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Melioidosis – a dry wet season results in fewer Top End cases

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It has been a dry wet season, with the monsoon arriving later than usual. From October 2001 until mid-March 2002 there have been only 18 cases of culture-confirmed melioidosis in the Top End, with two deaths. This compares with 33 cases and 4 deaths for 2000/2001 and 43 cases and 5 deaths for 1999/2000. The Northern Territory prospective melioidosis study has now documented 340 culture-confirmed cases in the twelve years since October 1989, with 59 deaths (17%).

Information about melioidosis

1. The bacterium, *Burkholderia pseudomallei*, is an environmental organism found in soils and water across the Top End. Most infection is thought to be acquired through percutaneous inoculation, although inhalation/aspiration and ingestion are also possible. Recent analysis of cases suggests that inhalation/aspiration may be important during heavy monsoonal rains.
2. Until new therapies recently became available it was the commonest cause of fatal community-acquired bacteremic pneumonia at RDH (and possibly also Katherine and Gove Hospitals).
3. While cases are commonest in the Top End, occasional cases have occurred in Central Australia over recent years following especially heavy rainfall. Melioidosis is also important in the Kimberley region of Western Australia and in north Queensland.

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4. The incubation period has been ascertained from the Top End study to be 1-21 days, with a mean incubation period of 9 days.

5. Pneumonia is the commonest presentation of melioidosis. As well as severe septicaemic pneumonia with mortality often over 50%, many patients present with milder forms of pneumonia, which respond well to appropriate antibiotics. Other presentations of melioidosis include skin abscesses or ulcers, abscesses in the internal organs such as the prostate, spleen, kidney and liver, fulminant septicaemia with multi-organ abscesses and unusual neurological illnesses such as brainstem encephalitis and acute flaccid paraplegia.

6. Diabetes is the most important risk factor for melioidosis, with around 40% of cases being diabetic. In addition, excessive alcohol consumption, chronic renal disease, chronic lung disease and excessive kava drinking are risk factors for melioidosis. While the majority of patients with melioidosis have one or more of these risk factors, melioidosis can also occur in children and healthy adults. However severe disease and death are extremely rare in people without identified risk factors.

7. Melioidosis has recently been diagnosed in several people with cystic fibrosis living in or travelling to melioidosis endemic regions. Colonisation of airways with *B. pseudomallei* may also be occurring, suggesting that the bacteria may behave in a similar way to *B. cepacia*.

8. Persons without symptoms or a known history of disease can also be found to be positive on serological testing, indicating asymptomatic infection. A small proportion of these people can "re-activate" from latent infection many years later in life, analogous to tuberculosis. However re-activation represents probably less than 5% of Top End cases, with the vast majority of presentations following infection during the current wet season.

9. The likelihood of diagnosis is increased by using selective culture media (modified Ashdown's broth), frequent sampling (sputum, throat, rectal and ulcer swabs) and collection of blood cultures. Clinicians should liaise with laboratory staff to ensure selective media are available including for remote communities.

10. Early diagnosis and appropriate antibiotic therapy decrease mortality.

11. Follow-up of cases and adherence to eradication therapy (usually at least 3 months of antibiotics after discharge) are critical to prevent relapse, which can be fatal.

12. Each monsoon cases of melioidosis occur in travellers returning from tropical Australia to southern states or overseas countries.

13. Public education remains very important so that wherever possible people avoid contact with wet season soils or muddy water. Wearing footwear and the use of gloves whilst gardening or working outdoors are very important measures to avoid possible exposure. These preventive measures are especially important to emphasise for all diabetics.

The NT melioidosis treatment protocol

The Top End empirical protocol for adult community-acquired pneumonia is devised to cover melioidosis in patients with risk factors, as well as other important pathogens (see *NT Disease Control Bulletin*, Vol 7 No 4, December 2000, p 5-6).

Once melioidosis is confirmed the usual treatment recommended is:

Initial intensive therapy for at least 14 days with:

- intravenous high dose ceftazidime or meropenem and
- high dose cotrimoxazole plus folic acid

This is followed by:

Eradication therapy for at least 3 months of:

- oral monotherapy and
- high dose cotrimoxazole plus folic acid

Durations of intensive and eradication therapy may need to be prolonged in more extensive pneumonia, deep-seated infections, bone, joint and CNS infections.

In patients in ICU with melioidosis septic shock, a G-CSF protocol has been associated with decreased mortality.

For antibiotic doses see Antibiotic Guidelines, 11th edition 2000, p 193.

Recent References from the NT study

Acta Tropica 2000;74:121-127
Acta Tropica 2000;74:145-151
Acta Tropica 2000;74:153-158
Trans Roy Soc Trop Med Hyg 2000;94:301-304
Clin Infect Dis 2000;31:981-986
Aust NZ J Med 2000;30:395-396
Int J Antimicrob Agents 2001;17:109-113
Am J Trop Med Hyg 2001;65:177-179
NT Dis Control Bull 2001;8 (1):1-2

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TB Community Screening - a new TB threat promotes community action

A Preliminary report

In the 10 years 1991 to 2000, an Aboriginal community of about 1100 people in the Top End of the Northern Territory (NT), had only 2 cases of active TB diagnosed and notified. Of these 2 cases only one had been sputum smear positive.

In November 2001, an adult died in this community from late stage, undiagnosed communicable pulmonary TB. Contact tracing around the case revealed 5 new cases of active TB. At the same time, a second unrelated case with extensive smear positive pulmonary TB and with numerous family contacts in the community, was diagnosed. This patient subsequently died while on TB treatment as there was wide-spread co-infection with an uncommon organism *Nocardia* which went undetected as it caused disease similar to the TB. In January, a third case of extensive sputum positive TB was diagnosed; unrelated to the other cases and making a total of 8 cases of TB diagnosed in a 4 month period. The sadness of 2 TB related deaths associated with the community and 6 other cases highlighted a new disease threat to the community; one that was communicable, but one that if diagnosed early was totally curable and if screened for was preventable.

The NT TB Control Guidelines recommend extended screening be carried out when 2 or more cases of TB are diagnosed in a community within a year. This may include an entire language group, a specific segment of the community or the whole community. Due to the large number of TB cases diagnosed in a short period of time in this community, TB screening of the entire community was planned.

This screening included Mantoux testing all children less than 15 years of age to detect those who were infected (reflected by a Mantoux positive skin text). This positive Mantoux group was then given a chest X-ray (CXR) and clinical review to rule out active TB disease. When disease was ruled out treatment for latent TB infection (LTBI) was offered. The aim of LTBI treatment is to eliminate the infection and hence prevent the possibility of the infection ever progressing to active TB disease in the future. All adults 15 years and older were offered CXRs to screen for active TB disease and also given brief (5 minute) reviews which included again assessing their level of TB contact, a nodal examination and brief public health messages, eg discussing smoking or offering pneumococcal and influenza vaccine and education about TB. If adults were found to be close contacts of TB cases not previously identified in the initial contact screening, they were also offered Mantoux testing.

The Centre for Disease Control (CDC) staff (2 RNs) along with the community health staff spent 2 preparatory weeks educating the community about TB sickness and Mantoux testing all the children under 15 years of age plus carrying out the routine second round of contact tracing for the November TB cases and initial contact tracing for the recent TB. They explained that the aim of the screening was to identify any undiagnosed cases of TB disease in the community and also to identify any children or close contacts who may be infected but not diseased. These children and contacts would benefit from treatment of their LTBI ie. preventing TB from possibly developing in the

future by eliminating the infection now. A total of 522 Mantoux tests were done during this period. As other screenings were required the health clinic and CDC staff worked well to combine the Mantoux testing of 118 under 5 year olds with Growth, Assessment Action (GAA) screening, and 196 of 5-15 year olds with school screening. Also included were the testing of 208 TB contacts, 30 of whom were under 15 years. A total of 16 children under 15 years were Mantoux positive. From January, opportunistic CXRs were arranged for any residents admitted to the regional hospital for any reason – and students away at school (eg in Katherine, Darwin or Alice Springs) had screening arrangements made.

The TB community CXRs and clinical screening took place over a 2 week period starting at the end of February. The NT's TB Control mobile X-ray unit was used and a radiographer from Darwin spent 2 weeks providing CXRs in the community. The clinic health staff continued with the daily running of the clinic (including administering directly observed treatment (DOT) to the already identified TB cases and LTBI treatment to the Mantoux positive contacts) and smoothed the way for TB screening, assisting whenever possible and providing the local liaison. Additionally there were 4 CDC staff, including 2 CDC TB nurses, one from Katherine and one from Darwin and 2 TB doctors, one from Darwin (for the first week) and one from Katherine for the 2 weeks. Importantly there was a local driver, known to and accepted by the community who was invaluable in getting people up to the clinic.

During the 2 week community TB screening:

- 453 CXRs were done; this included 16 in children under 15 years who had a positive Mantoux and hence a CXR, with the balance being in adults. Of the community population of approximately 1100, those over 15 years of age were estimated to be 572; giving an adult coverage of 76.4%. Including opportunistic CXRs/screening in the regional hospital (15) and the CXRs done after the first contact tracing (18), a total of 470 adults have had CXRs (82.2%).
- 53 Mantoux tests were given in addition to those given during the preparatory 2 weeks, to previously missed children (4) or newly identified close contacts (49).
- 16 CXR were taken of Mantoux positive children; the population of children under 15 years old was estimated to be 440 and a total of 350 received the recommended screening ie a Mantoux test (79.5%) of which 16 (4.5%) were Mantoux positive.
- 57 individuals had sputum collected for mycobacteriology (AFB smear and culture) either as spot sputums or x 3 for questionable CXRs and/or persistent cough (no CXRs taken were suggestive of cavitary TB).
- 21 Mantoux positive children and 34 Mantoux positive adults who were identified as contacts had TB disease ruled out and were recommended to start LTBI treatment.
- 2 Mantoux positive children with questionable CXRs and/or clinical reviews were referred for gastric aspirates.
- 3 individuals (1 child and 2 adults) were referred for further work up for lymph node enlargement to rule out nodal TB.
- TB awareness in the community is continuing, with ongoing requests for TB screening since CDC's departure.

In addition:

- 35 Pneumococcal vaccines were given (the community had undertaken a vaccine program in 2001 to increase coverage and also to address the new eligible population ie. all 15 to 49 year old Aboriginal people. These 35 represent missed individuals mainly in the 15 to 49 year old category.
- 36 Influenza vaccines for the 2002 "flu" season were given (again the community had identified and covered most eligible clients prior to this time).
- 5 individuals with probable rheumatic heart disease (RHD) or cardiomyopathy were found and referred. They had markedly enlarged cardiac shadows on CXRs with significant murmurs on clinical review, no previous cardiac history and were aged 5 to 37 years old.
- A number of people were identified as requiring a DMO review for, eg. blood pressure control, rheumatic heart disease management and asthma reviews. Also women's health referrals were confirmed and dental (2) and orthopaedic (1) referrals were made. Because of the excellent community and clinic staff support, it was an ideal opportunity to review people who very rarely access the clinic, in particular the younger men of the community.

