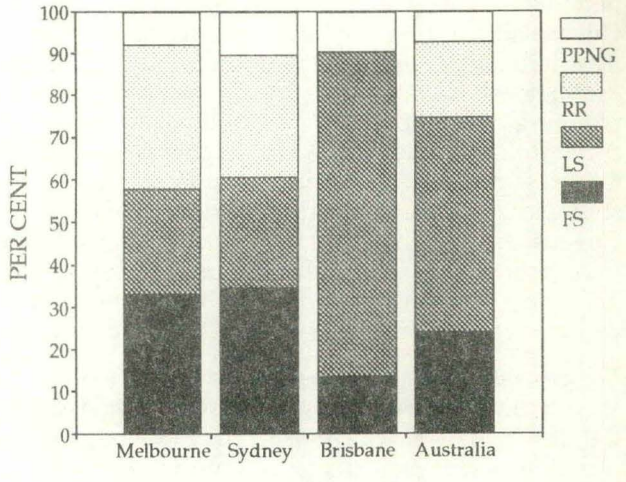
Figure 1. Proportional penicillin sensitivity of isolates of *Neisseria gonorrhoeae* by region and for Australia, 1 July to 30 September 1994



FS Fully sensitive to penicillin, MIC ≤ 0.03mg/L.
LS Less sensitive to penicillin, MIC 0.06 - 0.05mg/L.
RR Relatively resistant to penicillin, MIC ≥ 1mg/L.
PPNG Penicillinase producing *Neisseria gonorrhoeae.*

Figure 1 shows the proportion of isolates resistant to penicillin in Sydney, Melbourne and Brisbane and combined data for all Australian isolates. Data for the corresponding period in 1993 is shown in Figure 2. The number of penicillinase producing gonococci (PPNG) isolated in this period - 28 - was the same as in the

Figure 2. Proportional penicillin sensitivity of isolates of *Neisseria gonorrheae* by region and for Australia, 1 July to 30 September 1993[1]



FS Fully sensitive to penicillin, MIC ≤ 0.03mg/L.
LS Less sensitive to penicillin, MIC 0.06 - 0.05mg/L.
RR Relatively resistant to penicillin, MIC ≥ 1mg/L.
PPNG Penicillinase producing *Neisseria gonorrhoeae.*
1. NB: data from Sydney in 1993 have been revised from those previously published.

Table. Gonococcal isolates, Australia, 1 July to 30 September 1994, by sex and participating laboratory[1]

	Melbourne	Sydney	Brisbane	Adelaide
Male	125 (70)	112 (114)	63 (57)	354 (256)
Female	4 (6)	20 (13)	47 (17)	105 (43)
Male:female ratio	31.0:1.0 (11.6:1.0)	5.6:1.0 (8.7:1.0)	1.3:1.0 (3.3:1.0)	3.8:1.0 (5.9:1.0)

1. Figures in parentheses represent data for the corresponding period in 1993.

September quarter of 1993 and these strains were isolated in Sydney, Melbourne, Adelaide and Brisbane. Locally acquired infections with PPNG were seen only in Sydney and Melbourne. There were almost twice as many strains resistant to penicillin by chromosomal mechanisms (CMRNG) as there were PPNG. However strains of this type were found only in Sydney and Melbourne where they accounted for approximately 20% of isolates in each of these centres.

All 409 isolates tested were sensitive to both spectinomycin and ceftriaxone. Five isolates (1.2%) (one each in Sydney and Brisbane and three in Melbourne) possessed low level resistance to quinolone antibiotics (ciprofloxacin MICs 0.06 - 0.5 mg/L) and one strain isolated in Adelaide from an infection acquired in the Philippines was relatively resistant to ciprofloxacin (MIC 1 mg/L). A total of 20 isolates (4.9%) were TRNG and these were present in Sydney (11), Melbourne (6) and Brisbane (3).

The total number of strains examined (459) was almost the same as the 463 isolated in the previous quarter, but substantially more than the 363 seen in the corresponding period in 1993. Data on the number of gonococci isolated in those centres with higher numbers of strains in the third quarter of 1993 and 1994 are shown in the Table together with relative proportions of cases in males and females. The number of strains isolated in Melbourne in this quarter (129) is much higher than the 76 identified in the corresponding period in 1993 and accounts for much of the overall increase recorded. The male:female ratio of gonococcal infection has also substantially increased in Melbourne but continues to decline in Sydney. The sites from which gonococci were isolated in men and women are shown in Figures 3 and 4.

Figure 3. Gonococcal isolates by site from males, by region and for Australia, 1 July to 30 September 1994

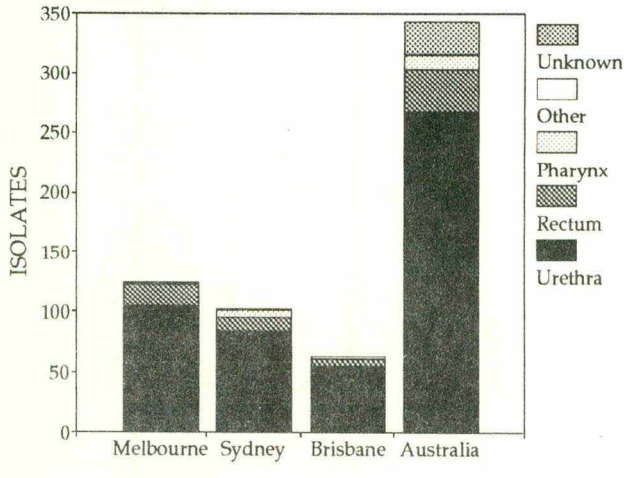
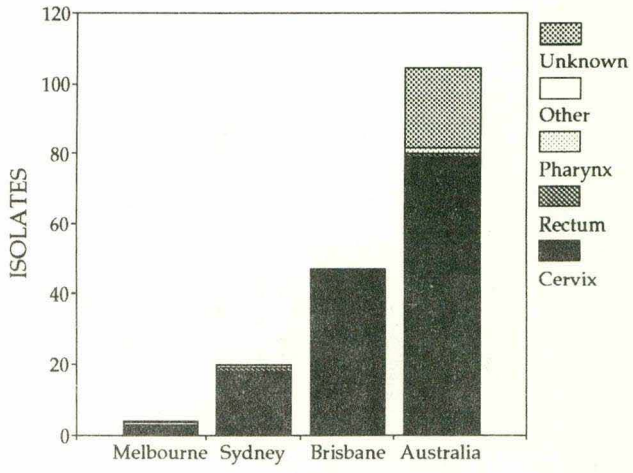


Figure 4. Gonococcal isolates by site from females, by region and for Australia, 1 July to 30 September 1994



ENTEROHAEMORRHAGIC *ESCHERICHIA COLI* OUTBREAK IN SOUTH AUSTRALIA ASSOCIATED WITH THE CONSUMPTION OF METTWURST

Scott Cameron[1], *Carolyn Walker*[1], *Mary Beers*[1,2], *Nick Rose*[3], *Elena Anear*[4]

Over the last few weeks, an outbreak of disease caused by enterohaemorrhagic *Escherichia coli* serotype O111 and perhaps other as yet unidentified serotypes, has been associated with mettwurst produced by a small-goods manufacturer in South Australia. The outbreak was declared after three children with haemolytic uraemic syndrome (HUS) had been reported to the CDC of the South Australian Health Commission by the Adeliade Women's and Children's Hospital (WCH) between 25 December 1994 and 16 January 1995. Although it seemed possible that the first case had been infected outside South Australia, the two subsequent children were South Australian.

