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Acute Rheumatic Fever and Rheumatic Heart Disease in the Top End

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Acute rheumatic fever (ARF) and rheumatic heart disease (RHD) are important health problems for the Aboriginal population in the Northern Territory (NT)[1]. ARF is an immune-mediated disease occurring after throat infection with group A *Streptococcus* (GAS), which in the acute phase may cause fever, arthritis, chorea (abnormal movements) and damage to heart muscle and heart valves. Of these manifestations, only the damage to heart valves may be permanent. With the exception of occasional severe attacks of ARF, each episode is thought to result in relatively minor valve damage. However, when recurrent episodes of ARF occur during childhood and adolescence, the cumulative damage to the valves may be severe, resulting in heart failure or death at a young age and in many instances necessitating major heart valve surgery. Northern Australian Aboriginal communities have high rates of GAS infection[2], but the extent of the problems of ARF and RHD in this region is unknown. Moreover, there are longstanding difficulties in providing clinical services to individuals with these diseases. An ongoing project at the Menzies School of Health Research and Royal Darwin Hospital (RDH) is attempting to create a database of all individuals in the Top End with known histories of ARF and RDH. This is an interim report of this project.

Methods

Lists of individuals with known or suspected ARF/RHD were gathered from RDH physician and cardiologist letters, district medical officer records, health centre lists of patients on penicillin prophylaxis to prevent recurrent ARF, hospital computerises records from Darwin, Katherine and Gove for 1991-1994, and the NT Health and Community Services database of RDH discharges from 1976-1988. From these sources we identified 547 subjects as of October, 1994. Twenty-two subjects will not be considered in this report; twelve were deceased and ten had uncertain diagnoses.Information was collected by examining medical charts at each of the three hospitals and at a sample of rural community health centres. Data collection concentrated on the diagnosis of ARF, progress of heart disease, compliance with benzathine penicillin prophylaxis, outcome of heart valve surgery, and status of present clinical disease and clinician review. When the study is completed, individual reports will be prepared so that service-providers will have an accessible record of each person's history, status and management review plan.

Contents

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Results

There were 313 (61%) females and 209 (39%) males in the data set of known or suspected ARF/RHD with a mean age of 16.9 (range 2.2-69.4) and median age of 13.5 years. There were 500 Aboriginal cases (96%) compared to 22 (4%) non-Aboriginal. Fifty-nine cases of chorea were found (11%). Most of the data reported here will focus on the Aboriginal patients.

Revised Jones Criteria: In the initial diagnosis for the Aboriginal patients, 141 (27%) cases met the Revised Jones Criteria for ARF, of which 36% were chorea. One hundred and twenty-three (24%) subjects presented with evidence of established RHD with no prior history of ARF. Nearly one-half (48%) of cases lacked hospital documentation and were in need of further follow-up at health centres for details of the initial diagnosis. In many cases the patient record noted features consistent with possible ARF but the Jones Criteria could not be met due to a lack of documentation. Of the Aboriginal patients 24% had one or more possible recurrences. Of the 199 total possible recurrences, 57 (29%) met the Revised Jones Criteria for ARF.

Rheumatic Heart Disease: A large number of Aboriginal patients with heart murmurs at initial diagnosis (n=279) also demonstrated evidence of chronic RHD (n=215). Twenty-five (9%) of those known to have had ARF and a heart murmur in the past did not have any sign of valve disease at the time of last medical examination. It is presumed that these murmurs resolved as commonly occurs in mild cases[3]. In addition, 12 other patients were found to have no valve murmurs after corrective surgery. In the remaining 27 cases with prior murmurs, no data was available on current valve status.

There were 253 subjects with established RHD requiring long-term follow-up at the time of last physician or cardiologist review, 238 (94%) of them Aboriginal. Using 1991 Census figures to estimate the total and Aboriginal population of the Top End, the minimum crude RHD point prevalences for Aboriginals and non-Aboriginals in the Top End are 8.9/1000 and 0.12/1000 respectively. The minimum known rate of Aboriginal RHD in the Top End is 74 times that of the non-Aboriginal population. When considered by region, the minimum crude prevalence rates of RHD in Aboriginals were: Darwin 8.6/100, Katherine 6.9/1000 and East Arnhem 11.6/1000.

Valve Surgery: Valve surgery was performed on 48 patients with chronic RHD, with 41 in the Aboriginal group. In Aboriginals, the mean age of surgery was 26.4 years (SD 10.8) with 31% before age 21 and 87% by age 36. The most common surgery for both racial groups was mitral valve replacement (n=28) followed by mitral valvotomy (n=9). In the Aboriginal population, the mean number of years between first diagnosis and surgery was 6.8 years (range 1.4-23.7, median 6 years).

Incidence of ARF: Incidences of known and suspected cases of ARF under age 20 were estimated for 1984-1993, using 1991 census figures. The crude estimate of annual incidence for this age group and period is between 78/100,000 and 107/100,000 with a mean of 13 new cases per year (range 11-15).

Discussion

Aboriginal Australians are known to suffer from high rates of rheumatic fever and rheumatic heart disease [1,4,5,6,7]. This study underscores the need for improved access to health care and secondary prophylaxis for those with histories of RHD. Although many cases of chronic RHD were diagnosed with no known history of an acute episode, the high rate of recurrence suggests that delivery of and compliance with prophylaxis is poor. Many subjects in this study were highly mobile, adding to the difficulty in maintaining good prophylaxis and good clinical histories. The nature of the documentation of initial onset of ARF and subsequent recurrences made it difficult to meet the Revised Jones Criteria in many cases. Any estimate of incidence and prevalence offered in this study will certainly be lower than the actual rates.

It has been noted in other studies of RHD in Aboriginal populations that females are more frequently diagnosed than males [4,5]. The mean age of first diagnosis in this study was higher than expected at 16.9 years (median 13.5). The most likely explanation is that many initial episodes of ARF in this sample were undiagnosed or undocumented and what appeared to be a first occurrence was often in fact a recurrence.

The crude RHD point prevalence for the Top End Aboriginal population (8.9/1000) in this study, is similar to rates reported from other underprivileged populations, and much higher than in Japan and the United States (Table 1). The rate we are reporting is over twice the value of an earlier hospital-based study in the NT (4/1000). Table 1 also shows that the RHD prevalence in East Arnhem is among the highest ever reported in the world (note that our figures cite the prevalence rate for all age groups, whereas the other figures cited in Table 1 are for school-age children only). The prevalence figures in our report are only preliminary, and are certain to rise as the study is completed.

The mean age of our population at the time of surgery, 26.4 years (median 24.6), parallels that of a large South African study of RHD valve surgery with a mean age of 27 years [10]. In that study, mitral valve lesions were

present in 58% of the patients under age 20, and mitral valve replacement was performed on 76% of the subjects across all ages. In the NT, mitral valve replacement accounted for 64% of the surgeries for RHD. MacDonald and Walker in 1984 reported the mean time interval from the diagnosis of acute rheumatic carditis to surgery in the NT was five years (n=6). In our 48 cases of surgery, the known mean interval was 6.8 years.

During our study we found many patients had become lost to follow-up and/or prematurely ceased penicillin prophylaxis. Lack of continuity of care is due in part to frequent changes in health centre staff, lack of a standard practice protocol for the management of patients on prophylaxis and understaffing in health centres which experience constant, high volume patient load with acute presentations. It is hoped that the problems of individual patient care will be partly alleviated by the patient-reports generated by this project and that the incidence and prevalence figures will provide support for appropriate levels and distribution of health-care resources.