The community, the health clinic and CDC TB staff worked together to screen approximately 81.3% of the community (79.5% of the targeted children and 83.2 % of the adults) for TB which is an achievement reflecting community concern and involvement and health services support, coordination and commitment. Further cases of active communicable diseases were not initially found, though smear negative and extra pulmonary cases of TB are being investigated. Importantly, 21 children and 34 close contact adults (many of whom were documented new converters) were found to be infected but not diseased. Mantoux positive children and new Mantoux converters are those at highest risk of progressing to disease and are the group who benefit most from being identified and treated. The majority of this treatment of LTBI will be DOT, administered 3 times weekly through the clinic just as treatment for active TB disease is given. This assists the patients in completing the treatment and effecting cure (or prevention).

The clinic are assessing the added work load of supervising and observing the 6 month LTBI treatment regimens for 55 people in addition to the 11 people already on LTBI treatment from earlier contact tracing and the 6 patients on full TB treatment. A dedicated driver has been secured and employing a community worker to assist in the observed treatment is being discussed.

Following the TB screening a local artist translated the community screening activities into a dot painting and presented it to the CDC RN and permission has been given to reproduce the painting to use it to promote and recognise TB control activities.

Those aspects identified as contributing to the success of the community screening included extensive community education, a motivated community with active participation and encouragement by eg TB family members, continuity in the CDC staff working with the community, a hard working radiographer (one day, 98 CXRs were taken), constantly available transport, priority and support given to the screening by the RN3B and the Aboriginal Health Workers and the clinic staff's ability to maintain other clinical services throughout the 2 weeks.

Report prepared by Dr Vicki Krause, Margaret Cooper RN, Dr Jan Bullen, Mark DiFrancesco RN (all from CDC), and the community health staff.

Acknowledgments to the community and the health clinic staff for their commitment and support and to Nancy Nyberg RN of CDC, Peter McLoughney the radiographer and Ray the driver for all their good work.

This painting by Norma Nanguala Joshua tells the story of TB community screening. The centre circle portrays the community. A ◡ represents a person. The 3 ◡ above and below portray a doctor, nurse and Aboriginal health worker at the clinic and the community members coming in for clinical reviews, CXRs, education etc. The side rectangles with the dots on them and with ◡ on each side show patients coming in to get their tablets from the AHWs for TB treatment or treatment of latent TB infection. The diagonal with the ◡ on one side of rectangle with the line of ◡ behind table (or rectangle) represent the giving of Mantoux tests . The other diagonal with the 2 ◡ on either side of the circle represents health staff telling the TB story to community members and then those people taking the story back to other community members.

NT Mantoux school screening 1991 - 2000

Peter Markey, Lyn Barclay and Vicki Krause, CDC Darwin

Introduction

Mantoux screening of school-aged children in the Northern Territory (NT) has been carried out for decades, but the purpose and target groups of the screening have changed. Initially Mantoux screening determined whether a student was Mantoux negative and should be offered a BCG vaccination. Gradually the emphasis was placed on identifying those who were Mantoux positive for evaluation. In 1991 the policy of giving BCG to Mantoux negative students was stopped and BCG was only recommended for Aboriginal newborns or those up to 5 years of age living in Aboriginal communities or travelling/living for more than 3 months in high risk TB countries. However, screening continued from 1991 with the aim of determining levels of latent TB infection (LTBI) in the school population and offering treatment as appropriate to those students with LTBI (as reflected by a positive Mantoux and clinical examination). From 1991 to 1997 the screening program included all 10 year old students in rural communities. In the urban schools it included initially all Year 9 students and then switched to Year 8 students. A review in 1996 revealed that in the years 1991-94 Australian born non-Aboriginal students had significantly lower prevalence of positive Mantoux reactions (2.0%) regardless of where their parents were born, while Aboriginal students and children born overseas had a significantly higher prevalence (4.3% and 8.6% respectively). On this basis Australian born non-Aboriginal students (except those living in Aboriginal communities) were excluded and efforts were directed towards screening Aboriginal children and those born overseas. CDC coordinated the program and collected data from the outset. A brief review of the 1991 to 2000 data was undertaken, with the aim of determining the trends in Mantoux status over time, whether the 1997 change to targeted screening was successful and to assess outcomes of screening for the year 2000.

Method

An extract of the database was analysed in EpiInfo. Included were all students aged 9-16 years inclusive who underwent Mantoux testing between 1991 and 2000. This range was chosen to include all children in the target age-groups (those aged 10 years in rural schools and Year 8 and 9 students - 12 to 15 years in urban schools) but also accepting those one year either side of the target group. Students outside this age group or whose ages were unknown were excluded (n=51). There were a number of students (n=464 or 3.0% of total) whose results were entered on the adult Mantoux database because they were outside the target age group and these were not included in the analysis.

For the purposes of analysis the population was divided into three groups; Aboriginal students, Australian born non-Aboriginal students and overseas born students. Mantoux positive was defined as having a Mantoux reading of 10 mm or over without a history (or scar) of BCG vaccination or a Mantoux reading of 15 mm or over with a history (or scar) of BCG vaccination. Those 0 – 9 mm or 0 – 14 mm respectively were defined as Mantoux negative. A small number of students in whom BCG status was unknown with Mantoux readings between 10 and 14 mm were classified as negative (n=43).

Outcome data, separate from the database, was collected for the 2000 calendar year. This included reviewing records to ascertain whether a student who was Mantoux positive in 2000 had been followed up appropriately (a clinical review and chest x-ray), offered treatment for LTBI and, if accepted, had completed treatment.

An estimate of the number of students to be screened (ie the denominator) was derived from data from the Australian Bureau of Statistics (ABS). It was assumed that the target population for the years 1991-96 was a *yearly cohort* of children in the 10-14 year age bracket according to ABS estimates. The denominator for the years 1997-2000 was calculated using an extract of 1996 census data of the NT population by ethnicity and country of birth (requested from ABS for this purpose). The proportion of the 1996 cohort which would have been screened using the revised criteria (ie overseas born, Aboriginal or living in an Aboriginal community)[a] was applied to the subsequent years' cohorts to give an estimate for each year.

[a] According to the ABS 1996 census figures, 46.1% of children aged 10-14 years would have been the target group. This proportion was applied to future ABS estimates of the yearly cohort to calculate the denominator in subsequent years.

Results

Target population and number screened

Using ABS figures, the target population for each year increased from 2,772 in 1991 to 3,032 in 1996 and from 1,412 in 1997 to 1,460 in 2000. There were 14,794 students between the ages of 9 and 16 screened in the years 1991-2000. Figure 1 illustrates the number screened in each population group and Figure 2 highlights the proportion of the target population screened. The change in policy in 1997 to exclude non-Aboriginal Australian born students unless they lived in an Aboriginal community can be seen in the figures. However, the proportion of the target population which underwent screening also fell with 69.4% of the target population screened before 1997 compared to 40.4% from 1997 to 2000, though the trend over the past 3 years has been upward.

Figure 1 The number of students screened per year, by population group, 1991-2000

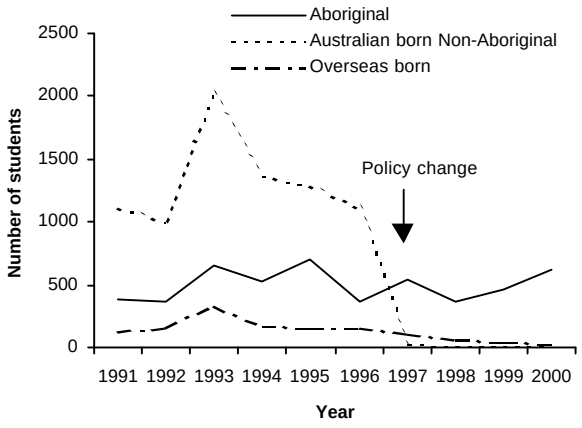
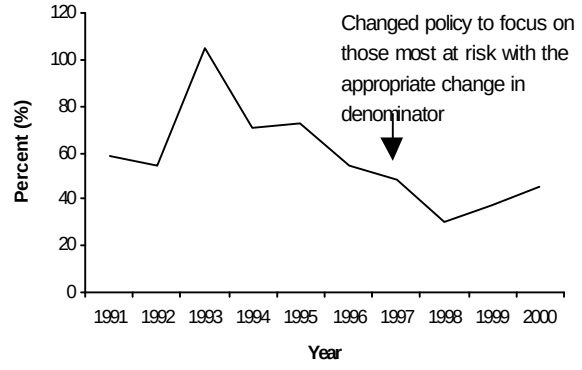


Figure 2 Proportion of the target group screened, 1991 - 2000

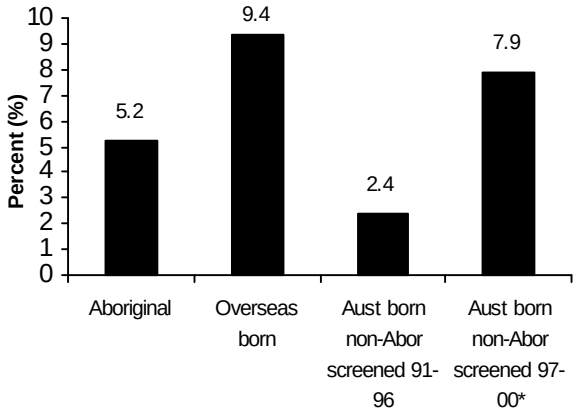


Mantoux positivity

Figure 3 illustrates the proportion of students who were Mantoux positive in each group, with the non-Aboriginal Australian born group divided into before and after 1997. The group of non-Aboriginal Australian born students tested post 1996 comprised only 76 students (6 positive).

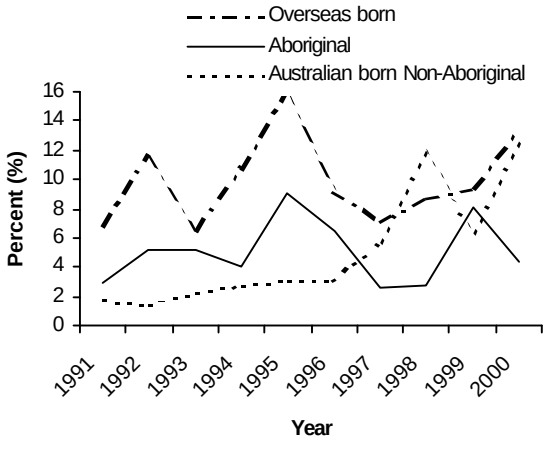
The prevalence of positive Mantoux reactions in the screened population prior to 1997 was 3.9% and from 1997 onwards was 5.0% (RR = 1.26, 95% CI; 1.03-1.54, p=0.02). The prevalence of positive Mantoux reactions in each of the population groups per year is illustrated in Figure 4.

Figure 3 Proportion of children Mantoux positive, by population group, 1991-2000



* Non-Aboriginal students living in Aboriginal communities.