Active surveillance was initiated for cases of HUS and other disease, such as bloody diarrhoea, which may have been related to the outbreak. This surveillance was later extended from South Australia, through the Communicable Diseases Network Australia New Zealand, to the other States and Territories. Epidemiological investigations were undertaken in South Australia in an attempt to identify the source of the infections, and laboratory investigations were performed on the patients and suspect food sources.

By 23 January, there had been a total of nine children with HUS identified. Eight were in South Australia and one had been to South Australia over the Christmas period and was being managed in Sydney. By 3 February a total of 18 cases of dialysis-requiring HUS in children (aged between five months and 14 years) (Figure 1) and two cases of thrombotic thrombocytopaenic pupura (TTP) in adults had been identified. One four year old female had died. Onset dates ranged from 25 December 1994 to 29 January 1995 (Figure 2).

Escherichia coli O111 has been identified in specimens from most of the cases. A gene sequence coding for shiga-like toxins (SLTs) in the faeces of all of the cases has been detected in Adelaide by scientists at the WCH. Further typing of isolates continues at the Institute of Medical and Veterinary Science.

All but two of the cases had a history of consumption of mettwurst or a related product. One of the others was an infant whose mother ate mettwurst and the other lived in a household in which there had been mettwurst. Thirteen of the cases identified the mettwurst that they had eaten as being from one manufacturer.

Figure 1. Cases of HUS associated with the consumption of mettwurst, by age

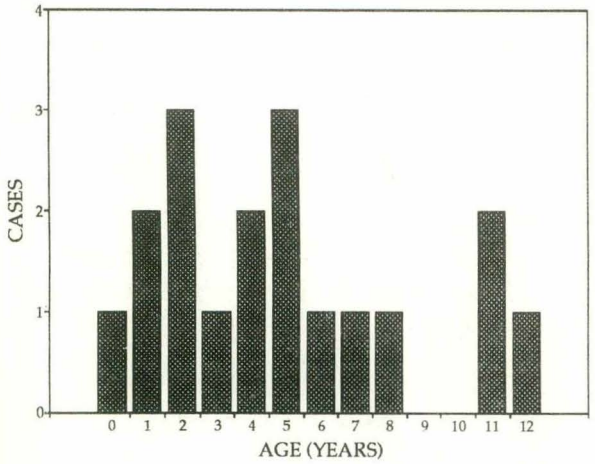
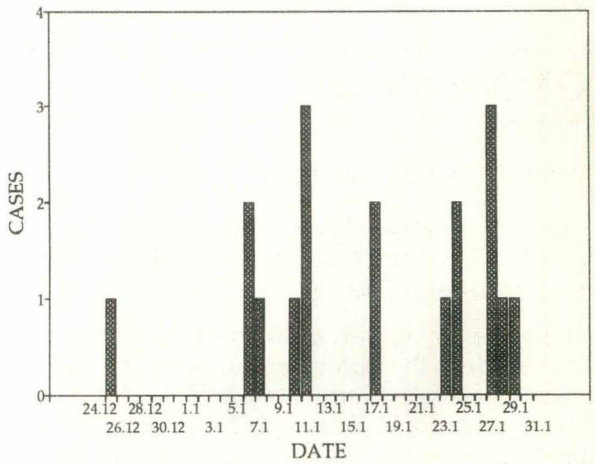


Figure 2. Cases of HUS associated with the consumption of mettwurst, 24 December 1994 to 29 January 1995, by date of onset



1. Communicable Disease Control Unit, Epidemiology Branch, Public and Environmental Health Service, South Australian Health Commission, Adelaide.
2. National Centre for Epidemiology and Population Health, Australian National University, Canberra.
3. Food Standards Section, Environmental Health Branch, South Australian Health Commission, Adelaide.
4. Food Legislation Section, Environmental Health Branch, South Australian Health Commission, Adelaide.

The same gene sequence coding for SLTs has been detected in samples of the mettwurst from the houses of five of the HUS cases. Three out of eight mettwurst samples associated with cases of haemorrhagic colitis detected through active surveillance have also been positive for the SLT gene. In addition, two of five samples of the implicated manufacturer's mettwurst selected at random from South Australian shops have tested positive for the gene. Products from ten other smallgoods manufacturers have all proven negative.

The implicated mettwurst with use by dates between 26 January and 12 April inclusive has been recalled by the manufacturer, as have all its other uncooked fermented meat products. The products may have had a restricted distribution in South Australia, but it is possible that they were also distributed to the Northern Territory, Victoria, New South Wales and Queensland.

The South Australian primary industry and food authorities are investigating the implicated products, in cooperation with the National Food Authority and the Department of Primary Industry and Energy. The quality controls employed by the mettwurst manufacturer and its suppliers are being investigated to determine the source of the contamination, which usually occurs when the organisms, which live in the intestines of healthy cattle and other farm animals, contaminate meat during slaughter.

Active surveillance for cases is also continuing throughout the country, and has identified a number of other children and adults admitted to hospital in South Australia and in New South Wales with HUS, haemorrhagic colitis or bloody diarrhoea in recent weeks. It is still being determined whether these cases are linked to the outbreak.

This is the first documented outbreak of HUS and other enterohaemorrhagic *E. coli* disease recorded in Australia. Almost coincident with the Australian incident an outbreak of HUS, associated with *E. coli* O157 in salami, has been reported from the United States. The strain of *E. coli* implicated in that outbreak appears to be particularly acid resistant.

Sporadic cases of HUS associated with enterohaemorrhagic *E. coli* have been reported in Australia, more often with serotype O111 and other serotypes other than O157[1], which has been associated with large outbreaks in the United States[2]. Most cases in the United States have been linked with the consumption of undercooked minced beef, although other foods, including roast beef, raw milk and apple cider have also been implicated. Person-to-person transmission has also been documented in settings such as child day care centres[3].

Acknowledgment

Much of the epidemiology on the associated haemorrhagic colitis cases was conducted by Dr Linda Selvey from Brisbane.

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COMMENTARY

Syphilis case definitions

Penny Miller, Medical Officer, Nganampa Health Council; Steven Skov, Medical Officer, Tri-State STD/HIV Project, Kirsty Smith, CNC, Disease Control Centre, Alice Springs

Surveillance for syphilis in Australia centres on notifications made to the health authorities of the States and Territories and the National Notifiable Diseases Surveillance System (NNDSS), which compiles a national dataset. The case definition used for syphilis surveillance is an important determinant of the operation and usefulness of syphilis surveillance. There are a number of points that need consideration in this regard.