Table 1. Reported prevalences of RHD. 1,3,8,9

Location	RHD prevalence (per 1000 population)
Soweto, South Africa	6.9
India	6-11
New Zealand Maori	7.6
Raratonga, Cook Islands	18.6
La Paz, Bolivia	17
Iran	22
Top End Aboriginal	8.9
East Arnhem Aboriginal	11.6
Japan and United States	0.05

Summary

We have reported the largest known study of ARF/ RHD in an Aboriginal Australian population. The study is ongoing, and the final data will show higher incidence and prevalence rates than those presented here. Preliminary results confirm that RHD is a major health problem in the Top End of the NT with rates over 70 times higher in the Aboriginal than the non-Aboriginal population. Crude incidence of ARF from 1983-1993 under age 20 in the Aboriginal population was estimated as 78-107/100,000 (or 0.78 -1.07/1000) with crude prevalence between 6.9-11.6/1000. East Arnhem region has one of the highest rates of RHD reported in the world. In the Top End, 253 subjects to date have been found to have chronic rheumatic heart disease with more than one-half of these diagnosed as moderate to severe. Community-based health initiatives and education programs are needed to improve treatment rates for GAS-related illness and to enhance secondary ARF prophylaxis delivery and compliance.

References

1. MacDonald K.T., Walker A.C. Rheumatic heart disease in Aboriginal children in the Northern Territory, *Med. J. Aust.* 1989; 150:503-505
2. Van Buynder P.G., Gaggin J.A., Martin D. et al., Streptococcal infection and renal disease markers in Australian Aboriginal children, *Med. J. Aust.*, 1992; 156:537-540
3. WHO Study Group on Rheumatic fever and rheumatic heart disease, *Technical Report#764, WHO Geneva,* 1988:1-58
4. Brennan R.E., Patel M.S. Acute rheumatic fever and rheumatic heart disease in a rural Central Australian Aboriginal community, *Med. J. Aust.*, 1990; 153:335-339.
5. Patten B.R. Rheumatic fever in the West Kimberley, *Med. J. Aust.*, Spec. Suppl. 1981:11-15
6. Neilson G., Streatfield R.W., West M. et al., Rheumatic fever and chronic rheumatic heart disease in Yarrabah Aboriginal community, North Queensland, *Med. J. Aust.* 1993; 158:316-318
7. Currie B. Medicine in Tropical Australia, *Med. J. Aust.* 1993; 158:609-615
8. Agarwal B.L. Rheumatic heart disease unabated in developing countries, *Lancet 1981;* 2:910-911
9. Haffejee I. Rheumatic fever and rheumatic heart disease: The current status of its immunology, diagnostic criteria and prophylaxis, *Quart J. Med.* new series, 1992; 305:641-658
10. Marcus R.H., Sareli P., Pocock W.A. et al., The spectrum of severe rheumatic mitral valve disease in a developing country, *Ann Intern Med.* 1994; 120:170-183

Standard of Care for Rheumatic Fever, Rheumatic Heart Disease in Aboriginal Communities.

Bart Currie, Menzies School of Health Research and Royal Darwin Hospital.

The preceding article documents the magnitude of the morbidity from rheumatic heart disease (RHD) in rural Aboriginal communities. In January this year there were two documented deaths in young Top End Aboriginals from known severe RHD.

Extensive international public health literature on RHD clearly tells us that:

1) the incidence of acute rheumatic fever (ARF) correlates with household crowding.
2) appropriate penicillin therapy (i.e. 10 days of 'blood levels' of penicillin such as from single dose I.M. benzathine penicillin G (BPG) for group A streptococcus (GAS) pharyngitis will prevent subsequent ARF.
3) unfortunately, the majority of ARF cases in tropical regions follow *sub*clinical GAS pharyngitis.
4) people with past ARF are at substantially increased risk of recurrent ARF.
5) secondary prophylaxis for recurrent ARF in those with past ARF dramatically decreases recurrent ARF and the development of progressive RHD.
6) The drug of choice for secondary ARF prophylaxis is BPG.

Given the above, the following are recommended as appropriate documentation of reasonable standard of care for each patient with ARF and/or RHD.

1) **Initial date of diagnosis and whether:**
   i) confirmed (by modified Jones criteria) ARF
   ii) suspected ARF or
   iii) established RHD.
2) **Specific valves affected if any.**
3) **Current valve and cardiac status (which is revised yearly).**
4) **Current medications and doses and documentation of BPG usage.**
5) **Proposed time for next District Medical Officer review.**
6) **Proposed time for next specialist review (for the majority this will be yearly).**
7) **Proposed date for cessation of secondary prophylaxis with BPG assuming further episodes of ARF do not occur. A guide for this is given in Antibiotic Guidelines and for many people with evident valve disease this could be 35 years of age.**

The current recommended dose of BPG for secondary ARF prophylaxis is 1,200,000 units (900mg) for adults. The WHO recommends 600,000 for those <30kg (Antibiotic Guidelines recommends 600,000 units for those <27kg). However recent data and experience (and the American Heart Association) now suggest 1,200,000 units for all children, especially if a four-weekly I.M. regimen is being used as it is in most of the Northern Territory. Even higher doses of BPG and/or more frequent dosing (e.g. three-weekly) are alternatives being studied.

For the present a minimum of 1,200,000 units BPG at least four-weekly should be the aim for *all* those on secondary prophylaxis.

Unlike most of the rest of the world (particularly those countries with high prevalences of RHD), a 1,200,000 units preparation of BPG is not currently available in Australia. We have to use either 2 vials of 'Bicillin AP' (each containing 600,000 units BPG) or 2ml from the 4ml (2,400,000 units BPG) 'Bicillin LA' syringe which is devised for syphilis therapy with an 18 gauge needle. Most commonly 2ml from the 'Bicillin LA' is transferred into another syringe and a smaller needle attached. This state of affairs reflects a failure of public health in Aboriginal communities and is one of a number of "clinical" public health issues where we have neglected to seek and adapt appropriate international health experiences. The manufacturers of BPG thought the high usage of 'Bicillin LA' in Aboriginal communities was all for syphilis (i.e. appropriate 4ml BPG doses). Having ascertained the need for 2ml BPG formulations, they are hoping to make these available in Australia in the near future.

Implementing appropriate standards of care for ARF/ RHD has considerable resource implications for community clinics which are usually understaffed and are often experiencing a high volume patient load with many acute presentations. However secondary ARF prophylaxis, appropriate medications and possible valve surgery are critical for those with moderate to severe disease and can dramatically improve quality of life as well as prevent death. Although a 'single-issue', for many of those 253 people in the Top End with known established RHD (and there are probably another 50 currently undiagnosed) it is their single most important health problem. Finally, the lesson from international and the wider Australian experience is that improved housing and living conditions will go a long way to eradication of ARF/RHD.

Review of article "Adult Immunization 1994"

by Task Force on Adult Immunization, American College of Physicians,
1 Oct. 1994, Annals of Internal Medicine Vol 121 No 7 p 540-541

Vicki Krause DCC, Darwin

In the United States of America (USA) yearly death rates from potentially vaccine preventable infections exceed those from automobile crashes and AIDS with an estimated 50,000 to 70,000 deaths from pneumococcal disease, influenza or hepatitis B. The current use of vaccines in targeted adult groups is only 40% for influenza, 20% for pneumococcal and 10% for hepatitis B infection. Hepatitis B infection has the distinction of being the only disease with an incidence that *increased* during the decade after a highly effective vaccine was introduced.

The American College of Physicians Task Force on Adult Immunization has made the following recommendations:

1. *Age 50 years should be a time for review of preventive health measures, with special emphasis on evaluating risk factors that would indicate a need for giving pneumococcal vaccine and initiating annual influenza immunization.*

Almost one third of Americans aged 50 to 64 years have risk factors for invasive pneumococcal disease, yet fewer than 10% of those with risk factors have received the vaccine.

2. *Persons who receive pneumococcal vaccine before age 65 years because of their risk factors should be reimmunized at age 65 years, provided at least 6 years have passed since they received the first dose of pneumococcal vaccine.*

After primary immunization, antibody levels and protective efficacy gradually wane, and hypersensitivity reactions do not increase in persons reimmunized after six years. (In Australia the NH&MRC recommends reimmunization every five years). Although the boosting of immunity with repeated doses of polysaccharide vaccines is suboptimal, reimmunization is the most prudent policy pending the development of improved (conjugated) pneumococcal vaccines.