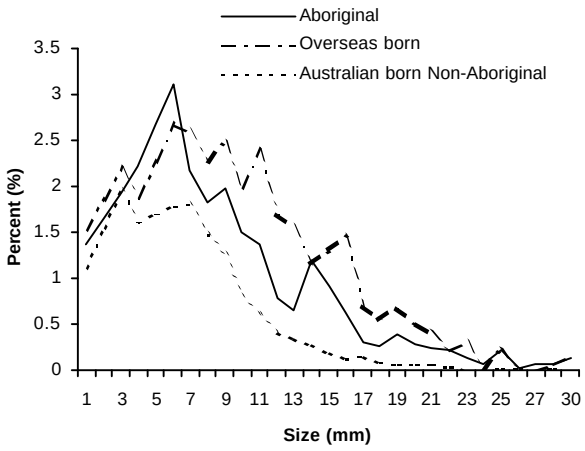
Figure 4 The proportion of children who were Mantoux positive, by year and population group, 1991-2000



Mantoux size

The Mantoux reading was zero in 82.4% of non-Aboriginal Australian born students, 71.3% of Aboriginal students, and 64.7% of overseas born students. The distribution of non-zero Mantoux size in the population groups is illustrated in Figure 5. In the Aboriginal and overseas born groups, a bi-modal pattern can be identified with the second mode at 14mm and 16mm respectively. This pattern is not seen in the non-Aboriginal Australian born population.

Figure 5 The size of non-zero Mantoux reactions as a proportion of each group, adjusted for digit preference, 1991-2000



Country of birth

Countries were categorised as low or high risk for TB based on WHO reported incidence being less than or greater than 50 per 100,000 in the years 1984 to 1991. 11.7% of students who were born in high risk countries were Mantoux positive compared with 4.7% of overseas born students born in low risk countries (RR=2.48; 95%CI; 1.59-3.58;p<0.001). Table 1 summarises the proportion of Mantoux positive students by country of birth. For most of the countries numbers were small and so the individual proportions were difficult to interpret and those numbering less than 5 were excluded.

Outcomes

Outcome data for 2000 revealed that there were 706 children screened which represented 50.5% of the target group. Thirty-four students were deemed eligible for isoniazid therapy but only 6 (17.6%) completed the course. Reasons for drop out included non-adherence, loss to follow-up (or still awaiting follow-up) while some students were not offered treatment. Thirty-eight students did not have their Mantoux read.

Table 1 Proportion of students who were Mantoux positive, by country of birth (excluding Australia)[a]

Country	Mantoux pos (%)	Number screened
Singapore	25.0	16
Taiwan	23.1	13
Vietnam	20.9	43
Brunei	16.7	6
Chile	16.7	6
Poland	16.7	6
China	15.4	13
PNG	15.3	72
Czech Rep	14.3	7
Fiji	14.3	14
Philippines	12.8	188
Zimbabwe	12.5	16
Thailand	11.8	51
Africa[1]	11.1	9
Japan	11.1	9
Germany	10.5	19
USA	9.5	42
Hong Kong	9.3	43
Malaysia	9.3	86
Timor	9.2	65
Portugal	8.7	23
Canada	7.7	13
S Africa	7.7	13
Korea	7.1	14
Indonesia	7.0	57
Sri Lanka	6.1	33

a The countries in which less than 5 students were born were excluded.
1. Country not specified.

Discussion

This is the first review of the Mantoux school screening program since 1995, but it still falls far short of a complete evaluation. The major policy change in 1997 which restricted screening in

non-Aboriginal Australian born students to those living in Aboriginal communities has had an effect with the proportion of Mantoux positive students increasing from 3.9% prior to 1997 to 5.0% thereafter. The numbers screened per year fell from an average of 2,060 per year (1991-96) to 608 per year (1997-2000). However the review has shown that focussing on the more at risk group for screening after 1996 has not necessarily resulted in improved coverage as envisioned.

The Mantoux positivity of the overseas born students likely reflects the infection rate in the countries in which they were born rather than that of the community in which they now live and remained higher than that of the Aboriginal students throughout the 10 years of screening. Furthermore, screening programs in southern states have revealed Mantoux positivity rates in overseas born children much higher than those recorded in the NT (up to 27%[2]). The reason for this is unclear but may reflect to different mix of immigrants in other cities. A study from Melbourne showed 0% prevalence in those from southern Europe to a prevalence of 15.9% for those from Indo China.[3]

Patterns of the Mantoux response across the target groups reflect the underlying exposure to mycobacterial antigens of that population. Populations with a greater degree of exposure to *M. tuberculosis* will have a greater proportion of Mantoux responses in the 10-15 mm range and this will be seen as a second rise in the curve describing the distribution of Mantoux size. Hence, it can be seen that Australian born non-Aboriginal students have a pattern which reflects minimal exposure to *M. tuberculosis*, while overseas born and Aboriginal students have an obvious biphasic pattern reflecting a greater degree of exposure. This reinforces the maxim that tuberculin testing needs to be interpreted with the underlying risk of TB exposure in mind.

Outcome measures for 2000 revealed that a disappointing number of students (17.6% of those reviewed and eligible) completed the six month course of isoniazid. Given that treatment of LTBI is the major clinical benefit of the program, unless the number of completed courses can be increased, continuing the program would be difficult to justify. From a monetary viewpoint, cost benefit analysis has revealed that Mantoux school screening programs become cost saving in student populations when the Mantoux positivity rate reaches 20%[4], which is significantly more than the rates observed in this program. While cost-benefit status ought not to be the sole determinant of a program's existence, it does give a benchmark of efficiency and allows comparisons to be made with other health interventions.

The NT TB guidelines are currently under revision and while this is happening school screening will continue for 2002. It will be important to demonstrate an ability to adequately screen the at-risk group of students as per the 1997 policy change and to achieve positive clinical outcomes in the future or the place of school screening as a useful disease prevention strategy (ie for identifying and treating LTBI) is in doubt.

References

1. Wright J. and Krause V. Outcomes of NT School Mantoux Program *1991-1994.* Abstract:PHA 2nd National Tuberculosis Conference, Sydney, 17-18 November 1997.
2. Alperstein J, Fett MJ, Reznik R, Thomas M, Senthil M. The prevalence of tuberculosis infection among Year 8 schoolchildren in inner Sydney in 1992. *Med J Aust* 1994;160:197-201.
3. Johnson PD, Carlin JB, Bennett CM, et al. Prevalence of tuberculosis infection in Melbourne secondary school students. *Med J Aust* 1998;168 (3):100-101.
4. Mohle-Boetani JC, Miller B, Halpern M, Trivedi A, Lessler J, Solomon S, Fenstersheib M. School-based screening for tuberculosis infection. A cost-benefit analysis. *JAMA* 1995;274:613-619.

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First notified case of Q fever in the NT

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Presentation

The NT's first notified case of Q fever[a] was reported in early March 2002. A 49 year old van driver from Palmerston was admitted to hospital in early February with a clinical picture of acute hepatitis. He had been increasingly unwell for 2 weeks, noting right upper quadrant pain and fever, and later developed headaches and arthralgia. A week prior to admission he noticed jaundice and by admission had developed a patchy maculo-papular rash over his trunk and limbs which faded after 3 days. On presentation he had a bilirubin of over 297 umol/L, his ALP was 312 U/L, GGT 199 U/L and ALT 273 U/L. Further investigation was undertaken in hospital. All viral hepatitis tests were negative and high fevers up to 39°C were noted. His condition continued to deteriorate with bilirubin peaking at 390 mmol/l. He developed mild pre-renal renal impairment (creatinine 170 umol/L). He had no cough nor signs of pneumonitis. Over the course of the next 3 weeks in hospital he gradually improved without specific treatment. His temperature settled, appetite returned and liver function began to normalise. A liver biopsy revealed granulomatous hepatitis without histological evidence of acid-fast bacilli. Convalescent serum for Q fever serology revealed Phase 1 IgG IFA of 1:640 and Phase 2 IgG IFA 1:20480. Phase 2 IgM IFA was positive. Retrospective testing on admission serum confirmed the rise in IgG Phase 2 titre. He was discharged after 3 weeks in hospital, clinically improving although having incurred a 20kg loss of weight. He was given doxycycline for 3 weeks.

History

This man had not been out of the NT for 18 months. He grew up in rural towns in South Australia and in Adelaide but had never lived on a farm. He had spent 20 years in the Airforce prior to moving to Darwin 3 years ago. Overseas postings had taken him to Malaysia in 1988 and New Zealand in 1993. He drives a van for a delivery company and delivers packed or frozen meat to restaurants, including eateries at the two wildlife parks near Darwin. In the 4 weeks prior to the onset of his illness he had no direct contact with animals apart from his and his friend's domestic pets (mainly dogs). He drives past a stock-yard of cattle and other live-stock every morning on his way to work (and drives an un-airconditioned car with the windows down) but has no other contact with cattle or livestock and has never been involved with hunting.

Q fever

Q fever is a zoonosis caused by the rickettsia *Coxiella burnetti*. The main reservoir is in farm animals, in particular sheep, cattle and goats but many animals have been known to transmit the disease including dogs, cats and camels. There are also wild reservoirs such as bandicoots and kangaroos. The most infectious part of the animal is the placenta with a report of over one billion organisms identified per gram.[1] *C. burnetti* is very infectious; according to one source an illness has been acquired from the inhalation of as little as one organism.[1] Those most at risk are abattoir workers, veterinarians, animal researchers and sheep and dairy farmers. There have been various reports of Q fever being spread to urban dwellers who live downwind from farmlands.[1-3]

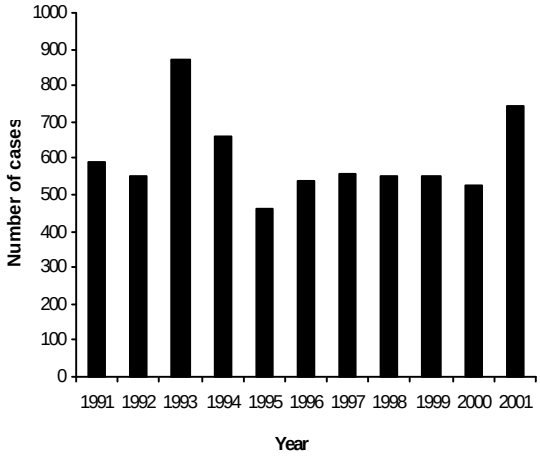
Although there have been anecdotal reports of cases from the 80s there has never been a notified case in the NT despite the existence of an active livestock industry and several abattoirs. All other Australian jurisdictions have cases every year with the majority centred around south-eastern Queensland and north-eastern NSW. There was an average of 600 cases per year reported nationally over the period 1991-2001. Figure 1 illustrates the national distribution of cases 1991-94 and Figure 2 the number of cases per annum from 1991.

With the NT being considered free of Q fever, there is little or no testing by the department of Primary Industry. Over the past few years between 200,000 and 500,000 head of cattle have come through Darwin every year for export. Up to 80,000 of the cattle come from Queensland and last year there were live camels exported.

[a] At least since electronic records were kept from 1991.

Figure 1 The distribution of cases of Q fever, Australia, 1991-1994[6]

Figure 2 Number of cases of Q fever in Australia by year, 1991-1994



Source: National Notifiable Diseases Database

Clinical features

Q fever can present as a pyrexia of unknown origin, pneumonia or acute hepatitis. Frequently all features are present to varying degrees. The case fatality rate in untreated cases is less than 2% and sub-clinical infection is recognised.[4] Rarely, culture negative chronic endocarditis or neurological features are the main manifestations.

Clinicians need to be vigilant in their consideration of this diagnosis particularly now that the first case has been identified. Diagnosis is confirmed by serology and not culture.