The current National Health and Medical Research Council's (NHMRC) recommended surveillance case definition of:

> A compatible clinical illness or past history
>
> AND
>
> > Demonstration of *Treponema pallidum* in clinical specimens by darkfield, fluorescent antibody or equivalent microscopic methods.
> >
> > OR
> >
> > Reactive treponemal tests (e.g. FTA-ABS, TPHA)

has a number of problems. It may be appropriate for a community with a low prevalence of syphilis and low rate of re-infection but it is not appropriate for central Australian Aboriginal communities, with a high prevalence of seropositivity and high rates of repeat infections. Currently over 90% of reported cases of syphilis in Australia occur in Aboriginal communities[1]. Marked regional variations exist with lower prevalence in urban communities and venereal syphilis being en-

demic or even hyper-endemic in rural and remote Aboriginal communities. Bowden[2] has shown that, in the Northern Territory, the relative risk of acquiring syphilis for an Aboriginal person compared to a non-Aboriginal person in 1993 was 194.7 (95% confidence interval 112.4 - 337.2).

The first part of the NHMRC case definition, requiring a compatible illness or past history and demonstration of *Treponema pallidum*, is valid irrespective of prevalence or rate of repeat infection. The serology component of the case definition creates problems. In areas of high prevalence, diagnosis of syphilis on the basis of a compatible clinical illness or past history and reactive treponemal tests will, in practice, probably result in significant over- and under-diagnosis of first infections and will be completely inadequate to diagnose re-infections.

In most cases, once a treponemal test becomes reactive it remains so for life. In central Australia (and, we suspect, in other parts of Australia), many Aboriginal persons are found to have positive treponemal serology but without a documented or remembered history of a 'compatible clinical illness'. For example, a person is found to have positive serology in an antenatal or community screen but has no recollection or documented history of clinical disease. This only indicates infection at some time in their lives.

According to a strict interpretation of the NHMRC definition, someone with positive treponemal serology, but no compatible clinical history, would not be reported as a case of syphilis. This would miss cases of latent syphilis, which may be of only a few years' duration.

If the NHMRC case definition is misinterpreted, the reporting practitioner may rely solely on the reactive treponemal serology and diagnose syphilis in spite of the absence of clinical history. Thus persons with a history of syphilis in the past will be reported as incident cases, and there will be over-reporting. That this occurs is strongly suggested by the age and sex distribution data on syphilis compiled by the NNDSS[3] which, we believe, show artificially high rates in the older age groups.

This potential for over-reporting was highlighted by the April 1994 Nganampa Health Council syphilis screening program data (unpublished data). Of a target group of 1230 persons aged 12-40 years, 813 (66%) were screened. Reactive treponemal serology was found in 52% but, by the Central Australian Rural Practitioners Association (CARPA) definition[4] (see below), only 22 cases of syphilis were diagnosed (2.7%).

The NHMRC definition is also not adequate for re-infections. A re-infection may be diagnosed if there is knowledge of a previous infection, but this is often not available in central Australia. Re-infections cannot be diagnosed by treponemal serology as these tests usually remain reactive for life and are not reliably quantifiable. To diagnose a re-infection by serology there must be two titre rise in non-treponemal tests such as the RPR[6].

In making a case definition, one must be clear about the purpose of collecting the data and the circumstances in which the disease occurs. Different definitions may be required for clinical case management and for notification for public health surveillance. Do we wish to know how many cases of new syphilis are occurring, how many cases of previously undiagnosed syphilis infection are being diagnosed or the prevalence of seropositivity? The current definition may be providing an uncertain mixture of all three.

Is there a uniform case definition for the notification systems of all the States and Territories which forms the basis of the information sent into NNDSS? Our inquiries in the Northern Territory, South Australia and Western Australia have revealed uncertainty at ground level, and variations between the three States in their official case definitions. This must compromise the quality of NNDSS data. In developing the Tri-State STD information system for central Australia, we will be negotiating with the three States and the Commonwealth to ensure uniformity. We suggest that it may be worthwhile that a similar process be undertaken nationally. There has already been some work done on this by the National Venereology Council of Australia[5].

We suggest that syphilis be defined so as to detect previously undiagnosed syphilis infection with a means to distinguish infection or re-infection known to be recently acquired from infection sometime in the past. Syphilis should also be defined in a way which is compatible with the circumstances of the population in which it mostly occurs. We believe that an adaptation of the *CARPA Standard Treatments Manual* definition will do this:

Syphilis of less than two years' duration

Primary chancre (painless ulcer)

OR

Signs of secondary syphilis - skin rash, hair loss, swollen glands all over the body (generalised lymphadenopathy), condylomata lata (syphilis warts on genitals or around anus)

AND/OR

Change in treponemal IgG and/or TPHA and/or FTA-ABS from 'non-reactive' to 'reactive' within the last two years regardless of what the RPR is

OR

Treponemal IgG and/or TPHA and/or FTA-ABS are 'reactive' with a rise in RPR of two or more titres when previous serology was done less than two years ago and was adequately treated.

Syphilis of greater than two years' duration or of unknown duration

Treponemal IgG and/or TPHA and/or FTA-ABS are 'reactive' with a rise in RPR of two or more titres when previous serology was done two or more years ago

OR

Treponemal IgG and/or TPHA and/or FTA-ABS are 'reactive' regardless of what the RPR is when there has been no previous serology done and the person has no signs of primary or secondary syphilis at present.

Different authors recommend one year or two year cut-off points, particularly for treatment purposes[6,7,8]. For surveillance purposes we would suggest the two year definition as this is the period during which clinical primary and secondary syphilis or a relapse of clinical secondary syphilis occurs[9].

Such a two part definition would give a clear indication of the rate of occurrence of new infections and of cases potentially infectious to others. It would also provide information on previously undiagosed infections of unknown duration which had slipped through the syphilis detection net. As time progresses, especially in areas, such as central Australia, with a syphilis register, the number of persons with serological scars of past syphilis being notified as new cases will quickly diminish.

A point to note is that to be fully used this definition of syphilis requires knowledge of previous serology and treatment, as is (usually) available in central Australia. This may not be the case in all areas but is more likely in clinics or areas which most cases of syphilis are diagnosed: Aboriginal communities. However, it could also be used in other settings to define syphilis where past history is not available.

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CDI editorial comment

The National Health and Medical Research Council has recommended uniform surveillance case definitions for all the diseases under surveillance in the National Notifiable Diseases Surveillance System (NNDSS). They have not been uniformly adopted by the States and Territories, as some have retained definitions which pre-date the NHMRC definitions, and some have developed their own in response to local needs.

The NHMRC regularly reviews its publications to determine whether they should be revised or rescinded. In addition, the NNDSS is under constant general review by the Communicable Diseases Network Australia New Zealand in the face of the changing epidemiology of and diagnositic capacities for communicable diseases in Australia. In March this year, the Network is conducting a workshop reviewing national communicable disease surveillance. Issues such as the surveillance case definition for syphilis are likely to be discussed in this forum.

The age and sex distribution of syphilis cases notified to the NNDSS for 1994 is presented in the *Communicable Diseases Surveillance* section of this issue of *CDI*.

Reference

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OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization.

Cholera update

Jaffna District in Sri Lanka has been removed from the list of cholera infected areas.