3. *Special emphasis should be given to ensuring that all adults have completed a primary immunization series with tetanus and diphtheria (Td) toxoids, followed by a single midlife Td booster at age 50 years for persons who have completed the full paediatric series, including the teenage/young adult booster. The recommendation for Td boosters as part of wound management is unchanged.*

This is an equivalent alternative strategy to the current recommendation for routine tetanus and diphtheria boosters every 10 years. Most patients with tetanus (40 to 60 cases per year) and diphtheria (0 to 5 cases per year) in the USA have not completed a primary series of immunization with the tetanus and diphtheria toxoids. The primary series consists of three injections given at two month intervals. Epidemiological evidence indicates long-term protection after primary immunization and an excellent booster response to Td after intervals as long as 35 years. Once fully immunized, frequent routine boosters are not cost-effective.

4. *The use of amantadine-rimantadine prophylaxis for influenza A should be more cautious.*

Many physicians have expressed concern about adverse neurologic reactions to amantadine in the elderly patients. Rimantadine is expected to be better tolerated.

5. *Serologic response to hepatitis B immunization should be assessed in all vaccine recipients older than 30 years.*

Seroconversion rates diminish with age.

Comment

In the USA fewer than 500 persons die of vaccine preventable diseases in childhood - this is in sharp contrast to the 50,000 to 70,000 adults who die yearly from influenza, pneumococcal infection and hepatitis B[1] Vaccine preventable diseases therefore remain important causes of death and of costly hospitalization especially among adults and should not be ignored.

In the USA 98% or more of children are fully immunized at school entry. It has been recognized that there are pockets of underimmunized children under two years of age and programs are being put in place in the USA to address this problem.[1] In Australia childhood immunization is being systematically addressed and supported by the National Immunization Strategy. Adults, however, with their heavier burden of disease seem to miss out. Although adult vaccines are recommended they have not been widely used. Fedson[1] offers the following reasons in explanation:

1. There is a limited perception on the part of both health care providers and the general public that adult vaccine-preventable diseases are significant health problems.

2. There are doubts in the minds of some health care providers and the public about the efficacy and safety of several of the vaccines used for adults.

3. Adult immunization is selective not universal; different vaccines have different target groups.

4. The sizes of the adult target populations for individual vaccines vary and for some vaccines are much larger than the target population for childhood vaccination.

5. Unlike the childhood vaccination schedule that must be completed if children are to enter school (in the USA) or at least documented in some parts of Australia, there are no statutory requirements for adult immunization.

6. Unlike the child health care practices in most communities, there are few programs in either the public or private sectors for vaccinating adults.

7. Reimbursement for adult immunization has traditionally been neglected by both government and private insurers.

We know in the NT, the incidence of invasive pneumococcal disease is very high - especially in Aboriginal people.[2,3,4] Pneumococcus is responsible for 40% of community acquired bacteremic pneumonia in adults admitted to Royal Darwin Hospital with a mortality of 21%[2]. Currently there are well defined and accepted risk factors for invasive pneumococcal disease and people with any of these risk factors are recommended for pneumococcal vaccination. Preliminary analysis of adult cases in the Top End suggests that the majority of cases had at least one of these risk factors[3] and the Central Australian study reports 62% had at least one conventional risk factor for pneumococcal disease[2] (see letter below).

1. Fedson, D. Adult Immunization - The National Vaccine Advisory Committee *JAMA* Vol 272 No 14 Oct 12, 1994 p 1133-1137

2. Torzillo, P., et al. Invasisve pneumococcal disease in Central Australia *MJA* Vol 162 20 Feb. 1995 p.182-186

3. Currie B. et al 1994 Community acquired bacterium pneumonia in tropical Northern Australia (Abstract) *Inter Soc Inf Dis Prague.* May 1994.

4. Connors, Christine, Pneumococcal Vaccine - Who needs it? *The Northern Territory Communicable Diseases Bulletin* Vol 2, No 2 Jan 1994 p 1-2.

Dear Health Care Professional,

Re: Pneumococcal vaccine

Streptococcus pneumoniae is a common cause of pneumonia, meningitis and bacteremia. Pneumococcal vaccine is effective in reducing both morbidity and mortality in people at high risk of pneumococcal disease in the Northern Territory.

The vaccine is *grossly* underutilised both nationally and locally. The NHMRC has recommended vaccinating 'at risk' groups for many years, but many health professionals are still unaware of these recommendations. Vaccination should be occurring in community settings but the opportunity to vaccinate 'at risk' hospital patients at discharge should be utilised.

Pneumococcal disease is a vaccine preventable cause of illness and death.

Some facts about pneumococcal disease in the Northern Territory.

- The Northern Territory has the highest incidence of pneumococcal disease nationally
- Pneumococcus causes 40% of adult community acquired bacteremic pneumonia
- Alcohol abuse is the most significant risk factor (both Aboriginal and non-Aboriginal people)
- Aboriginal adults have a greatly increased risk of acquiring the disease and dying from it
- Adult mortality is up to 20%, with 32% of all adult cases requiring intensive care
- Multiresistant strains are increasing internationally and have been documented in the NT

Pneumococcal vaccine is recommended for adults and children over two years of age with the following risk factors:

- **Chronic illness:**
  - **alcohol abuse**
  - **chronic lung disease**
  - **chronic liver disease**
  - **chronic renal failure**
  - **diabetes**

- **Elderly healthy adults:**
  - **Aboriginal adults older than 50 years**
  - **Non-Aboriginal adults older than 65 years**

- **Previous invasive pneumococcal disease**

- **Anatomic or functional asplenia**

- **Immunocompromised:**
  - **HIV, lymphoma, multiple myeloma**
  - **organ transplant with immunosupression**
  - **nephrotic syndrome**

- **Surgically incorrectable cerebrospinal fluid leaks**

Aboriginal children with recurrent pneumonia (i.e. two or more episodes) should be considered for pneumococcal vaccine.

Vaccination is given as a once only dose (0.5 ml) subcutaneous or intramuscular to all risk groups, except those patients who are immunocompromised or with asplenia who require booster doses at five (5) yearly intervals. Local tenderness at the injection site is common, usually lasting less than 48 hours. Low grade fever occurs occasionally. Serious side effects are extremely rare.

Children younger than two years produce less effective response to the vaccine, but do produce antibodies to some serotypes. Although the vaccine is not recommended routinely for children under two years it may be indicated in individual circumstances.

Note that many of the risk groups are the same as for influenza vaccine (Fluvax) and the vaccines can be given simultaneously at different sites.

Hospital pharmacies (and at present in Katherine, the DCC) maintain a data base of previously vaccinated people. This allows checking of previous vaccination to minimise duplication. The use of the vaccine in the NT has been so limited to date that only a few people have been vaccinated and undue concern about duplicate vaccination should not prevent vaccination now. A sticker will be sent with the vaccine to place on the inside front cover of the hospital record. Please record the date given on the discharge letter. This will assist information flow between hospital and community, and minimise multiple vaccinations.

Many people in the risk groups are admitted to hospital and this opportunity should be used to maximise vaccination. Hospital staff should assess patients prior to discharge to determine if they need pneumococcal vaccine. Likewise community doctors, nurses and health care workers need to access their chronic disease register's information to determine appropriate pneumococcal vaccination lists and continually assess individual patients to identify their risk factors for vaccination.

Dr Vicki Krause
Director Disease Control

Australasian Society for Infectious Diseases
Annual Scientific Meeting
at the Beaufort, Darwin
May 21-24 1995

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Errata

Vol 2, No 4 December 1994, p.17.

Doctor/Hospital Notification of Infectious Disease' form

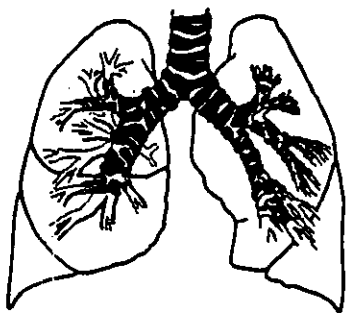
Darwin facsimile number should read 22 8310.