Public health action

An inactivated whole-cell vaccine against Q fever (Q-Vax™) was developed in Australia in the late 1980s and released in 1990 by CSL. Despite evidence of efficacy[5] it was not actively promoted until a Commonwealth government funded program was commenced in 2000 targeting veterinarians and abattoir workers and expanded in 2001 to include all sheep and cattle farmers. This case would not have been prevented by such a program. Because there had been no cases of Q fever, no vaccination program was established in the NT.

The most likely source of infection in this case was the cattleyards past which the patient drove every morning on his way to work. It is interesting that this is a busy road and it is perhaps surprising that there haven't been other cases if our theory is correct. CDC has alerted specialist adult physicians in the Top End of the occurrence and has planned meetings with the NT Department of Primary Industry and Fisheries.

References

1. Q fever outbreak – Germany, 1996. *MMWR* 1997;46(2):29-32.
2. Hawker JI, Ayres JG, Blair I et al. A large outbreak of Q fever in the West Midlands: windborn spread into a large metropolitan area? *Commun Dis Public Health* 1998;1(3):180-7.
3. Tissot-Dupont H, Torres S, Nezri M, Raoult D. Hyperendemic focus of Q fever related to sheep and wind. *Am J Epidemiol* 1999;150(1):67-74.
4. Chin J. (ed) Control of Communicable Diseases Manual. 2000 (17th ed) American Public Health Association. Washington.
5. Ackland JR, Worswick DA, Marmion BP. Vaccine prophylaxis of Q fever. A follow-up study of the efficacy of Q-vax (CSL) 1985-1990. *Med J Aust* 1994;160:704-708.
6. Garner MG, Longbottom HM, Cannon RM, Plant AJ. A review of Q fever in Australia 1991-1994. *Aust N Z J Public Health* 1997;21(7):722-30.

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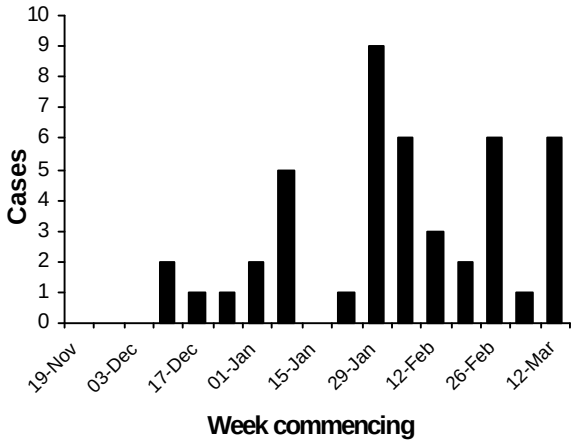
Cryptosporidiosis outbreak in Darwin and Palmerston

Peter Markey, CDC Darwin

The 2001-02 wet season heralded another outbreak of cryptosporidiosis in the suburbs of Darwin and Palmerston. Crytosporidiosis is caused by a parasitic infection of the gastro-intestinal tract that produces a self-limiting illness characterised by profuse, watery diarrhoea that can last from a few days to 2-3 weeks. It is a zoonosis, but is commonly spread by faecal-oral transmission, typically through childcare centres or swimming pools. Effective treatment is limited to re-hydration.

There was a gradual increase in the number of sporadic cases during December and January in the Darwin district. The outbreak was recognised in the first week of February when a cluster of 5 cases was reported in one day, mostly from Palmerston. Since then, there has been between 3 and 8 cases per week from the greater Darwin region. The outbreak curve is shown in the Figure below.

Figure Cases of cryptosporidiosis in the greater Darwin region by week, Nov 2001 - Mar 2002



At the time of writing there were 33 laboratory confirmed cases since February 1st, 24 (73%) of these being in children under 5. Investigation into the outbreak involved administering the usual questionnaire with added questions concerning childcare facilities attended and swimming pools used in the two to three weeks prior to the illness. A total of four childcare centres were attended by more than one case, with the most at any one centre being four. Each centre was contacted and given advice concerning notifying parents, avoiding water play, cleaning practices and exclusion policy. Environmental health officers were notified and the centres visited to review practices.

In the second week of the outbreak there was a report of several tri-athletes (up to 11) becoming ill with a diarrhoeal illness after having swum in a particular community swimming pool. The cause of this illness was not confirmed by stool sample, but at the same time there had been 3 or 4 confirmed cases of cryptosproidiosis in others who had swum in the same pool. All together there were a total of 7 notified cases with a history of contact with that particular pool. Environmental health officers investigated and the pool was closed for 48 hours for hyper-chlorination. This event generated a degree of media interest in the outbreak.

The outbreak continues with 4-6 cases a week being reported from Darwin/Palmerston area. There has also been a long, widespread and severe outbreak over the past 4 months in Queensland.

Editorial

Breaking the cycle of transmission depends on the public's awareness of how to control its spread. To prevent transmission, doctors and other health care providers should instruct those with diarrhoea not to attend childcare, school or work until at least a day or preferably 2 days after the diarrhoea has settled. Taking a stool specimen to make a definite diagnosis should be considered. Importantly, anyone with cryptosporidiosis should be told not to swim, wade or paddle in public or other pools while they are unwell. Additionally water activities should be avoided for at least 2 weeks after the diarrhoea has resolved as the organism is excreted for several weeks after the symptoms resolve and is quite resistant to chlorine. The best prevention for all faecal-orally transmitted diseases also includes careful hand-washing after going to the toilet and always before preparing food and not seating or changing nappies of young children and babies on food preparation surfaces.

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Report on "STIs in the NT: A Refresher Course"

Simon Morgan, General Practice Education and Research Unit, NTU

On Saturday March 2nd 2002, the AIDS/STD Unit, in collaboration with the Top End Division of General Practice (TEDGP), ran an educational event entitled "STIs in the NT: A Refresher Course". The program was directed by the results of a Top End GP survey on STI knowledge and practices conducted in 1999, as well as the findings of the STI/HIV remote strategy development process. The course was attended by 26 people (20 GPs or GP registrars) and was reported by all participants as meeting their learning needs to a high level. This brief report discusses the development, attendance and evaluation of this successful educational event.

Introduction

Sexually transmissible infections (STIs) remain a significant clinical and public health problem in Australia, with serious potential health consequences, including pelvic inflammatory disease (PID), tubal pregnancy and other adverse pregnancy outcomes.

The Northern Territory (NT) continues to have disproportionately high rates of STIs compared with other states.[1] The epidemiology of disease is unique, as are many local approaches to diagnosis and management. As a result, primary health care providers in all settings in the NT, particularly general practitioners, need to be competent in the clinical care and community approach to STIs.

A survey conducted on GP knowledge and practices in relation to STIs in the NT (1999) revealed a number of areas where STI management could be improved, including comprehensive STI testing, screening for antenates, syndromic treatment and awareness of local epidemiology.[2] As well, a recent situation analysis[3] of the practices of THS Darwin remote clinics documented a number of areas where STI management could be improved.

The 1999 GP survey was also specifically designed to act as a needs assessment tool for a future educational event on STIs. The enthusiasm for this was great, with 95% of respondents stating that they would be interested in attending such an event.

"STIs in the NT: A Refresher Course" was therefore developed from these findings and as a result of the considerable interest expressed by Top End GPs.

Program

The program was developed by the four presenters of the course, and was directed by the documented local deficiencies in knowledge and practice, as well as current best practice or new information in STI management.

The program (see Appendix, page 15) was designed to give an initial overview of the unique epidemiology of STIs in the NT, and to then address the population health aspects of STIs and their implications for clinical care and program development. Subsequent sessions included brief snippets of diagnostic and therapeutic updates, common clinical STI scenarios, and the traditionally challenging area of syphilis serology interpretation. The sessions were designed to appeal to both urban and rural/remote practitioners, covering a range of issues of importance to both groups. It aimed to confirm existing knowledge as well as impart new knowledge or best practice, without becoming too overwhelming to participants.

A package of references was developed for participants to read at the course. As well, all presenters developed a list of take home messages to accompany their sessions, key concepts or information that were collated into a handout for participants.

Continuing Medical Education (CME) point application was sought and gained through the Royal Australian College of General Practitioners. To meet CME point requirements, learning objectives (see page 16) were developed, and the session formally evaluated at its conclusion as to its educational worth.

Attendance

The course was attended by 26 people (see Table) with 20 (77%) being either GPs (16) or GP registrars (4). Two other doctors attended, an A&E registrar and a DMO. The other

participants included two RNs, one urban and one from a remote community, a STI project officer and a sexual health educator.

Table Course attendance

Practitioner	Location	Number
GP	Urban	7
	Rural	9
GP registrars	Urban	4
	Rural	0
Other doctors	Urban	1
	Rural	1
RNs	Urban	1
	Rural	1
Other	Urban	2
	Rural	0
Total		26

Evaluation

On a scale of 1 to 5 (with 5 representing that personal learning objectives were very well met), the course was rated 4 or 5 by all participants (50% each). All participants who completed an evaluation form felt the course should be highly recommended to all.

Participants were also asked to list what in particular they learnt from the course that was new. These responses included:

- the role of HSV PCR (5)
- an approach to vulvar pain
- the need for presumptive treatment of PID
- a better understanding of syphilis serology
- which swabs to be used for which clinical scenarios
- the epidemiology of STIs in the NT
- the management of HSV
- the best practice approach to STI screening in women
- the redundancy of endourethral swabs

Discussion

Having 26 participants at the course was regarded as very good. That 11 attendees (9 GPs) were from rural/remote clinical settings was a direct result of running the course in conjunction with the NT Remote Workforce Agency Family Support Weekend, a self care program for remote GPs that brings them into Darwin for the weekend.

Four of the 7 urban GPs and the 3 of the 4 urban GP registrars who attended the course worked in Aboriginal health settings. In other words, only 4 of the 20 GPs and GP registrars in attendance were from non Indigenous practices. This presumably reflects an awareness by GPs working in Aboriginal health of the huge excess burden of STIs in this population, and the need to be competent in screening, diagnosis and management of these infections.

Notification rates of bacterial STIs in non-Aboriginal people in the NT are also significantly higher than those of other states and nationally. In 2000, the rates of chlamydia were 118 and 90/100 000 in the NT (non-Indigenous) and Australia respectively and 54 and 29/100 000 for gonorrhoea. The NT has a young mobile population, is a popular tourist destination for Australian and international visitors, and is a region with increasingly strong links to SE Asia, an area with a high prevalence of HIV. GPs in the NT working in non-Indigenous settings also need to be competent in STI management. As stated, despite the effort to pitch the course at both urban and rural/remote GPs, attendance was proportionately poorer in the urban group. There is a continuing need to engage the mainstream GP population in future educational events on STIs.

The course was universally highly regarded by all participants who completed an evaluation form (16/26). This may have reflected the diverse range of topics covered, a predominantly case based approach and the use of a variety of speakers (4). The length of the course, at 5 hours of actual teaching, meant participants were not too tired at the end of the day. One participant felt the only way the course could have been improved was to make it longer! Other comments included a need for greater interaction with the audience and more small-group exercises.

The compilation of a comprehensive reference package for this course was a valuable spin-off from the development of this course. This package should have an ongoing role in the orientation and training of new staff in CDC, as

well as for use in similar educational events. The list of 'take-home' messages were highly appreciated by course participants, and likewise can be used for future training.