Cholera cases have been reported for October, November and December from Albania, Algeria, Benin, Cambodia, Cameroon, Cape Verde, Chad, Chile, Costa Rica, Dagestan, Djibouti, Ecuador. El Salvador, Gaza, Ghana, Guinea, Guinea Bissau (3556 cases and 72 deaths between 12 November and 29 December), Guyana, Hong Kong, India, Italy, Laos, Morocco, Mozambique, Niger, Philippines, Romania, Sierra Leone, Singapore, Somalia, Tanzania (in December in Rwandan refugees in Benaco and Musuhara camps, only) and Ukraine.

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1132 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 6, 7 and 8).

- Forty-two reports of **measles** were received this period, for 19 males and 23 females, 17 of whom were in the 15 to 24 year age group. Diagnosis was by IgM detection (41) and single high titre (one). Included was a 7 year old Queensland female with a diagnosis of encephalitis. The number of reports has declined after peaking in September.
- **Mumps** was reported for 2 patients this period, both diagnosed by IgM detection. Included was an 8 year old female with clinical diagnosis of meningitis.
- **Rubella** was reported for 14 patients this fortnight for 4 females (2 of childbearing age, one of whom was pregnant) and 10 males. Thirteen diagnoses were by IgM detection and one by single high titre. Fewer reports were received for the month of December than for the preceding months (Figure 1).
- Thirteen reports **hepatitis A** were received including 7 males and 4 females, all in the 5 to 44 year age range.
- Positive **hepatitis B** serology was reported for 74 patients this fortnight, 46 males and 26 females (one sex not stated). Forty-one patients were in the 25 to 44 year age group, and 21 in the 15 to 24 year age group. Included were 3 pregnant females and one liver transplant recipient.
- Positive **hepatitis C** serology was reported for 173 patients this fortnight including 111 males and 59 females (3 sex not stated). One hundred and nineteen reports were for the 25 to 44 year age group. Included were 33 injecting drug users, one pregnant female and one patient with a history of overseas travel. Also included were 3 infants of seropositive mothers, a one year old male who had received a blood transfusion in Indonesia and a 37 year old male, the index case in a needlestick injury.
- **Hepatitis E** was reported for 2 patients with a history of overseas travel, one male and one female, both 41 years of age.

Figure 1. Rubella laboratory reports, 1993 to 1994, by month of specimen collection

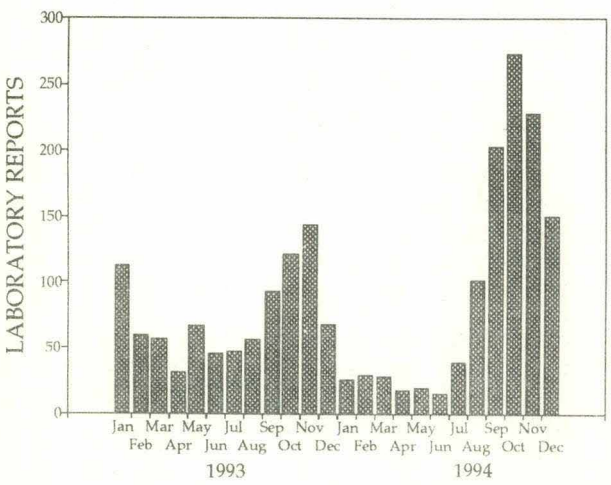
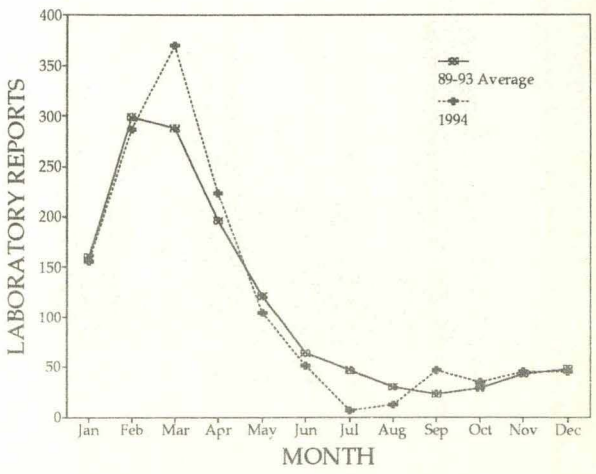
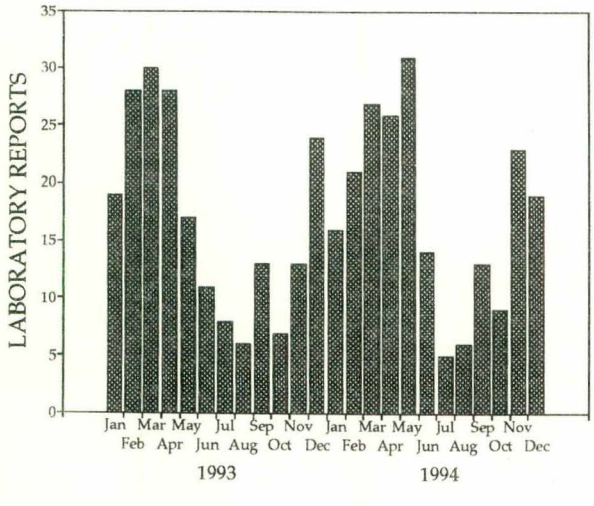


Figure 2. Ross river virus reports, 1989 to 1993 average and 1994, by month of specimen collection



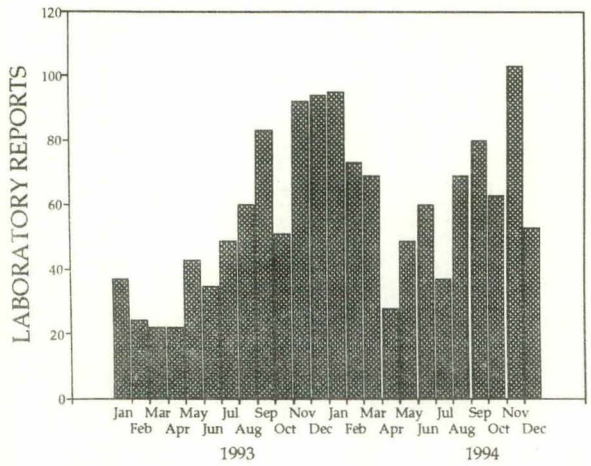
- **Ross River virus** was reported for 17 patients this fortnight, 10 from Queensland, 5 from Western Australia and 2 from the Northern Territory. Two diagnoses were confirmed (fourfold rise in titre), both for Western Australian patients (one from Broadwater, other location not stated), the remainder being presumptive diagnoses (IgM detected). Specimen collection dates ranged from late November to late December. The number of reports received last year was about the same as average for recent years (Figure 2).
- Three reports of **Barmah Forest virus** were received this period, all presumptive diagnoses. Specimens were collected in early November to early December. The number of reports increased in November and December (Figure 3).
- **Untyped dengue** was reported for a 22 year old Western Australian male who had a recent history of overseas travel.
- Fifty-seven reports of **adenovirus** were received this fortnight, 32 virus isolations, 13 antigen detections and 12 single high titres. Included were 8 reports of **adenovirus type 3**, 4 of which were associated with eye disease and 2 (both patients under the age of one year) with lower respiratory tract infections. **Adenovirus type 7** was isolated from the eye of a 44 year old male with eye disease. **Untyped adenovirus** was reported for a one year old with periorbital cellulitis.
- **Herpes simplex virus type 1** was reported for 154 patients this fortnight, 145 isolations and 9 antigen detections. Included was isolation from the skin of a 37 year old female, the mother of a neonate with stomatitis and suspected encephalitis.
- There were 34 reports of **cytomegalovirus** (CMV) this fortnight, 19 virus isolations, 2 antigen detections and 13 IgM detections. Included were 2 patients with HIV/AIDS and 3 immunocompromised patients.