DISEASE CONTROL CENTRES

Alice Springs	**Ph 51 7550 (Fax) 51 7555**
Barkly	**Ph 62 4259 (Fax) 62 4207**
Darwin	**Ph 22 8044 (Fax) 22 8310**
East Arnhem	**Ph 87 0282 (Fax) 87 0355**
Katherine	**Ph 73 8795 (Fax) 73 8573**

Disease Control

MARCH 1995



PNEUMOCOCCAL DISEASE

A VACCINE PREVENTABLE CAUSE OF ILLNESS AND DEATH

Indications for pneumococcal vaccine
All children older than two (2) years and adults in the following risk groups:

Chronic illness: **alcohol abuse**
chronic lung disease
chronic liver disease
chronic renal failure
diabetes

- **Elderly healthy adults:** **Aboriginal adults older than 50 years**
  Non-Aboriginal adults older than 65 years

- **Previous invasive pneumococcal disease**

- **Anatomic or functional asplenia**

- **Immunocompromised :** **HIV**
  lymphoma
  multiple myeloma
  organ transplant with immunosuppression
  nephrotic syndrome

- **Surgically incorrectable cerebrospinal fluid leaks**

Vaccination is given as a ~~once only dose~~ (0.5 mL) subcutaneous ~~or~~ intramuscular to all risk groups,except those patients who are immunocompromised or with asplenia who require booster doses at five (5) yearly intervals.

Local tenderness at the injection site is common, usually lasting less than 48 hours. Low grade fever occurs occasionally. Serious side effects are extremely rare.

Note that many of the risk groups are the same as for "Fluvax" and the vaccines can be given simultaneously at different sites.

Northern Territory Government

NT DEPARTMENT OF HEALTH AND COMMUNITY SERVICES

Barcoo Rot

Jan O'Neill, Barkly Mobile

Barcoo Rot is a term commonly used on the Barkly Tablelands of the Northern Territory to refer to a skin ulceration often thought to be caused by *Corynebacterium diphtheria*. Other terms used elsewhere in Australia and overseas are "desert sore" and 'veld fever or sore'.

After commencing in my present position as rural health nurse (Barkly Mobile) in March 1992 I discovered that Barcoo Rot (cutaneous diphtheria) was a common complaint of jackaroos and accounted for the administration of seven individual courses of penicillin on one cattle station in two months (according to 'medicine book').

It must be said from the start that attempting to culture diphtheroids is almost impossible from a mobile health service point of view. We are unable to swab and transport to Tennant Creek and onto Alice Springs within 48 hours. Therefore the diagnosis of Barcoo Rot is mainly presumptive, based on the experiential knowledge of long term cattle station people and the presentation of an ulcer as described by Canizares and Harman[1] Champion et al[2] and Wilcocks and Manson-Bahr[3]. Barcoo Rot only seems to effect young jackaroos. It is assumed that children have childhood vaccine immunity for diphtheria and older people have gained additional immunity from past infection or have been given ADT (adult diphtheria-tetanus) as part of treatment for trauma.

In the past, Barkly Mobile had conducted education sessions on Barcoo Rot but these focused on treatment rather than prevention. At the beginning of each season on the stations ADTs are offered but the focus had been on the tetanus toxoid component rather than the diphtheria toxoid. Most jackaroos begin at the age of 17-18 years of age so were not presenting for immunisation because it was assumed that they had the injection at 15 years of age at school. It has now been discovered that whilst it is policy in all states to offer ADT at 15 years, not all people have been in a position to access the immunisation. Nor is it clear that if an injection was given whether or not it contained a diphtheria toxoid component.

During the latter half of 1992 Barkly Mobile began to focus on the diphtheria toxoid part of ADT pointing out to clients that immunisation against diphtheria may decrease the incidence of Barcoo Rot. From July 1992 approximately 80 ADT immunisations have been administered to cattle station people on the Barkly Tablelands.

Towards the end of 1993 people on the Tablelands began to comment on the drop in cases of Barcoo Rot. Other factors such as sharing bath and dish washing water on stock camps (which has been suggested as a mode of transmission) have not changed. In addition, companies with stations in Queensland have noticed a drop in cases in the Barkly but not in Queensland.

Although not proven scientifically in this instant that an adult booster of diphtheria toxoid decreases the incidence of cutaneous diphtheria, experiential knowledge would suggest it to be the case.

It would appear that diphtheroids are prevalent in the Central Australian area as suggested by Patel et al[4]. It would be an interesting exercise to see if the findings of Montgomery in Papua New Guinea[5] of diphtheroids as an organism in infected scabies lesions is also a problem in the Northern Territory.

References

1. Canizares, O. and Harman, R. (Eds.) *Clinical tropical dermatology* Blackwell Scientific Publications. London, 1975 pp 231-232
2. Champion, R., Burton, J. et al.. *Textbook of dermatology* Blackwell Scientific Publications, London, 1992 pp 995-996
3. Wilcocks and Manson-Bahr 19th Ed. *Manson's Tropical diseases* Bailliere Tindall, London, 1976 pp 718-719.
4. Patel, M. et al. "The frequent isolation of toxigenic and non-toxigenic corynebacterium diphtheria at Alice Springs Hospital" *Communicable Diseases Intelligence.* June 1994 18(13), pp 310-311.
5. Montgomery, J. (1985). "The aerobic bacteriology of infected skin lesions in children of the Eastern Highlands Province". *Papua New Guinea Medical Journal* 28(2), 1985 pp 93-103.

EDITORIAL

The term 'Barcoo' is an interesting one. The Australian Concise Oxford Dictionary[1] couples the term Barcoo to the word 'buster' to describe a violent electrical storm, to 'grass' to describe Queensland pasture grass, to 'salute' to describe the Australian salute (i.e. waving flies), to 'spew' to describe an illness marked by

attacks of vomiting, to 'River' to name a river in western Queensland and to 'rot' to describe a chronic ulceration of the skin. The ulcer is usually on the leg and found in hot desert conditions as well as tropical areas, hence the term 'jungle sore'. It was reported in the South African war and both World Wars, especially in men associated with horses and camels.[3]

Diphtheria infections usually occur in the upper respiratory tract but occasionally extra -respiratory tract infection occurs such as in the conjunctiva and, as in Barcoo Rot, the skin. The three types of skin involvement are:[2]

1. ***Secondary infection*** of a pre-existing wound in temperate as well as tropical climates. A purulent exudate is present and the lesion is partially covered by a membrane and surrounded by redness.

2. ***Primary cutaneous diphtheria*** which is rare and begins as a tender pustule usually on a lower limb. The pustule necroses and turns into a punched out ulcer, the base of which is covered by a grey-brown membrane. This occurs most often in the tropics.

3. *C. diphtheriae* ***superinfection*** in pre-existing skin lesions such as impetigo, ecthyma-eczema or insect bites infected with streptococci or staphylococci.

The clinical diagnosis is based on the characteristic appearances as described above, often with regional lymphadenopathy. Tropical ulcers are usually deeper and Buruli ulcers *(Mycobacterium ulcerans)* have undermined borders. The rare genital lesions which occur must be differentiated from sexually transmitted diseases, especially chancroid.[4]

It is reported that in 40% of people with cutaneous diphtheria, *C. diphtheriae* can be isolated from their respiratory tract. Cardiac or neurological sequelae from diphtheria toxin are much less common following cutaneous diphtheria (i.e. in less than 5% of patients) than from diphtheria involving the respiratory tract.

In the USA from 1972-1982 there were outbreaks of diphtheria in Seattle's skid row totalling over 1000 cases of which 86% were cutaneous. In addition to alcohol, risk factors for disease included streptococcal pyoderma and other underlying skin disorders, poor hygiene and crowded living conditions.[5]

Resistance to clinical diphtheria is gained by having adequate levels of circulating antitoxic antibody. This is achieved by adequate and up-to-date childhood immunization followed by boosters of ADT (adult diphtheria tetanus) every ten years for older children and adults. Active immunization prevents diphtheria or causes a much attenuated disease. Immunization does not prevent nasopharyngeal or cutaneous carriage.[2]

References

1. Sykes J.B. (ed.) *The Australian Concise Oxford Dictionary 7th Ed.* Oxford University Press Melbourne 1987 p.76
2. Rubenstein, E. and Federman D. (eds.) *Scientific American Medicine;* Scientific American Inc. New York loose-leaf 1994 7 Inf Dis IV p2-5
3. Wilcocks & Manson-Bahr Mansons (eds.) *Tropical Diseases 19th Ed.* Bailliere, Tindall London, 1976 p. 718-719
4. Canizares O. and Harman R. (eds.) *Clinical Tropical Dermatology,* Blackwell Scientific Publications, London 1992 p232
5. Harnisch J.P., Tronca F., Nolan C.M. et al, Diphtheria among alcoholic urban adults: a decade of experience in Seattle. *Ann Intern Med* 111:71, 1989.