Conclusion

The success of this educational event supports the approach of an interactive assessment of needs (the 1999 GP survey and remote strategy findings) and the subsequent development of a training program reflecting these needs. The course was highly regarded by all who attended and consideration could be given to running it in Central Australia in the future. Negotiations are underway with the TEDGP for a workshop highlighting the common notifiable diseases, using 'hypotheticals' and clinical scenarios and explaining the public health responses.

Acknowledgements

Thanks to Jan Savage, Steven Skov and particularly to Stephen Baguley, who spent his last day in Australia teaching at the course, for making the session a success. Thanks too, to the TEDGP staff, Gemma Byrne, Caitlin and Vicki McGowan, for their support.

Appendix

Program

Time	Session	Facilitator
09:00 – 09:20	Introduction GP Survey findings	Simon Morgan
09:20 – 10:05	Epidemiology of STIs in the NT	Jan Savage
10:05 – 10:40	Population Health and the Remote STI strategy	Steven Skov
10:40 – 10:55	Morning break	
10:55 – 11:30	Diagnostic issues The role of HSV serology Trichomoniasis HIV testing - legal issues Culture for gonorrhoea FVU in women The role of endourethral swabs Self administered LVS	Stephen Baguley
11:30 – 12:00	Treatment Issues Genital Herpes Genital Warts Antibiotic Resistant Neisseria Gonorrhoea Genital Tract Chlamydia HIV Post Exposure Prophylaxis	Simon Morgan
12:00 – 13:00	Lunch	
13:00 – 13:20	Vulval pain case study	Stephen Baguley
13:20 – 13:45	Syphilis serology interpretation	Steven Skov
13:45 – 14:10	PID – clinical pitfalls/case study	Jan Savage
14:10 – 14:50	Male and female genital discharge case studies	Stephen Baguley
14:50 – 15:00	Summary, closing points, questions	Simon Morgan

Learning Objectives

1. To increase knowledge of the distinct epidemiology of STIs in the NT, in order to apply this knowledge to clinical practice and STI/HIV program development.
2. To understand some of the key population health concepts of STI control.
3. To increase awareness of the documented deficiencies in current STI/HIV knowledge and practice by clinicians in the NT, in order to apply this awareness to future practice.
4. To learn about recent advances in diagnostics and therapeutics of STIs and HIV.
5. To learn about the diagnosis, investigation and clinical management of a number of STI syndromes, including vulval pain, pelvic inflammatory disease and genital discharge.
6. To increase knowledge and skills in the difficult area of interpretation of syphilis serology.

References

1. NT Notifiable Diseases Database, Territory Health Services.
2. Morgan, S. Knowledge and practices of sexually transmitted diseases by General Practitioners in the Top End of Australia. *NT Dis Control Bull* 2001;8 (3):6-10.
3. Skov S et al. STD/HIV Strategy for the Darwin Remote Region: Phase 1, Territory Health Services, 2000.

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Chronic Obstructive Pulmonary Disease: recent guidelines and local initiatives

Tarun Weeramanthri, CDC Darwin, Rosemary Lee, Darwin Rural Services, Graeme Maguire, Menzies School of Health Research and Rosaleen Reilly, NT DHCS

Background

Chronic Obstructive Pulmonary Disease (COPD) is a progressive condition characterised by airflow limitation that is not completely reversed by bronchodilators. The term is synonymous with Chronic Obstructive Airways Disease (COAD) and Chronic Airflow Limitation (CAL). It encompasses such conditions as emphysema and chronic bronchitis, and sometimes bronchiectasis is also included. It is often difficult to distinguish it from chronic or episodic asthma, which is characterised by *reversible* airflow limitation, and sometimes asthma and COPD overlap.

COPD is an important public health problem in Australia. In 1996, there were 300,000 people with COPD in Australia, and an estimated 20,000 new cases are diagnosed each year.[1] It is the 4th leading cause of death in Australia and the incidence is increasing rapidly in women. Tobacco smoking is the major causative factor in 80% of cases.

COPD is one of the top three causes of premature death, illness and disability in NT Aboriginal people (along with cardiovascular disease and injury). The main risk factor, tobacco smoking, is more common in the Indigenous population, and low birth weight and repeated childhood chest infections may also be contributing to the high burden of adult disease. Death rates in Aboriginal Territorians are many times higher than in Australians generally, particularly in females. Hospitalisation rates for COPD showed a dramatic rise in both NT Aboriginal men and women from 1983 to 1997, while remaining relatively constant in non-Aboriginal people.[2]

However, despite the above data, COPD has not received the attention it merits, because there has been an air of despondency around its management, and possibly also a perception that it is self-inflicted. This attitude of 'therapeutic nihilism' is changing because of recent advances in non-pharmacological therapies, and the development and dissemination of evidence-based guidelines.

The Global Initiative for Obstructive Lung Disease (GOLD) is a WHO collaborative project, which aims to raise public awareness, improve prevention and management, and stimulate research. It has released a global

strategy for prevention and management of COPD, including a detailed evidence base.[3] In Australia, the Australian Lung Foundation (ALF) is currently developing a COPD handbook, and Australasian evidence-based guidelines.[4]

Key messages from the guidelines

In its early stages COPD is often asymptomatic, though use of a spirometer can identify the presence and severity of airways limitation, and should be performed in people who have been smoking for more than a few years. By the time people feel short of breath, lung damage is usually fairly advanced.

Stopping smoking is the only intervention known to slow disease progression. Options to assist patients have increased in recent years and now include counselling, nicotine replacement and specific drugs. Some medications with known adverse effects, such as inhaled corticosteroids, seem to be overused, when they have been shown to be efficacious in only a small subset of COPD patients.[5] It should be remembered that all medications in COPD are essentially symptom relievers, and do not alter the course of the disease.

However, much can be done to improve patients' sense of well being and relieve their symptoms. Home oxygen can prolong survival in a selected group; pulmonary rehabilitation programs (including exercise training, nutrition education and psychosocial/behavioural interventions) improve quality of life; and vaccination against influenza and pneumococcal disease can prevent some infective complications. For a selected group, care of exacerbations can be provided at home rather than in hospital, and good follow up care after hospitalisation can reduce readmission rates. In hospital, non invasive ventilation is an effective and increasingly used option for the management of severe exacerbations. There are now even some surgical options (lung volume reduction surgery and lung transplantation) for advanced disease and good palliative care techniques may also be applicable.

The Australasian guidelines will be based around a simple acronym 'COPD-X'[6]
C – confirm diagnosis and assess severity
O – optimise function
P – prevent deterioration
D – develop self management and support plan
X – manage eXacerbations

Local programs, projects and resources

COPD is one of the five main chronic diseases covered by the NT Preventable Chronic Disease Strategy.[7] Preventive work to address smoking, the main remediable cause of COPD, is undertaken by the Tobacco Action Project (TAP) which operates as part of the Alcohol and Other Drugs Program within NT DHCS. TAP pays particular attention to smoking among minors, young adults and Aboriginal and Torres Strait Islander people. The Quitline telephone counselling service is the main form of cessation support available to those wishing to quit smoking. Self help cessation resources are available in a variety of translations. A recent publication contains a bibliography of health promotion materials designed for Indigenous people about tobacco.[8]

With respect to clinical care, the Centre for Disease Control in Darwin ran a 'COPD - Clinical Management and Continuity of Care' project from 1997-1998. This led to an emphasis on COPD management in the 1998 Remote Area Adult Chronic Disease Management Guidelines, which have been widely adopted in the NT.[9] These guidelines also include a focus on helping patients quit smoking.

There is a corresponding need to regularly examine guideline implementation. A recent audit of clinical management of stable COPD patients in an East Arnhem community revealed that spirometry was rarely performed and severity rarely assessed (Ian Bilmon, personal communication). Many COPD patients had also not received their influenza and pneumococcal vaccinations. Such regular audits, with feedback of information to providers, will be a feature of the work performed by the NT DHCS 'Total Recall' public health nurses in the Top End. Menzies School of Health Research is also following a cohort of Indigenous Australians living in remote communities who have chronic respiratory disease, and evaluating the efficacy of management guidelines and the role of bacterial infection.[10]

NT DHCS employs a full time Respiratory Nurse within the NT. This position is Home and Community Care (HACC) funded and performs

a consultancy role with a strong emphasis on education of clients, carers and health professionals in the management of COPD. The Respiratory Nurse also coordinates and reviews clients on domiciliary oxygen therapy (approximately 100 within the NT).[11]

The Respiratory Outreach Project within Central Australia has recently explored options for improving hospital and community care for patients with COPD and other chronic lung conditions.[12] The project has also produced resources such as the 'Living with a chronic lung condition' patient education booklet.[13]

The 'Short Wind Project' run by Asthma NT has produced a number of educational resources suitable for Indigenous clients with asthma. The resources are also of relevance to those with COPD, especially the parts dealing with puffers, spacers, nebulisers and peak flow meters.[14] A COPD Self Directed Learning Package has also been developed by NT DHCS staff in Workforce Support and Darwin Urban Community Health.[15]

Royal Darwin Hospital has also developed a 'COPD exacerbation' clinical pathway, which has been in use within the hospital for the last two years for the multidisciplinary management of uncomplicated cases.

Acknowledgements

Thanks to Justine Glover for chasing down details on local initiatives, and to Di Rayson from the Tobacco Action Project for providing details on the program.

References

1. The Australian Lung Foundation. Case Statement – Chronic Obstructive Pulmonary Disease. Brisbane: Australian Lung Foundation, 2001. Available at www.lungnet.com.au. This website is an information service run by the Australian Lung Foundation with a specific COPD information hub, patient education leaflets and contact details for Lung*Net* (the network of Lung Support Groups in Australia).
2. Weeramanthri TS, Clark L. Chronic diseases. In: The Health and Welfare of Territorians 1999, Condon JR, Warman G, Arnold L (eds.). Darwin: Territory Health Services, 2001, pages 97-104. Available on the NT DHCS Intranet at http://internal.health.nt.gov.au/healthplan/epi/epi.htm
3. Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop Summary. *Am J Resp Crit Care Med* 2001; 163: 1256-1276. Available at www.goldcopd.com (last accessed 27-02-02).
4. Burdon J, Edwards R. The chronic obstructive pulmonary disease strategy. *Intern Med J* 2002; 32:64-65.
5. Gibson PG. Management of chronic obstructive pulmonary disease (COPD). *Australian Prescriber* 2001; 24 (6): 152-155. Available at www.australianprescriber.com (last accessed 27-02-02).
6. Frith P, McKenzie D, Pierce R. Management of chronic obstructive pulmonary disease in the twenty-first century. *Intern Med J* 2001; 31:508-511.
7. Weeramanthri TS, Morton S, Hendy S, Connors C, Rae C and Ashbridge D. The NT Preventable Chronic Disease Strategy - Overview and Framework. Darwin: Territory Health Services, 1999. Available at http://www.nt.gov.au/health/cdc/preventable/overview.shtml (last accessed 27-03-02).
8. Ivers R. Indigenous Australians and Tobacco: a literature review. Darwin: Cooperative Research Centre for Aboriginal and Tropical Health, 2001, pages 113-120.
9. Guidelines, Standards and Audit Team. Remote area adult chronic disease management guidelines. Darwin: Territory Health Services, 1998.
10. Maguire G, Bailie R, Currie B. Optimising chronic lung disease care for Indigenous Australians. Darwin: Menzies School of Health Research Annual Report 2000-2001, page 31.
11. Young IH, Crockett AJ, McDonald CF. Adult domiciliary oxygen therapy: Position statement of the Thoracic Society of Australia and New Zealand. *Med J Aust* 1998; 168: 21-25. Available:www.mja.com.au/public/issues/jan5/young/young.html (last accessed 11-03-02).
12. Atkins L, Meikle M. Respiratory Outreach Project Report. Alice Springs: NT DHCS, November 2001.
13. Available from Adolescent and Adult Health Community Nurses at Flynn Drive, Alice Springs, on 8951 6744.
14. Contact Asthma NT on 89228817 for more details.
15. Rosenow P, Frampton J, Reilly R. A multidisciplinary approach to Chronic Obstructive Airways Disease (COAD): self-directed learning package. Darwin Urban Community Health and Workforce Support Unit, 2000. Available later this year.