Figure 3. Barmah Forest virus laboratory reports, 1993 to 1994, by month of specimen collection



- **Varicella-zoster virus** was reported for 26 patients this period. Method of diagnosis included virus isolation (10), antigen detection (6), nucleic acid detection (2), IgM detection (7) and fourfold rise in titre (one). This virus was reported for a 43 year old Victorian female with clinical chickenpox and for a 20 year old Queensland female with a diagnosis of meningitis. Varicella-zoster virus was isolated from the eye of a 74 year old male and detected by nucleic acid detection in the CSF of 30 and 37 year old males.
- Fifty-nine reports of **Epstein-Barr virus** were received this period. Included were 30 males and 28 females (one sex not stated), 36 of whom were in the 15 to 24 year age group. One patient reported hepatic involvement and one meningitis.
- **Molluscum contagiosum** was detected by electron microscopy in the skin of a 25 year old Western Australian male.
- **Untyped herpes simplex virus** was reported for 20 patients this period. Included was a 3 day old neonate with fever and stomatitis and a 25 year old female with pelvic inflammatory disease.
- Twelve reports of **parvovirus** were received this fortnight, all diagnosed by IgM detection. Included were 10 females (8 of childbearing age) and 2 males.
- **Coxsackievirus B5** was reported for 2 patients this fortnight both of whom had meningitis.
- Six reports of **echovirus type 6** were received including 3 patients with meningitis. This virus was isolated from gastric and liver specimens from a 46 year old female transplant recipient.
- Twelve reports of **rhinovirus** were received this period including isolation from a bronchial biopsy from a 49 year old female with pneumonia.
- **Influenza A** was reported for 10 patients this fortnight. Diagnosis was by virus isolation (one, specimen collected July 1994), direct detection (one, a 2 year old male from Victoria, specimen collected January 1995) and single high titre (8).
- Two reports of **influenza B** were received this period both diagnosed by single high titre.
- Twenty-nine reports of **parainfluenza virus type 3** were received this fortnight, 20 under the age of 4 years. Diagnosis was by virus isolation (10), antigen detection (9) and single high titre (10). Included was isolation from a lung biospy from a one year old male with a malignancy who subsequently died and from an 83 year old Western Australian female who also died. More reports were received for December than for any other month in 1994.
- Seventeen reports of **respiratory syncytial virus (RSV)** were received this fortnight, 16 for patients under one year of age. Diagnosis was by virus isolation (6) and antigen detection (11).

Figure 4. *Bordetella pertussis* and *Bordetella* species laboratory reports, 1993 to 1994, by month of specimen collection



- **Rotavirus** was reported for 17 patients this period including 4 males and 12 females (one sex not stated). All patients were under the age of 14 years, 15 being in the under 4 years age group.
- Forty reports of ***Chlamydia trachomatis*** were received this fortnight, 10 males and 29 females (one sex not stated). Thirty-five patients were in the 15 to 44 year age group. Diagnosis was by culture (10), antigen detection (28) and nucleic acid detection (2).
- **Q fever** was reported for 10 patients this period including 2 females and 8 males, all in the 3 to 48 year age range. Two meat workers and a cattle worker were included.
- Sixty-eight reports of ***Bordetella pertussis*** were received this fortnight. Thirty-two patients were male and 36 female, 30 in the 5 to 44 year age group. The number of reports declined in December (Figure 4).

Australian Sentinel Practice Research Network

Data for week 2 (ending 15 January) and week 3 (ending 22 January) are included in this issue of *CDI* (Table 1). There were 6917 and 7859 and consultations reported, respectively. The rate of reporting of chickenpox continues to be higher than in early 1994.

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 6 laboratories.

There were 98 reports of recent significant sepsis:

New South Wales: Liverpool Hospital 32.
Queensland: Sullivan, Nicolaides and Partners 31; Toowoomba Pathology Laboratory 8.
Tasmania: Northern Tasmanian Pathology Service 4; Royal Hobart Hospital 17.
Western Australia: Princess Margaret Hospital for Children 6.

Organisms reported 5 or more times from blood are detailed in Table 2.

Other blood isolates not included in Table 2 were:

Gram positive: 1 *Enterococcus faecalis*, 4 *Staphylococcus epidermidis*, 1 *Staphylococcus simulans*, 1 *Streptococcus* Group A, 1 *Streptococcus* Group B, 1 *Streptococcus* Group D, 1 *Streptococcus* 'milleri', 1 *Streptococcus sanguis*, 1 *Streptococcus* species, 2 *Streptococcus* 'viridans'.

Gram negative: 1 *Acinetobacter* species, 1 *Aeromonas hydrophila* (reported in a 51 year old female from NSW; *Escherichia coli* and *Clostridium* species were also isolated), 1 *Citrobacter diversus*, 1 *Citrobacter freundii*, 1 *Enterobacter aerogenes*, 1 *Enterobacter cloacae*, 2 *Haemophilus influenzae* (one isolate was biotype 111, non-serotypable, reported in a 57 year old female with pneumonia and a risk factor of malignancy, from Queensland; the other isolate, no serotype reported, was in a 80 year old male with pneumonia, from New South Wales), 1 *Klebsiella pneumoniae*, 3 *Klebsiella* spe-

Table 1. Australian Sentinel Practice Research Network, weeks 2 and 3, 1995

Condition	Week 2, to 15 January 1995		Week 3, to 22 January 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	8	1.2	15	1.9
Rubella	4	0.6	6	0.8
Measles	0	0	1	0.1
Chickenpox	20	2.9	19	2.4
Pertussis	3	0.4	4	0.5
Gastroenteritis	94	13.6	110	14.0

Table 2. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Clinical information						Risk factors				Total[1]
	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Neonatal	
Staphylococcus aureus	3	3				4	1	7	1		22[2]
Staphylococcus coagulase negative	1						1	2	2		6
Streptococcus pneumoniae		2									5
Escherichia coli				3	5		1	4			20

1. Only organisms with 5 or more reports are included in this table.
2. MRS

cies, 2 *Neisseria meningitidis* (one isolate was serogroup C, reported in a 18 year old female from New South Wales; the other isolate, no serogroup reported, was in a 38 year old male from Queensland), 1 *Proteus mirabilis*, 2 *Pseudomonas aeruginosa*, 2 *Serratia* species, 2 *Xanthomonas maltophilia*.

Anaerobes: 1 *Bacteroides fragilis*, 1 *Clostridium* species, 1 *Propionibacterium acnes*.

There were eight blood isolates from patients aged less than one year and 45 from patients aged 55 years and over (Figure 5).