Complications of BCG Vaccine in a Central Australian Community

Jennifer Rossiter, DCC Alice Springs

In 1989 a mass TB screening program was undertaken in the communities west of Alice Springs. Those children under the age of fourteen who were found to be Mantoux negative (0-9mm) were given BCG vaccination. An unusually high incidence of BCG complications was noticed which resulted in review of the BCG policy.

The region identified for TB screening had been chosen by the community physician because there had been 15 new active TB cases over the previous eight years. The communities included were considered at high risk of TB because of the:

- high incidence rate of disease over the previous eight years
- high prevalence of diabetes (greater than 15% of the adult population) with the recognition that diabetes increases by ten the chance of progress to TB disease, once infected
- identified high rates of alcohol consumption

The TB screening included chest x-rays for adults and Mantoux tests for children under 14 years of age. Those children with a negative Mantoux result (defined as 0-9mm) were to be given a BCG vaccination. Consistent

with the policy of the time there was no restriction on the total number of BCGs a child or adult could be given in a lifetime. The vaccine providers were rural clinic nursing staff assisted by communicable disease officers (nurses).

Following the BCG vaccination of 30 children at a 140 member community, eight children had local ulceration and abscess at the administration site and gave a history of recurrent breakdown. After five months three required referral to a general surgeon and a decision was made to excise the recurrent abscesses.

The then current policy came under review and several policy changes were made which included:

1) The neonatal BCG dose was reduced from 0.075 ml to 0.05 ml.
2) Only neonates considered at high risk are offered BCG i.e. Aboriginal infants, neonates of mothers from developing countries, or neonates of parents with leprosy.
3) BCG's are restricted to no more than two in a lifetime and only where clearly Mantoux negative (i.e. less than 5mm).
4) The school BCG program was stopped and BCG restricted to at risk children under five years of age.

Half of all babies born at the Alice Springs Hospital are Aboriginal infants. Provided they are well and thriving and weigh at least 2000 grams, they are given BCG vaccination at 48 hours post delivery. Recent studies indicate that the uptake of the BCG vaccine is as high as 95%. Since the above policy changes were made in early 1991 there have been no BCG related abscesses requiring excision.

EDITORIAL

In February 1991 amendments were made to the NT Immunisation Guidelines relating to BCG as noted above. BCG vaccination is no longer administered to the general population by way of the school BCG program - but is limited to infants of high risk populations. BCG does not prevent infection with *Mycobacterium tuberculosis* but limits extension of the infection and thereby is accepted as useful in preventing life-threatening tuberculous meningitis and miliary TB in children. The NT was the last State/ Territory to stop its school BCG program.

Over the years 1991-1994 the non-Aboriginal, non-migrant TB incidence rate has been very low, ranging from 0.9 to 5/100,000. Over the same time period the Aboriginal rate ranged from 33 to 58/100,000 and the migrant rate from 25 to 42/100,000 respectively.

Infants from Aboriginal and migrant populations are presently recommended for BCG vaccination. Infants born *in* Australia *of* migrant parents however, may not necessarily have a higher incidence of TB and therefore would not benefit from BCG. This is presently being evaluated.

BCG vaccination complicates the reading of the Mantoux test making it difficult to assess whether *M. tuberculosis* transmission has taken place and if isoniazid preventive therapy would be useful. It is important therefore to continually monitor the risk-benefit ratio and the complications or adverse reactions associated with BCG use in these high risk populations.

BCG adverse reactions are associated with the dose, BCG strain used and the training given to health staff administering the BCG. Therefore:

1) A reduced dose is now used for infants.
2) Commonwealth Serum Laboratories (CSL) no longer manufacture BCG for Australia, so monitoring of the "new strain" from the new supplier will be important .
3) The NT Vaccine Providers Course will standardise immunisation procedures and provide training for BCG administrators.

A BCG adverse reactions register is currently kept in the NT and is necessary in reviewing the policy and making appropriate recommendations.

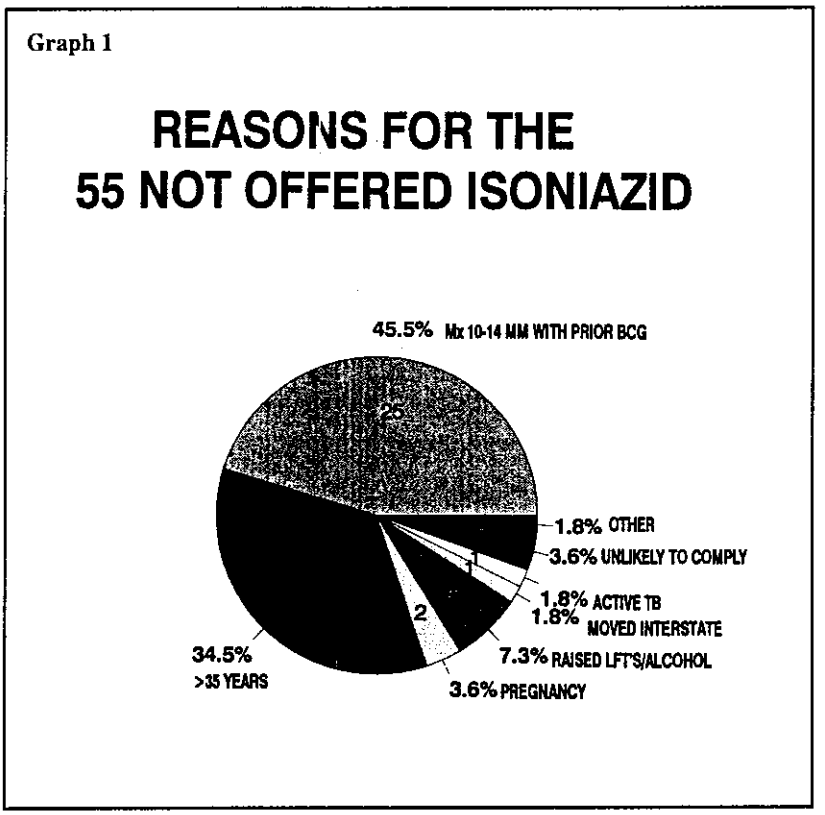
The Success of Preventive Treatment and Follow-up of Mantoux Positive TB Contacts in an Aboriginal Community

Terry O'Brien, Vicki Krause DCC Darwin, Marnie Fraser, Darwin Rural

Maningrida is a coastal Arnhem Land community in the Darwin Rural District with a population of approximately 2200 and a history of high rates of tuberculosis (TB). There have been 66 TB notifications from Maningrida in the years 1967 to 1993. This represents an average 2.4 TB notifications per year, giving a crude yearly incidence of 150/100,000. Looking at the more recent years from 1989 to 1993 there were

a total of 12 TB notifications from Maningrida (8 nodal, 3 pulmonary and 1 spinal). The Northern Territory (NT) incidence rate in 1989 was 40/100 000 representing 63 total cases and the Aboriginal rate was 114/100 000 representing 42 cases. In 1993 the NT incidence rate was 18/100 000 representing 31 cases and the Aboriginal rate was 58/100 000 representing 23 cases.