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New conjugate Meningococcal C vaccine

Lesley Scott and Peter Markey, CDC Darwin

Meningitec ™, marketed by Wyeth Australia, is the first meningococcal group C conjugate vaccine for prevention of meningococcal disease caused by *Neisseria meningitidis* serogroup C to be licensed. The vaccine is suitable for infants from 6 weeks of age[1] and adults. It is a safe and efficacious vaccine expected to provide long term protection.[2]

Children under 12 months of age require 3 doses with an interval of at least one month between doses. For those over one year one dose is required.[1]

The Australian Technical Advisory Group on Immunisation has established a working party reviewing meningococcal disease in Australia. This will include recommendations to the federal government about the possibility of introducing meningococcal group C conjugate vaccine into the standard schedule of vaccines. A decision is expected by mid to late 2002.

As GP's may be questioned by their patients or the general public it is useful to review a few facts and the local data about meningococcal disease.

Those most at risk of meningococcal disease are children 0-4 years and young adults from 15-24 years.[3] The transmitting agent, *Neisseria meningitidis*, is transmitted by droplets through coughing, sneezing and from an infected person's saliva through kissing, sharing drink containers and other close personal contact.[4] Asymptomatic nasopharyngeal carriage rates of 5-10 % are estimated in the general population.[5]

Meningococcal disease is uncommon in Australia with a national rate of 3.1 per 100,000 population in 1997.[6]

Below are some key points about meningococcal disease in the NT over the 11 years 1991 to 2001.[7]

- 109 cases of meningococcal disease with 30% being group C
- the proportion of cases which are group C appears to be decreasing with only 14% (6) of all cases being group C over the last 4 years
- mortality among all cases was 5.5% with mortality among all group C cases being 12.5% and accounting for 4 out of the total of 6 deaths (66.6%).

In other states there is a greater proportion of cases that are group C (53% in Victoria). Group C is more serious than other serogroups with a higher mortality (NT 12.5%/national 15%) than in group B infections (NT 2.6%/national 6.4%).[4]

The polysaccharide meningococcal vaccines, Mencevax™ and Menomune™, have been available for many years and are suitable for those over 2 years of age and protect against serogroups A, C, W135, and Y. In the NT this is recommended for patients with asplenia, HIV, and travellers to foreign countries with high prevalence. A booster dose is required after 3-5 years.[8]

Presently meningococcal group C conjugate vaccine is available via general practitioners on private prescription. Estimated cost is $70 - $106 per vaccine.

References

1. Approved Prescribing Information for Wyeth Australia's Meningococcal Group C Conjugate Vaccine.
2. Rosenstein NE, Perkins BA, Stephens DS, Popovic T, Hughes JM. Meningococcal Disease. *N Engl J Med* 2001; 344:1378-1388.
3. The Australian Meningococcal Surveillance Programme. Annual report of the Australian Meningococcal Surveillance Programme 2000. *Commun Dis Intell* 2001; 25(3):113-121.
4. CDNA, Guidelines for the early clinical and public health management of meningococcal disease in Australia. June 2001, 17. http://www.health.gov.au/pubhlth/cdi/pubs/mening.htm (last accessed 14-03-2002).
5. Chin J. (ed) Control of Communicable Diseases Manual. 2000 (17th ed) American Public Health Association. Washington.
6. Roche P, Spencer J, Merianos A. Editorial: Meningococcal disease. *Commun Dis Intell* 2001; 25 (3):126-129.
7. Communicable Diseases Surveillance System, CDC, DHCS, Darwin, NT. March 2002.
8. National Health and Medical Research Council. The Australian Immunisation Handbook. 7th Ed. Canberra: Australian Government Publishing Service, 2000. 164-168.

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Bicillin update

In October 2001, all health providers were notified of a national shortage in the availability of Bicillin LA. As a result, practitioners were advised to restrict the use of this medication. Interim guidelines were issued advising what conditions should continue to be managed with Bicillin and what should be managed with alternate medications.

We are advised by the importers of the product that the situation has now improved and there are adequate supplies of Bicillin LA in the country. No further shortages are anticipated.

Therefore, there is no need to continue the restrictions on the use of Bicillin LA. All practitioners are advised that they should now revert to the normal use of Bicillin LA.

The CARPA Standard Treatment Manual recommends its use for:

- Acute Rheumatic Fever/Rheumatic Heart Disease treatment and prophylaxis (monthly BLA)
- Treatment of sore throats
- Treatment of skin infections
- Treatment of active and latent syphilis and the sexual partners of those patients.

Review of guidelines for the management of *Trichomonas vaginalis*

Jan Savage, AIDS/STD Program, CDC Darwin

Management of the sexually transmitted infection *Trichomonas vaginalis* (TV) infection and guidelines to support this have become a source of confusion and concern for service providers and policy makers alike. In northern and central Australia there are undeniably high rates of TV infection in Indigenous people. It appears that a significant proportion do not have, or do not report symptoms of infection. There is a growing body of evidence that suggests that TV is associated with more serious effects than simply genital discomfort. These complications include adverse pregnancy outcome such as prematurity, low birth weight infants and premature delivery of small-for-gestational-age infants and the enhanced transmission of HIV.

The studies that have found these associations have used conventional methods of diagnosis of TV: microscopy and culture. Polymerase chain reaction (PCR) is a newer diagnostic technique that was introduced into Australia in the 90's. It has been found to be highly suitable for use in remote Australia for the diagnosis of chlamydia, and to a lesser extent, gonorrhoea. It has been suggested that it may be equally useful to diagnose TV. There have been a number of studies confirming its high sensitivity and specificity in women but there has been little work done in men (fundamental for an STI). The relationship between PCR diagnosed TV infections and the development of complications is not clear, as PCR will theoretically pick up the presence of one organism/ml. That is, do people who have an absence of symptoms or low microbial load have the same risk of developing complications as those with florid genital inflammation?

Any recommendations to change TV management guidelines (that is testing and treatment) must be considered in the context of the capacity of health care providers to implement them and involve those population groups most affected.

From our analysis of the literature, it appears that at the very least there is a need for clinical research, a cost benefit analysis and consultation with communities and service providers to assist in this decision making process.

The Indigenous Australians' Sexual Health (sub) Committee to the Australian National Council on AIDS, hepatitis and related diseases and the Intergovernmental Committee on AIDS,

hepatitis and related diseases are currently considering a background paper on this issue.

This paper will soon be available from the AIDS/STD program, Darwin. Please contact Jacqui Sutcliffe at the NT AIDS/STD Program if you would like a copy, on (08) 8922 8874 or jacqui.sutcliffe@nt.gov.au.

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HOAX E-MAIL

There is an email circulating that purports to be from the Red Cross entitled "*HIV Warning*". It describes situations where needles and syringes have been found at the backs of cinema seats with a note attached reading "you have just been infected with HIV." The email warns people to take care when visiting the cinema.

Understandably this has created some concern in the community and the warning has been broadcast widely and has also been reprinted in newsletters and magazines as fact.

Red Cross Australia has confirmed that what this email describes is untrue and nothing more than a mischievous hoax. If you receive this email it would be appreciated if you could pass this message on to the person who sent it to you.

The AIDS/STD Program can provide you with up to date information on HIV/AIDS issues and if you have heard stories or read information about HIV that seems suspect, please ring the program on 8922 8874 for clarification.

Elden Chamberlain
AIDS/STD Program
Darwin

Practical Paediatrics Workshop

The Community Child Health Section is planning a one week "Practical Paediatrics" workshop for nurses and health workers in April this year. This workshop will focus on the management of respiratory and gastro-intestinal disorders but include other important child health conditions as well as emergency procedure practice. The workshop will be held in close proximity to Block 4 at the Royal Darwin Hospital and will allow for 12 participants. It is hoped to repeat the workshop several times a year if funding can be allocated.

Centre for Disease Control Conference 2002

The Centre for Disease Control will hold its annual conference in Alice Springs from the 8th to the 10th of October 2002. Inquiries should be directed to Dr Alex Brown on (08) 8951 6906 or Email alex.brown@nt.gov.au

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Mosquito control in Ilparpa Swamp – A Big Step Forward

Nina Kurucz and Peter Whelan, Medical Entomology Branch Darwin, and Philippe Porigneaux Environmental Health Alice Springs, NT DHCS.

Introduction

In the Northern Territory (NT) mosquito monitoring and control is vital to reduce the potential public health risk of mosquito borne disease such as Murray Valley Encephalitis (MVE) and Ross River Virus disease (RRV). Mosquito monitoring and control programs are established in all major towns throughout the NT by the Medical Entomology Branch (MEB) in liaison with local Environmental Health Officers (EHO's) and local government or mining company environmental officers. A major goal of the MEB program is the reduction and management of mosquito breeding habitats in the vicinity of residential areas to reduce the potential risk of mosquito borne disease.

The Ilparpa Swamp, a 130 hectares area in Alice Springs, has long been of public health concern as an extensive breeding habitat for the common banded mosquito *Culex annulirostris*. This mosquito is a major vector for MVE as well as RRV. The MEB first identified extensive mosquito breeding in the swamp in 1974. An adult mosquito monitoring program was set in place the same year, with occasional fogging of adult mosquitoes as a control measure. Since then the MEB has supported the ongoing surveillance and control program.

However, the extent of the swamp is not only determined by rainfall but also by effluent discharges from the adjacent sewage ponds. Currently, the sewage ponds have a capacity of 211.9 mega litres and cover an area of 21.6 hectares. Discharges occur usually during the winter months when the weather is cool, evaporation rates are poor and the town is in peak tourist season. Effluent discharges also occur during summer months when significant rain events can take place. An estimated additional 30 hectares of sewage ponds are required to retain all effluent and cease discharges.

Effluent discharges provide nutrients, which enhances the common banded mosquito breeding to pest levels during the summer months. Since 1974 the issue of effluent disposal into the swamp and its consequences regarding public health issues have been discussed regularly between the MEB, PAWA, the Alice Springs Town Council (ASTC) and the DHCS Alice Springs Environmental Health branch. This has resulted in many improvements in reducing the area of mosquito breeding, including the development of large evaporation ponds, the establishment of an irrigated tree plantation, a sprinkler irrigation system at Blatherskite Park, effluent sprinkler banks within the lands of the sewage ponds, and the building of pipes to convey effluent to the centre and lower parts of the swamp.