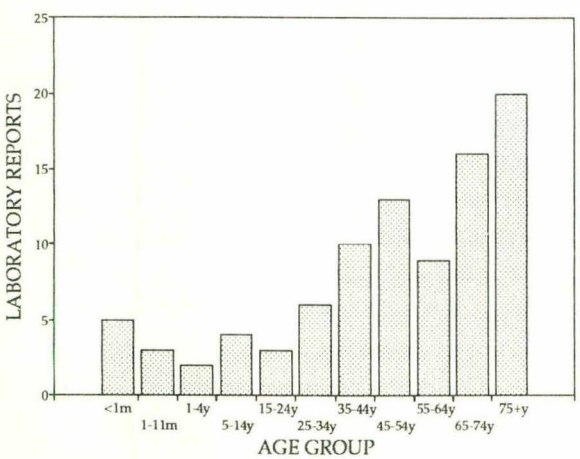
Hospital acquired blood isolates

A total of two isolates were reported as hospital acquired. The two reported organisms were: 1 *Proteus mirabilis*; 1 *Staphylococcus aureus*.

Meningitis and/or CSF isolate reports

There were 2 reports of meningitis and/or CSF isolates. One isolate, from CSF, was *Neisseria meningitidis* serogroup B reported in a two year old female from Western Australia. The other isolate was reported as *Streptococcus pneumoniae*, from blood and CSF, in a one year old male from Tasmania.

Figure 5. LabDOSS reports of blood isolates, by age group



Isolates from sites other than blood or CSF

Joint fluid: 1 *Staphylococcus aureus*, 1 *Streptococcus* group C.

Peritoneal dialysate: 1 *Staphylococcus aureus*.

Other: 1 *Bacteroides* species.

National Notifiable Diseases Surveillance System, 8 January to 21 January 1995

There were 1960 notifications received in the period (Tables 3, 4 and 5 and Figure 7).

- Ninety-four cases of **Ross river virus infection** were reported for the period; 56 cases were male and 38 were female. Cases were aged between the 5-9 and the 85-89 years age group. Sixty-seven percent of cases were from the Northern Territory. Reports were also received for residents of statistical divisions in Qld and there was one report for a resident of the Statistical Division of Sydney. Recorded onset dates were in October (5), November (2), December (24) and January (63).
- There was a single case of **dengue** reported for a female in the 50-54 years age group resident in northern Queensland.
- There were 3 notifications of **brucellosis** received. All cases were males with recorded ages in the 30-39 years age group.
- Four hundred and eighteen cases of **campylobacteriosis** were reported; 258 cases were male, 157 cases were female, and the sex of 3 cases was unrecorded. Cases were aged between the 0-4 and the 90-94 years age group with 20% of cases aged less than 5 years.
- There were 56 notifications of **gonococcal infection** received; 33 cases were male, 20 cases were female, and the sex of 3 cases was unrecorded. Cases were

aged between the 0-4 and the 45-49 years age group with 3 cases aged less than 15 years and a single case aged less than one year.

- Three cases of ***Haemophilus influenzae* type b infection** were reported. All cases were males aged less than 5 years.
- There were 48 cases of **hepatitis A** reported; 32 cases were male and 16 cases were female. Recorded ages were between the 0-4 and the 65-69 years age group.
- There were 13 notifications of **hepatitis B** received; 12 cases were male and one case was female. Recorded ages were between the 15-19 and the 55-59 years age group with 6 of the cases in the 20-24 years age group.
- Six notifications of **legionellosis** were received; 5 cases were male and one case was female. Recorded ages were between the 50-54 and the 80-84 years age group. There was an apparent cluster of 3 cases resident in contiguous postcode areas in the Statistical Division of Sydney with onset dates 3 days apart.
- There were 5 notifications of **leptospirosis** received; 4 cases were male and one case was female. Cases were aged between the 20-24 and the 55-59 years age groups.
- A single case of **listeriosis** was reported for a female in the 85-89 years age group resident in the Statistical Division of Perth.
- Nineteen cases of **malaria** were reported. Ten cases were male and 9 cases were female. Recorded ages were between the 0-4 and the 50-55 years age group. Onset dates were in October (3), November (6), December (2), and January (8).
- There were 111 notifications of **measles**; 52 cases were male, 58 were female, and the sex of one case was unrecorded. Cases were aged between the 0-4 and the 35-39 years age group with 32% of cases aged less than 5 years and 16% aged less than one year. There were 18 apparent clusters.
- Fourteen cases of **meningococcal infection** were reported; 5 cases were male, 8 cases were female, and the sex of one case was unrecorded. Cases were aged between the 0-4 and the 55-59 years age groups with 9 cases aged less than 20 years. There were no apparent clusters.
- Two hundred and two cases of **pertussis** were reported; 92 cases were male, 106 were female, and the sex of 4 cases was unrecorded. Cases were aged between the 0-4 and the 80-84 years age groups with 28 cases aged less than one year. There were 34 apparent clusters of between 2 and 16 cases each in the same postcode area.
- There were 16 notifications of **Q fever** received; 13 cases were male and 3 cases were female. The cases were aged between the 15-19 and the 50-54 years age groups.
- One hundred and thirty-seven cases of **rubella** were received; 95 cases were male and 42 cases were female. Recorded ages were between the 0-4 and the 50-54 years age group with 22 cases in females age between 15 and 44 years.
- There were 186 cases of **salmonellosis (not elsewhere classified)** reported; 94 cases were male, 89 cases were female, and the sex of 3 cases was unrecorded. Cases were aged between the 0-4 and the 85-89 years age group with 70 cases aged less than 5 years.
- Forty-seven notifications of **syphilis** were received; 19 cases were male, 27 cases were female, and the sex of one cases was unrecorded. The cases were aged between the 10-14 and the 80-84 years age groups, as were most of the cases notified during 1994 (Figure 6).
- Thirty cases of **tuberculosis** were reported; 15 cases were male and 15 cases were female. Recorded ages were between the 0-4 and the 85-89 years age groups.
- A single notification of **typhoid** was received for a male in the 20-24 years age group.
- There were 27 cases of **yersiniosis** reported; 11 cases were male, 15 cases were female, and the sex of one case was unrecorded. Cases were aged between the 0-4 and the 90-94 years age group. There was one apparent cluster of 2 cases both from the same postcode area in Queensland with onset dates 3 days apart.