Graph 1



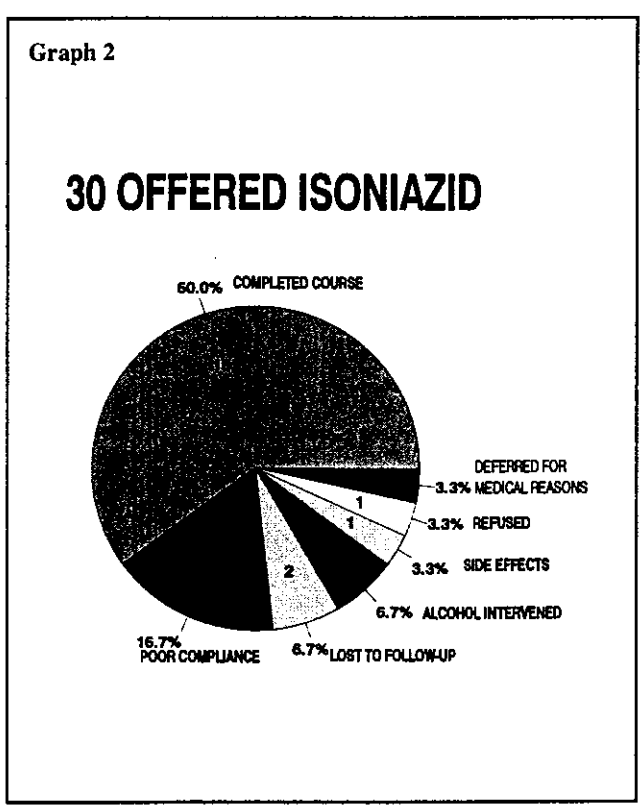
The aim of this study was to look at all Mantoux positive (MX>9mm) TB contacts who were identified from 1989 to 1993 to assess their follow-up with specific attention to the appropriateness, acceptance and compliance of contacts placed on preventive therapy. Preventive therapy was defined as isoniazid for six months given either three times weekly fully supervised or daily with supervised weekly dosette boxes. Of the 230 Mx's performed on contacts, 85 were Mx positive. All 85 Mx positive contacts were chest x-rayed, clinically reviewed and assessed as to their appropriateness for preventive therapy. Isoniazid was offered to 30 of the 85 Mx positive contacts.

In general, isoniazid preventive therapy is offered to known new Mx converters of any age and to those under 35 years old with a Mx>9 without a prior BCG and Mx>14 with a prior BCG. It is not offered to pregnant women or in the post partum year or to women desiring pregnancy. It is not offered to those with liver disease, those with repeated elevated LFTs or to those not desiring to decrease or stop alcohol intake. Initial LFTs are taken and not repeated after therapy begins unless the patient is greater than 35 years old, known to be drinking heavily or has side effects.

The 55 not offered isoniazid (see Graph 1) included 25 with Mx's of 10 mm - 14 mm and prior BCG, 19 who were greater than 35 years of age, two found to be pregnant and four found to have raised LFTs. The five remaining included: one with active nodal TB requiring full treatment, one desiring pregnancy, two assessed to be unlikely to take the medication and one who moved interstate.

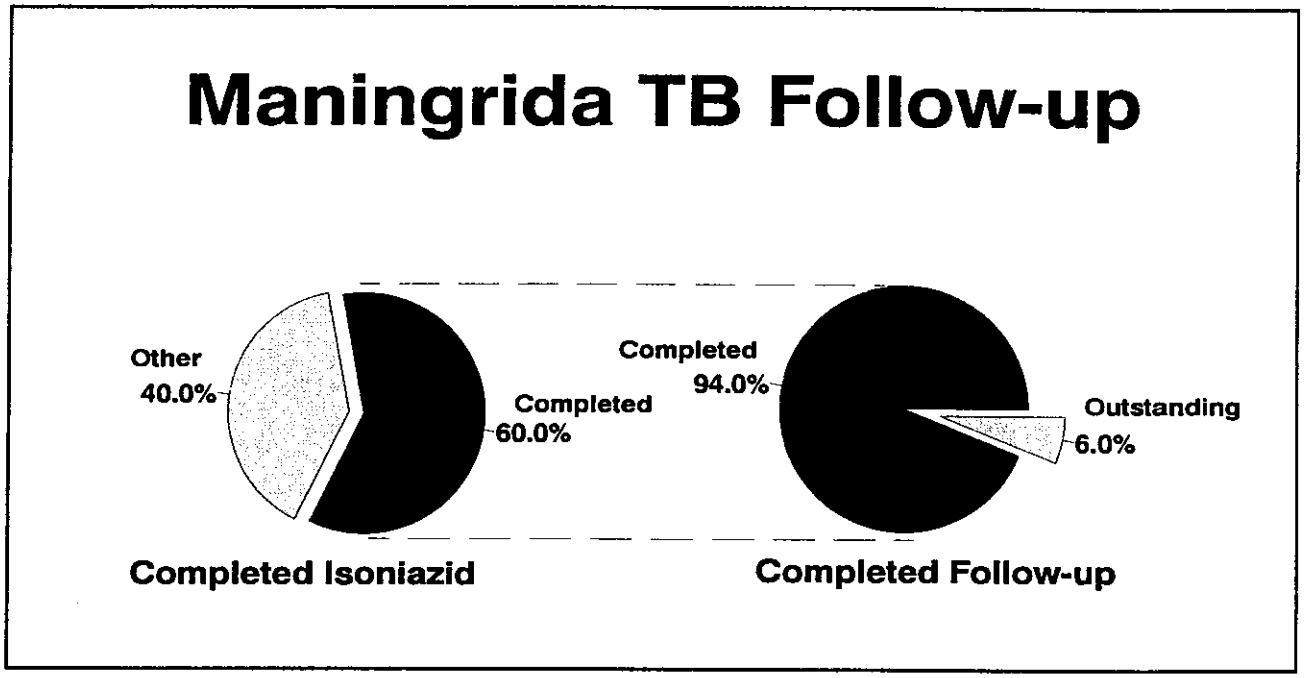
Of those 30 offered isoniazid (see Graph 2) 18 (60%) completed six months of preventive therapy. Reasons for not completing were: five had poor compliance, two refused, in two alcohol intervened, one was lost to follow-up, one deferred for intervening medical reasons and one stopped because of side affects (mild vertigo). The decision to stop treatment for poor compliance was made by the local health staff if there was more than one month medication missed on more than one occasion. Mild vertigo was the only identified side effect and this resolved on ceasing therapy.

Graph 2



Overall 95% of Mantoux positive contacts completed follow-up (see Graph 3), with the remainder still being reviewed. The results of this study have been encouraging and both the community and the health staff are to be congratulated for achieving excellent results in sometimes extraordinary circumstances.

Graph 3



Three Recent Cases of Dengue Fever Acquired in Indonesia

Angela Merianos and Vicki Krause DCC Darwin, Janine Spencer, Paediatric Registrar and Stephen Meredith, A & E, Royal Darwin Hospital.

A ten year old girl presented to A & E at Royal Darwin Hospital (RDH) on 28 January complaining of fever, chills, myalgia, headache and abdominal pain which had been present for seven to eight days. She had been diagnosed with dengue haemorrhagic fever grade 1 by positive tourniquet test (Hess test) and dengue blot test[1] two days earlier in Kupang, Timor, where she had been admitted to hospital for rehydration and observation. She had not experienced any spontaneous bleeding episodes. Her initial platelet count done on 26 January in Kupang was 200 x 10^9/L (normal range 150 - 450). In A & E she was febrile (39.6°C), tachycardic (PR 126/min) and had a petechial rash on the right arm at the site of the tourniquet test. The physical examination was otherwise unremarkable.

Initial investigations at RDH showed thrombocytopenia (platelet count 36 x 10^9/L) and positive dengue serology (dengue IgM detected and flavivirus haemagglutination inhibition (HI) titre >1:640). Other haematological (FBE and coagulation studies) and routine biochemical parameters were within normal limits. After review she was discharged from A & E for outpatient follow-up.

She was reviewed in outpatients on 31 January and her platelet count was still low (61 x 10^9/L). She reported one episode of epistaxis the previous day but there was no further evidence of bleeding and her coagulation studies were normal. Follow-up is ongoing.

A second case of dengue fever was diagnosed in a 27 year old male who also returned from Kupang (a five day trip). He was admitted to RDH on 18 January with fever, frontal headache, myalgia, nausea and diarrhoea, thrombocytopenia (platelet count 108 x 10^9/L and leucopenia (WBC 2.6 x 10^9/L)

His platelet count had returned to normal by 2 February. Additionally he had hookworm ova in his stools. The diagnosis was made when sera tested in parallel from 18 January 1995 and 2 February showed a seroconversion on flavivirus HI and dengue specific IgM.