Consultation and political commitment

Long term measures to rectify issues associated with effluent discharges and the swamp were discussed at a community consultation workshop on an urban water management strategy in Alice Springs in August 2000. The workshop was a result of cases of Murray Valley encephalitis in Central Australia in early 2000, continuing mosquito pest problems and disease risks around the Ilparpa area, and support from respective departments and the Hon Stephen Dunham, the minister responsible for both DHCS and PAWA at the time. Both long term and short term solutions to Ilparpa effluent problems were discussed, including the community's strong desire to have no additional sewage ponds constructed and have effluent seen as a resource to be reused. A presentation by DHCS warned of the increasing risks of MVE in Alice Springs. One outcome was the formation of the Alice Springs Urban Water Management Strategy Reference Group in October 2000. A sub committee, the Ilparpa Swamp Rehabilitation Committee (ISRC) was established in April 2001, with its focus being to return the swamp to an ephemeral claypan.

Water level reduction

Pumping of the swamp to reduce the extent of the swamp was begun by PAWA in 2000 after the consultation workshop. Initially the pumping was at 30L per second using a small diesel powered generator. This was later upgraded to pumping 130L per second in May 2001 after the installation of power lines and large electric pumps, and the construction of formal drainage lines, which were assisted by full support from

the Minister. The water was drained to St Marys Creek near the Racecourse area, where it rapidly infiltrated a pervious sand aquifer. However pumping only resulted in minor reductions in the water level in the swamp because of further rain in December 2001 and periodic excess capacity effluent releases.

In early February 2001 there were cases of MVE in Alice Springs following heavy summer rain and effluent discharges which flooded Ilparpa swamp. Extreme numbers of mosquitoes occurred around the swamp. Fogging operations were carried out regularly but it became clear that better solutions were required.

Plans were drawn up in July 2001 for a drain from the swamp after recommendations from the DHCS EHO advising that a gravity drain and high volume drainage was required to reduce continuing mosquito numbers within a short time frame in preparation for significant summer rain events. PAWA and ASTC jointly constructed the necessary culverts and the drain.

One potential delay for the drain was native title approval, but after discussions initiated by a local Lands Department officer, the Lands, DHCS officers and traditional owners agreed on the requirements and process, and speedy approval was given for the works. The gravity drain was started in December 2001 but was delayed by rain and flooded conditions. Partial drainage completed in early February saw water levels retreat from marginal flooded grass areas that were major sources of mosquitoes. Minor drain extensions into the swamp were largely completed in March and saw major reductions in extent and depth of the swamp. When completed the drain was capable of flows up to 700L per second.

Insect growth regulation

Through 2001 the swamp remained relatively full despite the temporary pumping operation and it was clear to DHCS officers that the coming summer posed high risks of further outbreaks of MVE. The DHCS EHO advised PAWA that a contingency plan needed to be developed to conduct larval control should *Culex annulirostris* numbers exceed 600 in an adult carbon dioxide light trap. PAWA agreed and commenced preparations in consultation with DHCS MEB and EHO and ASTC officers in October 2001. It was decided to trial the newly approved mosquito control agent, methoprene pellets, an insect growth regulator, in early summer when *Culex annulirostris* numbers started to increase. Compared to other chemicals, methoprene pellets have a label residual of 30 days. If applied at a critical time, this would require only one or two control operations compared with weekly applications with other control agents. If found to work effectively under NT climatic conditions, this agent would lead to more effective and less costly control.

Following a swamp assessment for mosquito breeding in late December 2001 by MEB, local DHCS and Alice Springs Town Council EHO's, methoprene pellets were applied by helicopter over the entire swamp area using a special granule applicator hung below the helicopter. PAWA paid for the application costs and assisted with the operational aspects of the program. At the same time PAWA agreed to discontinue any further discharge from the sewage ponds into the swamp to allow for water levels to drop. Additional sprinkler dispersal was used to reduce effluent release levels.

Outcome of efforts

As a combined result of the drainage works, reduced effluent release, and reduced summer rain, water levels dropped significantly and swamp margins had receded drastically by early February 2002. This water level reduction and the methoprene pellets application decreased mosquito numbers near the swamp below pest level (less than 600 per trap) in February 2002 compared to the same time the previous year, when mosquito numbers exceeding 17,000 per trap were recorded. By early March less than 50 common banded mosquitoes per trap were recorded around Ilparpa. The combination of mosquito control through the use of methoprene pellets, the reduction of sewage overflow into the swamp, and drainage works, has successfully reduced the mosquito numbers and thus the potential risk for mosquito borne disease in the Ilparpa Valley area and to Alice Springs residents.

Conclusion

There are still issues to be overcome with the rehabilitation of the swamp and a long-term solution, but the light is at the end of the tunnel and groups are interacting. This outcome was a great example of cooperation between very diverse groups including community groups and both local and NT government working to a common end. Well done everybody!

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News from the NT Medical Entomology Branch

First published in the Australian Entomological Society News Bulletin, January 2002.

There have been a few changes in the branch recently. The most significant is the start of extended leave of **Gwenda Hayes,** operations manager, in early December prior to embarking on a new career in another area. Gwenda has been in the branch over ten years and progressed from base grade technical assistant to the professional position of operations manager.

Gwenda made a tremendous contribution to the branch in all areas, from upgrading and overall organising the reference collection, initiating and developing a fully integrated data base to record and output all programs of the branch, initiating Geographical Information Systems (GIS) procedures, and implementing well organised larval surveillance and control operations and recording systems. She developed well presented tables and graphs for annual reporting and brought intensive branch reports up to a professional standard. She also organised professional presentations for the branch head and trained new recruits in all aspects of medical entomology. She put in 150% all the time, including studying degree courses and undertaking projects that would be of direct benefit to the branch operations. Her initiative, dedication and commitment is a tremendous loss to the branch. We all thank her for all her prodigious contribution and wish her every success in the future.

It is a measure of Gwenda's skill, knowledge and hard work that she is replaced by three people sharing her duties. **Nina Kurucz** is now overseeing routine operations, **Brett Brogan** is looking after public inquiries and development planning comments, while **Gisela Lamche** is looking after exotic vector operations, with all the surveillance and control operations in the various towns in the NT shared out between the above three. Another temporary addition has been **Nancye Turnbull** to input a backlog of data into the database.

Wet season helicopter surveys and salt marsh control operations in the coastal swamps around Darwin results have been very good so far until late January, with low numbers of saltmarsh mosquitoes in the monitoring traps and no complaints from residential areas. The success in reduced numbers is in part from lower January rainfall and in no small part to the field operations organised by Nina, with great efforts by **Jane Carter** and **Allan Warchot** in the field. Jane is also organising GIS recording of the control operations. Nina has also been busy organising the branch annual reports and organising wall presentations for the new health ministers visit to the branch.

Peter Whelan has been pursuing efforts with local environmental health officers and others to drain the large effluent/rain influenced Ilparpa swamp in Alice Springs. Native title has been granted to carry out engineering operations and a drainage culvert has been started. Peter and Nina flew to Alice in January to help with a methoprene pellet mosquito control application of the swamp as an interim measure until drainage is completed. The operation was required after extensive flooding rains and a rise in *Culex annulirostris* mosquito numbers. Over 100 hectares were treated and results to date indicate reduced mosquito problems compared to previous years.

Peter has also been presenting various talks including training for new quarantine officers in Darwin and addressing environmental health officers at a disaster management course in November. Peter attended the national Arbovirus Advisory Committee (NAAC) meeting in Canberra in November where exotic vector surveillance and national surveillance for Murray Valley encephalitis virus matters were organised.

Gisela Lamche has been appointed as exotic vector entomologist and her duties will include all aspects of surveillance and control of exotic mosquitoes, as well as other operational duties. Gisi has already been in the thick of operations with a risk interception by AQIS of *Aedes albopictus* in Darwin port area where adults had probably flown on shore. The importation was in cargo from Singapore via Timor. Brett and Gisi fogged the port area and Gisi has successfully bred out a batch of adults with larval skins from the intercepted larvae to clarify larval descriptions of this species.

Brett Brogan is handling routine public inquiries and busy reorganising a base line report on biting insects for a projected gas developments project. he has been following up on mosquito problem breeding sites around Darwin in the botanic gardens and new construction sites near the Navy base and Ludmilla sewage station.

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Woomera Detainees

By David Peacock, formerly CDC Darwin

Question:

How can it be
that if you can see
the countries we flee
where we were not free
why can't we join thee
and all become "we"
so please turn the key
and let's all be "us".

Answer:

I think I can see
that we've come to be
a nation of "me"
instead of "we"
so unless you can be
exactly like me
I'm afraid there's no "we"
and simply no "us"

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NT Malaria notifications October - December 2001

Merv Fairley, CDC Darwin

Eight notifications of malaria were received for the fourth quarter of 2001. The following table provides details about where the infection was thought to be acquired, the infecting agent and whether chemoprophylaxis was used.

Number of Cases	Origin of Infection	Reason Exposed	Agent	Chemoprophylaxis
1	Solomon Islands	Holiday	*P.vivax*	No
1	Indonesia	Holiday	*P.falciparum*	Yes
1	Indonesia	National	*P.falciparum*	No
1	Indonesia	National	*P.falciparum*	No
1	Indonesia	National	*P.vivax*	No
1	Indonesia	National	*P.vivax*	No
1	Indonesia	Holiday	*P.vivax*	Yes
1	East Timor	Work	*P.falciparum*	Yes

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Points to note regarding NT Notifications on page 27

- Kokobera, Brucellosis, Chancroid, Cholera, Congenital Rubella Syndrome, Gastroenteritis, Haemolytic Uraemic Syndrome, Hepatitis C (incidence), Hepatitis D & E, Hydatid Disease, Lymphogranuloma venereum, Measles, Poliomyelitis, Vibrio Food Poisoning and Viral Haemorrhagic Fever are all notifiable but had "0" notifications in this period.

- The higher numbers of cases of **RRV and BFV** in 2001 reflected an increased rainfall pattern across the entire Territory during the calendar year 2001. Nearly all areas of the NT had higher than average rainfall and some parts had the highest ever recorded. The 2001 figures for BFV were the highest since 1997 and for RRV the highest since 1995.

- In 2001 notifications of **campylobacter** infection increased by 50% over 2000 levels. This to some degree reflects an overall increase in campylobacter rates nationally and, since enteric pathogens tend to be more common in the wetter months, may also be a reflection of the increased rainfall over the Territory in the 2001 calendar year. The number of notifications in 2001 was the highest since 1995.

- **Trachoma** notifications increased in 2001 due to an outbreak in the Darwin District where 71 cases were notified, compared with 26 the previous year. The outbreak occurred in a community in the Darwin rural district that prompted a screening program. It is nevertheless interesting that trachoma, usually a disease associated with dry climates, is now more prevalent in the tropical areas of the NT. Of note these cases are laboratory confirmed by PCR or culture and do not include clinically diagnosed cases found by staff experienced at everting the eye lid and recognising follicles.

- The marked rise in **pertussis** cases in 2001 reflects the onset of an epidemic with numbers similar to those seen in the last epidemic in 1994-1995.

- The increase in **rotavirus** cases in 2001 were due to an epidemic which started in Alice Springs and moved up through the Territory. See article in *The Bulletin* September 2001.

- There has been a large increase in notifications of **congenital syphilis** from zero in the year 2000 to 17 in 2001. This "increase" in part represents an increase in awareness of the case definition and the responsibility of paediatricians to notify the condition to CDC.