Figure 6. Syphilis notifications, 1994, by age group and sex

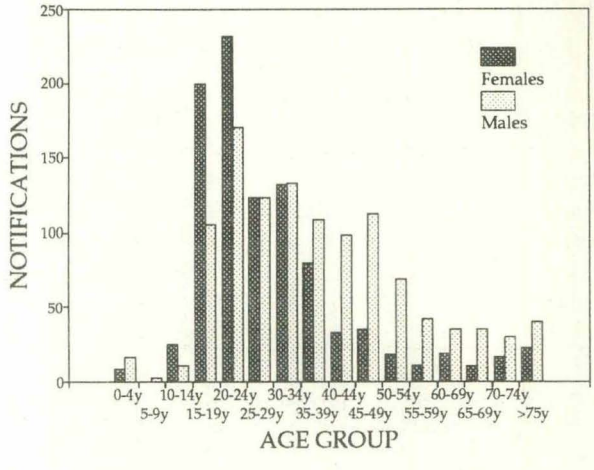
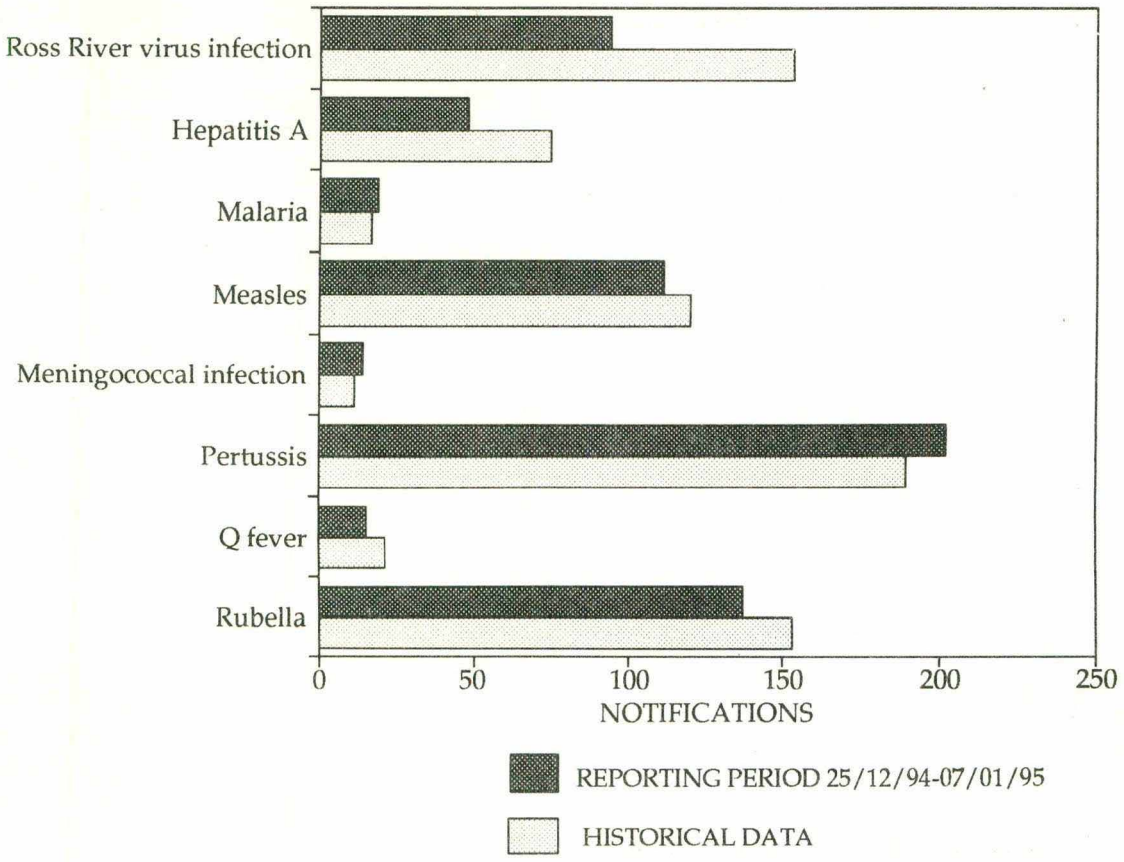


Figure 7. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications in 6 previous 2-week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 3. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 8 to 21 January 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0	0	0	0	0	0	0	1	0	1
Haemophilus influenzae b infection	0	0	0	1	0	0	2	0	3	14	5	23
Measles	6	37	20	40	0	2	4	2	111	241	155	364
Mumps	0	0	1	NN	0	NN	0	1	2	0	3	0
Pertussis	0	12	16	93	6	15	17	43	202	395	287	594
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	0	1	0	119	1	0	6	10	137	122	214	179
Tetanus	0	0	0	NN	0	0	0	0	0	0	0	0

1. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.

2. Tas: CRS only.

NN Not Notifiable.

Table 4. Notifications of other diseases[1] received by State and Territory health authorities in the period 8 to 21 January 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	0	1	58	34	1	-	0	0	94	204	119	291
Dengue	0	0	0	1	0	-	0	0	1	2	1	2
NEC[3]	0	0	0	10	0	0	0	0	10	29	19	38
Campylobacteriosis[4]	11	-	4	119	105	20	126	33	418	453	617	656
Chlamydial infection (NEC)[5]	5	NN	2	97	11	13	0	29	157	278	217	396
Donovanosis	0	NN	0	1	NN	NN	0	1	2	1	2	2
Gonococcal infection[6]	0	3	1	22	4	0	0	26	56	133	79	172
Hepatitis A	1	15	0	24	1	0	1	6	48	76	71	104
Hepatitis B incident	0	0	0	4	2	1	5	1	13	10	14	14
Hepatitis C incident	-	0	0	-	0	-	-	-	0	1	0	2
Hepatitis C unspecified	16			130		1	99	23	269	382	377	523
Hepatitis (NEC)	0	0	0	2	0	0	0	NN	2	9	3	9
Legionellosis	0	3	0	1	1	0	0	1	6	12	6	18
Leptospirosis	0	0	0	3	1	0	1	0	5	11	7	13
Listeriosis	0	0	0	0	0	0	0	1	1	2	2	2
Malaria	0	6	0	10	0	1	1	1	19	12	25	17
Meningococcal infection	0	0	1	6	0	0	4	3	14	14	17	20
Ornithosis	0	NN	0	1	0	0	7	0	8	4	10	10
Q fever	0	3	0	11	0	0	2	0	16	27	18	38
Salmonellosis (NEC)	4	12	6	58	32	7	40	27	186	274	255	367
Shigellosis[4]	0	-	3	13	3	0	4	8	31	32	46	42
Syphilis	2	9	0	28	0	0	0	8	47	95	56	134
Tuberculosis	0	1	0	10	3	0	13	3	30	49	37	84
Typhoid[7]	0	0	0	0	0	0	0	1	1	1	1	2
Yersiniosis (NEC)[4]	0	-	0	14	11	0	2	0	27	29	34	38

1. For HIV and AIDS, see Tables 2 and 3 *CDI* 1995;19:16-17. For rarely notified diseases, see Table 5.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. Tas: includes Ross River virus and dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

\- Elsewhere Classified.

Table 5. Notifications of rare[1] diseases received by State and Territory health authorities in the period 8 to 21 January 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	3	Qld	4
Chancroid	0		0
Cholera	0		0
Hydatid infection	0		0
Leprosy	0		0
Lymphogranuloma venereum	0		0
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1988 to 1993.

Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 12 to 25 January 1995, historical data[2], and total reports for the year

	State or Territory [1]							Total this fortnight	Historical data [2]	Total reported this year
	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA										
Measles virus	2	18	14			2	6	42	36.2	143
Mumps virus				1			1	2	3.3	9
Rubella virus			7	1			6	14	46.2	273
HEPATITIS VIRUSES										
Hepatitis A virus	1			3		1	8	13	20.2	61
Hepatitis B virus	4	1				18	51	74	98.5	258
Hepatitis C virus	13	1		43	1	15	100	173	165.8	723
Hepatitis E virus		1				1		2	.3	2
ARBOVIRUSES										
Ross River virus		2	10				5	17	58.3	92
Barmah Forest virus			2				1	3	8.0	38
Dengue not typed							1	1	.3	1
ADENOVIRUSES										
Adenovirus type 1				1		1		2	3.8	9
Adenovirus type 2	1			1				2	4.0	9
Adenovirus type 3				4		4		8	4.0	16
Adenovirus type 4				1				1	4.7	1
Adenovirus type 7						1		1	.3	4
Adenovirus type 8						1		1	4.0	1
Adenovirus not typed/pending	6		10	8		5	13	42	58.5	165
HERPES VIRUSES										
Herpes simplex virus type 1	28	1		12	2	57	54	154	201.7	653
Herpes simplex virus type 2	30	2	1	15		29	54	131	223.8	524
Herpes simplex not typed/pending	10		4	1		2	3	20	23.3	74
Cytomegalovirus	8		8		2	6	10	34	61.3	213
Varicella-zoster virus	4		4	2		8	8	26	45.0	131
Epstein-Barr virus	10		6	15		8	20	59	67.7	268
OTHER DNA VIRUSES										
Molluscum contagiosum							1	1	.0	1
Parvovirus		1		3			8	12	6.7	23
PICORNA VIRUS FAMILY										
Coxsackievirus B2						1		1	.8	4
Coxsackievirus B3						2		2	.5	12
Coxsackievirus B5						2		2	3.7	4
Echovirus type 6						5		5	.3	15
Echovirus type 30	2							2	18.7	16
Echovirus not typed/pending						2		2	.2	2
Poliovirus type 1 (uncharacterised)	1							1	2.2	4
Rhinovirus (all types)	2					10		12	39.8	111
Enterovirus not typed/pending	12					6	16	34	54.7	127
ORTHO/PARAMYXOVIRUSES										
Influenza A virus		1	8			1		10	11.2	23
Influenza B virus			2					2	2.0	3
Parainfluenza virus type 3	5		10			9	5	29	18.7	120
Parainfluenza virus typing pending						3		3	1.2	6
Respiratory syncytial virus	3	2				6	6	17	17.0	60

Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 12 to 25 January 1995, historical data[2], and total reports for the year, continued

	State or Territory [1]							Total this fortnight	Historical data [2]	Total reported this year
	NSW	NT	Qld	SA	Tas	Vic	WA			
OTHER RNA VIRUSES										
HTLV-1							1	1	.3	1
Rotavirus	1					1	15	17	32.2	180
OTHER										
Chlamydia trachomatis not typed	10			5	3		22	40	110.3	282
Chlamydia psittaci			7			5		12	4.8	29
Chlamydia species	1							1	.3	3
Mycoplasma pneumoniae			2	1	1	5	1	10	68.7	50
Coxiella burnetii (Q fever)			5	1		4		10	14.5	55
Brucella abortus			2					2	.0	2
Bordetella pertussis					1	13	54	68	17.5	103
Leptospira pomona				1				1	.2	1
Leptospira hardjo			2					2	.2	2
Treponema pallidum	4		1			1		6	21.2	69
Entamoeba histolytica			2			1		3	.7	3
Toxoplasma gondii			1					1	1.3	6
Echinococcus granulosus			1					1	.3	3
TOTAL	158	30	109	119	10	236	470	1,132	1,589.3	4,988

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 7. Virology and serology laboratory reports by clinical information for the reporting period 12 to 25 January 1995

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA												
Measles virus	1						13				28	42
Mumps virus		1									1	2
Rubella virus							3		1		10	14
HEPATITIS VIRUSES												
Hepatitis A virus						12					1	13
Hepatitis B virus						5					69	74
Hepatitis C virus				1	2	24					146	173
Hepatitis E virus											2	2
ARBOVIRUSES												
Ross River virus							2		8		7	17
Barmah Forest virus				1							2	3
Dengue not typed							1					1

Table 7. Virology and serology laboratory reports by clinical information for the reporting period 12 to 25 January 1995, continued

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ADENOVIRUSES												
Adenovirus type 1				1				1				2
Adenovirus type 2					1						1	2
Adenovirus type 3				4				4				8
Adenovirus type 4				1								1
Adenovirus type 7								1				1
Adenovirus type 8								1				1
Adenovirus not typed/pending				16	10		1	2			13	42
HERPES VIRUSES												
Herpes simplex virus type 1				7			87	14		40	6	154
Herpes simplex virus type 2				3			45			82	1	131
Herpes simplex not typed/pending			1	1			6			7	5	20
Cytomegalovirus				7	1	6					20	34
Varicella-zoster virus		1				1	18	1			5	26
Epstein-Barr virus		1		6		1					51	59
OTHER DNA VIRUSES												
Molluscum contagiosum											1	1
Parvovirus							3		1		8	12
PICORNA VIRUS FAMILY												
Coxsackievirus B2				1								1
Coxsackievirus B3											2	2
Coxsackievirus B5		2										2
Echovirus type 6		3			1						1	5
Echovirus type 30		2										2
Echovirus not typed/pending				1				1				2
Poliovirus type 1 (uncharacterised)				1								1
Rhinovirus (all types)				12								12
Enterovirus not typed/pending		5	3	12	2		2	1			9	34
ORTHO/PARAMYXOVIRUSES												
Influenza A virus		1		5			1				3	10
Influenza B virus											2	2
Parainfluenza virus type 3		1	1	20							7	29
Parainfluenza virus typing pending				3								3
Respiratory syncytial virus				13			3				4	17
OTHER RNA VIRUSES												
HTLV-1											1	1
Rotavirus					17							17

Table 7. Virology and serology laboratory reports by clinical information for the reporting period 12 to 25 January 1995, continued

	Encephalitis	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
OTHER												
Chlamydia trachomatis not typed				1						38	1	40
Chlamydia psittaci				5					1	1	5	12
Chlamydia species										1		1
Mycoplasma pneumoniae				7					1		2	10
Coxiella burnetii (Q fever)					1	1					8	10
Brucella abortus											2	2
Bordetella pertussis				68								68
Leptospira pomona											1	1
Leptospira hardjo											2	2
Treponema pallidum											6	6
Entamoeba histolytica						1					2	3
Toxoplasma gondii											1	1
Echinococcus granulosus											1	1
TOTAL	1	17	5	197	35	51	185	26	12	169	437	1132

Table 8. Virology and serology laboratory reports by contributing laboratories for the reporting period 12 to 25 January 1995

STATE OR TERRITORY	LABORATORY	REPORTS
New South Wales	Prince Henry/Prince of Wales Hospitals, Sydney	80
	Royal Alexandra Hospital for Children, Camperdown	26
	Royal Prince Alfred Hospital, Camperdown	16
	South West Area Pathology Service, Liverpool	34
Queensland	State Health Laboratory, Brisbane	109
South Australia	Institute of Medical and Veterinary Science, Adelaide	116
Tasmania	Northern Tasmanian Pathology Service, Launceston	8
Victoria	Monash Medical Centre, Melbourne	27
	Royal Children's Hospital, Melbourne	64
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	152
Western Australia	Princess Margaret Hospital, Perth	92
	State Health Laboratory Services, Perth	408
TOTAL		1132