A third case of dengue fever was diagnosed in a 26 year old female who travelled in rural Indonesia for two months. Two days after returning on 24 January she

was admitted to RDH with three days of fever, headache, myalgia, back pain, vomiting and diarrhoea, leucopenia (WBC 2.4 x 10^9/L) and a reported rash before admission. She had no spontaneous bleeding and a low but normal platelet count on admission which dropped to 74 x 10^9/L on 30 January. Her serology of 3 February showed flavivirus (Kunjin and MVE) HI > 1:640 and MVE IgM and Dengue IgM (FA) detected. The results show the cross reaction of flavivirus antibody. The infecting agent is 'chosen' based on the clinical presentation. She met the clinical case definition for dengue fever. She was discharged 3 February with normal (300 x 10^9/L) platelets. Additionally her stools were positive for *Salmonella livingstone.*

Comment

Dengue fever is caused by the flavivirus dengue virus, comprising four distinct serotypes (DEN 1-4).[2] Dengue viruses are closely related antigenically to other flaviviruses (Murray Valley encephalitis virus, Kunjin, Japanese B encephalitis virus, Edge Hill virus

and yellow fever virus) and ecologically to some viruses (yellow fever) via the common vector of transmission, the *Aedes aegypti* mosquito. *Aedes aegypti* is an urban mosquito which was cleared from the NT in the mid 1950s but has an extensive distribution worldwide including Queensland, PNG, SE Asia, the Pacific and India. It is the vector of both dengue and yellow fever in Africa and Central and South America.

Dengue infection causes a spectrum of disease ranging from subclinical infection to severe and fatal haemorrhagic disease. The incubation period is 3-14 days, usually 7-10 days. The following clinical case definition for dengue fever was used in the Queensland outbreaks:

High fever of sudden onset with five of the following signs or symptoms:

A

- retro-orbital pain
- bone pain
- myalgia
- abnormal bleeding episodes
- abnormal taste in mouth (metallic taste)
- macular or maculopapular rash or confluent petechial rash
- thrombocytopenia and leucopenia

or

B afrebile with a macular or maculopapular rash or confluent petechial rash, with a recent clinical history consistent with A.

The diagnosis is confirmed serologically or by virus isolation from appropriate specimens.

Infection with one dengue virus does not induce lasting protective immunity from infection with another serotype. Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS), the severe haemorrhagic manifestations of dengue virus infection, have been attributed to infection with a second dengue virus in the presence of pre-existing dengue antibody at sub-neutralising levels, and appears to be more common when DEN-2 is the second virus in the infection sequence. Both DEN-1 and DEN-2 have been isolated in Queensland.[3,4] In 1993, the first case of confirmed DHF since the re-emergence of dengue in Queensland in 1981 was reported in Charters Towers.[3] DHF and DSS occur most commonly in children under 15 years, and especially in those aged 5-9 years.[5]

Under the new NT notification requirements (1995), dengue fever is both a laboratory and clinical notification. International and interstate travel mean that NT doctors may see clinical cases of dengue in their practice. Obtaining a comprehensive travel history for the 14 days prior to the onset of symptoms and immunisation history of yellow fever vaccination is important for the interpretation of laboratory results and to determine what public health action should be taken by the Medical Entomology Branch and Disease Control. **If locally acquired fever is suspected, notification should be by telephone on the same day.** Entomological surveys will be carried out to exclude the reintroduction of the mosquito vector and control introduced species. Disease Control will assist doctors in contact tracing. The importance of taking a comprehensive travel history is crucial in the diagnosis of other exotic arbovirus infections as international travel increases.

References

1 World Health Organisation. *Dengue Haemorrhagic Fever: diagnosis, treatment and control.* Geneva: World Health Organisation, 1986.

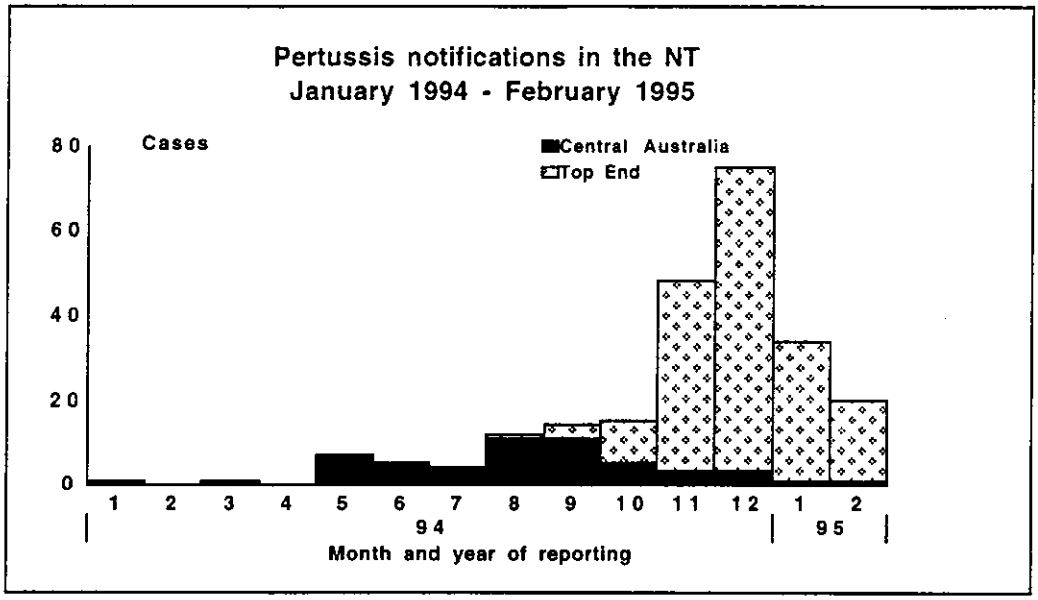
2 Gubler D.J. Dengue, In: *The Arboviruses: Epidemiology and Ecology.* Volume II. Monath T.P. (Ed.) Florida: CRC Press Inc., 1986.

3 Row D., Pearce M., Hapgood G., Sheridan J. Dengue and Dengue Haemorrhagic Fever in Charters Towers, Queensland, Comm Dis Intell 1993; 17:182-183.

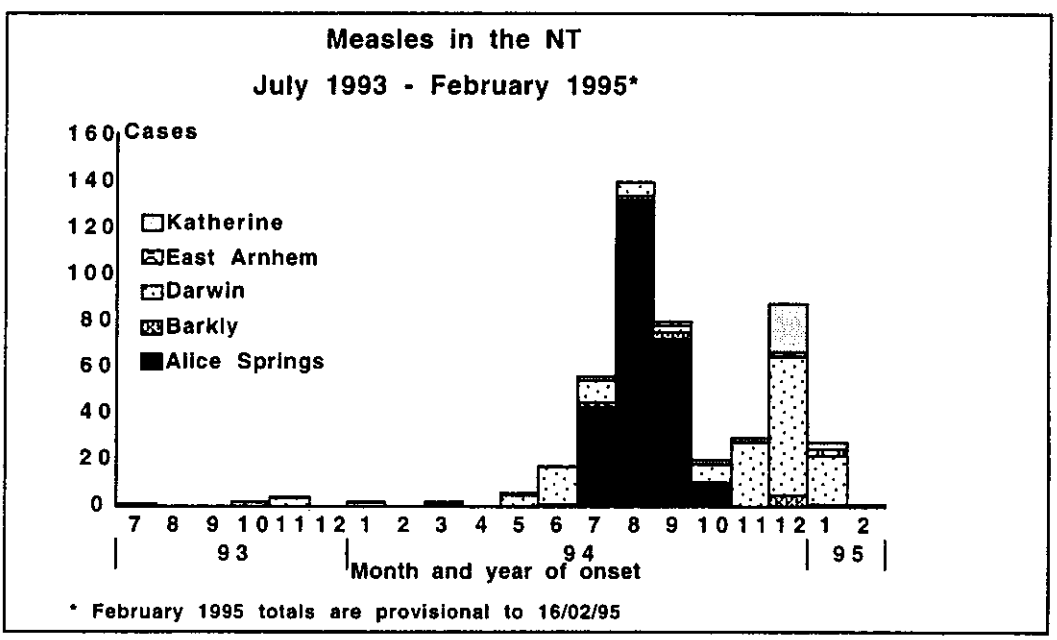
4 Streatfield R., Sinclair D., Bielby G., Sheridan J., Pearce M., Phillips D., Dengue serotype 2 epidemic, Townsville, 1992-93. *Comm Dis Intell* 1993; 17:330-332.