- New notifications of **syphilis** also appear to have increased from 2000 to 2001. In the absence of further data to indicate a greater level of testing, this increase may be indicative of a true increase in new syphilis cases.

- The increase in the number of cases of **donovanosis** for 2001 in the Alice Springs region may indicate an increase in screening for both men and women.

The reporting of notifiable diseases – 'onset date' to replace 'report date'

Traditionally, NT notifiable diseases have been reported in *The Bulletin* and elsewhere according to their 'report date'. This is the date on which the case is 'reported' to the CDC office in the district where the case occurred. The other date that is often used in reporting notifiable disease data is the 'onset date' which is the date on which symptoms of the disease began. However, this date is often either not known or not recorded, and in this situation is substituted by the date on which the diagnostic test was taken (the 'collection date') which is always recorded on the pathology form. Logically, the 'onset date' better depicts the actual time the disease occurred, even if it has been substituted by the specimen 'collection date'.

Nationally and internationally, 'onset date' is becoming the standard method of reporting notifiable diseases and from the next edition of *The Bulletin* we will be reporting notifiable diseases by 'onset date'. This will not cause any major change in the counts and rates but may cause some aberration in the data in the future. For example the number of cases reported in this edition for 2001 (still by 'report date') may not exactly match the number reported for 2001 (by 'onset date') as the previous comparison year to 2002 in future editions of *The Bulletin*.

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NT NOTIFICATIONS OF DISEASES BY DISTRICTS 2001 AND 2000

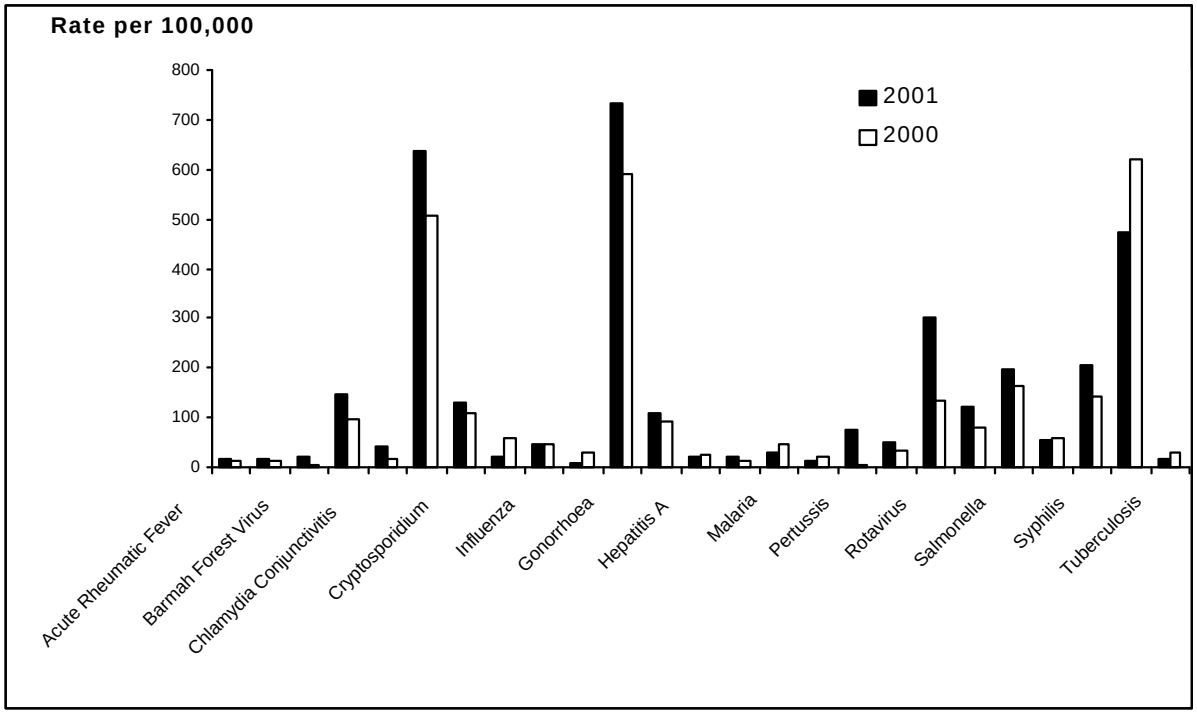
DISEASES	ALICE SPRINGS		BARKLY		DARWIN		EAST ARNHEM		KATHERINE		TOTAL	
	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000
Acute Rheumatic Fever	18	6	2	2	5	9	6	5	5	5	36	27
Adverse Vaccine React.	4	1	4	1	17	24	4	0	1	2	30	28
Amoebiases	1	0	0	0	0	2	0	0	1	0	2	2
Arbovirus infections												
Murray Valley Enceph	2	4	0	0	1	3	0	0	0	0	3	7
Barmah Forest Virus	1	1	5	0	20	7	6	0	7	1	39	9
Dengue	0	0	0	1	41	109	1	0	1	1	43	111
Kunjin	2	1	0	0	0	1	0	0	0	0	2	2
Ross River Virus	7	16	70	10	110	88	5	8	43	31	235	153
Atypical Mycobacteria	0	0	0	0	4	2	0	0	0	0	4	2
Botulism	0	0	0	0	0	1	0	0	0	0	0	1
Campylobacter	89	58	9	6	146	94	17	7	22	23	283	188
Chlamydia	584	481	17	18	438	316	101	67	105	112	1245	994
Chlamydia Conjunct.	1	1	0	0	71	26	0	1	9	1	81	29
Congenital Syphilis	6	0	0	0	5	0	3	0	3	0	17	0
Cryptosporidiosis	60	69	4	7	95	100	29	7	68	27	256	210
Diphtheria	0	0	0	0	1	0	0	0	0	0	1	0
Donovanosis	11	2	0	0	2	1	0	0	2	3	15	6
Glomerulonephritis	5	1	0	0	10	20	2	27	3	6	20	54
Gonococcal Disease	918	704	36	51	253	190	88	69	140	145	1435	1159
Gonococcal Conjunct.	0	7	0	0	0	0	0	0	0	0	0	7
Gon Opthalmic.Neonatal	1	1	0	0	0	0	0	0	0	0	1	1
Haemophilus Influenza	1	0	0	0	1	0	0	0	1	0	3	0
Haemophilus Inf type b	0	0	0	0	2	0	0	1	1	1	3	2
Hepatitis A	6	9	1	0	20	36	8	1	2	4	37	50
Hepatitis B	0	3	1	2	0	1	1	0	1	4	3	10
Hepatitis C (prevalence)	39	31	2	2	150	139	7	1	15	10	213	183
HIV infections	0	0	0	0	6	9	1	0	0	0	7	9
HTLV-1	29	22	0	0	8	0	0	0	2	3	39	25
Influenza	47	31	0	1	37	41	5	9	4	4	93	86
Legionnaires Disease	0	0	0	0	3	1	0	0	0	0	3	1
Leprosy	0	0	0	0	0	1	0	0	0	0	0	1
Leptospirosis	0	0	0	0	3	7	0	0	2	1	5	8
Listeriosis	0	3	0	0	0	0	0	0	0	0	0	3
Malaria	3	7	0	0	51	77	3	0	1	2	58	86
Melioidosis	0	2	1	0	21	33	3	1	3	6	28	42
Meningococcal Infection	4	4	0	0	8	3	1	2	0	1	13	10
Mumps	0	1	0	0	1	3	0	0	0	0	1	4
Ornithosis	0	0	0	0	1	0	0	0	0	1	1	1
Pertussis	55	5	4	0	73	1	6	0	9	0	147	6
Pneumococcal Disease	61	42	4	1	25	16	1	2	5	6	96	67
Rotavirus	190	119	15	13	242	53	44	64	101	15	592	264
Rubella	0	0	0	0	0	0	0	1	0	0	0	1
Salmonella	83	81	10	7	199	161	22	20	69	53	383	322
Shigella	36	54	8	4	39	32	7	22	16	3	106	115
Syphilis	204	139	30	12	70	79	35	20	61	30	400	280
Trichomonas	232	356	23	20	295	310	163	272	213	257	926	1215
Tuberculosis	5	12	0	1	21	42	2	1	6	4	34	60
Typhoid	0	0	0	0	3	0	0	0	0	0	3	0
Typhus	0	0	0	0	1	1	0	0	0	0	1	1
Yersiniosis	0	0	0	0	1	2	0	0	0	0	1	2
Total	**2705**	**2274**	**246**	**159**	**2500**	**2041**	**571**	**608**	**922**	**762**	**6944**	**5844**

NOTIFIED CASES OF VACCINE PREVENTABLE DISEASES IN THE NT BY REPORT DATE 2001 AND 2000

DISEASES	TOTAL		No. cases among children aged 0-5 years	
	2001	2000	2001	2000
Congenital rubella syndrome	0	0	0	0
Diphtheria	1	0	0	0
Haemophilus influenzae type b	3	2	3	0
Hepatitis B	3	10	0	0
Measles	0	0	0	0
Mumps	1	4	0	1
Pertussis	147	6	39	2
Poliomyelitis, paralytic	0	0	0	0
Rubella	0	1	0	1
Tetanus	0	0	0	0

* Mumps is largely under-reported

NT WIDE NOTIFIABLE DISEASES 2001 AND 2000



Rates < 10/100,000 not listed
NT est resid. Pop. - 195,905 supplied by Epidemiology & Statistical Branch, DHCS

Disease Control Staff Updates

Darwin

A farewell to **David Peacock**, Head of Surveillance and resident poet. David has returned to NZ and reportedly will then be off to sunny ole England to re-stoke his accent!

Peter Markey, most recently a TB medical officer with CDC has been appointed the new Head of Surveillance and may also keep up the bard tradition. Peter has a past history in the Territory working as a DMO and in epidemiology. He also worked as an academic GP in Melbourne.

Lesley Scott, formerly TB/Leprosy RN has been appointed as Project/Research Officer replacing **Sandra Downing** who is planning to work overseas in the coming months. **Chris Nagy** has been appointed to **Nan Miller's** position as Immunisation Project Officer while Nan is working in Papua New Guinea on a Cold Chain project. Until the end of June Chris will work one week in CDC and the other week in her position with the Top End Division of General Practice. In July she will take up the CDC position full-time.

Sue Reid has returned from maternity leave on a part-time basis and is currently working in the TB/Leprosy Unit.

Keith Edwards has recently been appointed Community Paediatrician, taking over from **Alan Ruben**. Keith worked for 20 years as a paediatrician in Papua New Guinea and has been involved in maternal and child health project design for Ausaid in Cambodia, Vietnam and the Phillipines. He has a strong interest in health worker training and operational research.

Rosanne Muller has commenced as the new MAE student for 2002. She is a GP from Melbourne who completed a MPH through James Cook University in 2000. Her most recent work was in India with the Australian Red Cross.

Katherine

Matthew Hansen resigned to take up a Community Health RN position in Borrolloola and CDC now have **Greg Hensche** on board as the Men's Health Educator (AIDS/STD). He has come from the Kintore Street Community Services (Aged and Disability) where he was the Disability Care Coordinator but he has had extensive past rural and community health experience. He has lived in Katherine since 1997/8.

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CUMULATIVE INDEX
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