5 World Health Organisation. *Guide for diagnosis, treatment and control of Dengue Haemmorrhagic Fever, 2nd edn.* Technical Advisory Committee on DHF for the Southeast Asian and Western Pacific Regions, World Health Organisation, Geneva, 1980.

Update on Measles and Pertussis Outbreaks



Pertussis outbreaks have occurred nationally since 1993. The NT did not experience an outbreak until mid 1994. Pertussis is dependant upon both clinical and laboratory notification and it is probable that many clinically diagnosed cases have not been notified. Children under five years accounted for 23% of the cases. A number of young children were hospitalized but fortunately there were no deaths. A 5 th DPT at five years was introduced into the national and NT schedule in 1994 to boost immunity. In the NT however, only 60% of children have had their 4th DPT by two years. Therefore strategies are needed to improve vaccination rates at 18 months *in addition* to implementing the change to a 5th DPT at five years. Every opportunity should be taken to review and update the immunization status of a child whenever he or she presents to a health care provider.



Measles cases occurred in all districts of the NT in 1994, with Alice Springs district experiencing a large outbreak mid year. Measles is highly infectious and population vaccination rates of 95% are required to prevent outbreaks. Some remote communities have achieved this high rate, but the overall NT coverage at 2 years is only 76%. A second dose MMR for children 10 - 16 years was introduced nationally and in the NT in 1994. Of the notified measles cases in the NT 49% occurred in people 10 years and older, and the majority of these were in adolescents eligible for a second MMR. Further outbreaks of measles will only be prevented by increasing community vaccination rates at 2 years, and completing a catch- up second dose MMR for all eligible children 10 - 16 years, during 1995.

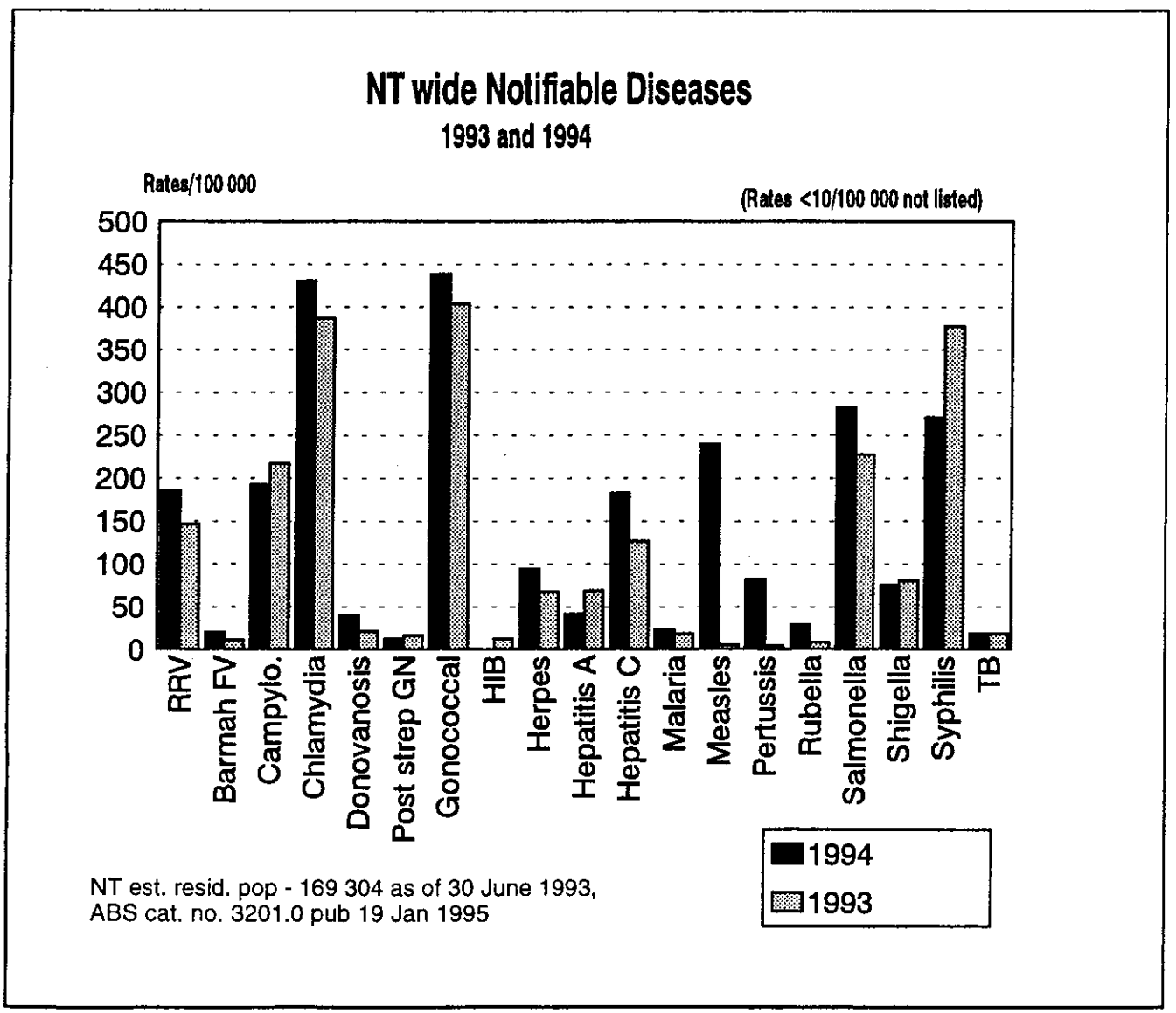
NT NOTIFICATIONS OF DISEASES BY DISTRICTS 1993 AND 1994

DISEASES	ALICE SPRINGS		BARKLY		DARWIN		EAST ARNHEM		KATHERINE		TOTAL	
	'94	'93	'94	'93	'94	'93	'94	'93	'94	'93	'94	'93
Acute Rheumatic Fever	0	0	0	0	6	0	0	0	4	6	10	6
Arbovirus infections												
Ross River Virus	1	12	0	31	268	149	23	27	21	28	313	247
Barmah Forest Virus	0	1	0	1	26	11	7	3	1	2	34	18
Dengue	0	0	0	0	5	4	0	0	1	0	6	4
Murray Valley Enceph	0	0	0	1	0	3	0	0	0	3	0	7
Campylobacter	159	197	5	7	147	128	0	1	14	35	325	368
Chlamydia	192	138	19	10	381	379	51	51	85	75	728	653
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0
Donovanosis	49	17	3	2	8	4	2	4	6	9	68	36
Glomerulonephritis	1	0	0	0	14	1	2	25	4	1	21	27
Gonococcal Disease	367	333	36	22	197	200	39	40	103	87	742	682
Gono Neonatorum	0	1	0	0	0	0	0	0	0	0	0	1
Haemophilus Inf type B	1	5	0	0	0	10	0	2	0	3	1	20
Herpes Genital	17	15	1	1	125	55	8	4	8	6	159	81
Herpes Other	0	1	0	0	1	1	0	0	0	0	1	2
Hepatitis A	29	19	5	3	24	74	9	3	2	16	69	115
Hepatitis B	3	12	0	2	7	8	0	3	1	14	11	39
Hepatitis C	10	15	1	4	294	183	0	5	3	6	308	213
Hepatitis E	0	0	0	0	0	1	0	0	0	0	0	1
Hydatid Disease	0	0	0	0	1	0	0	0	0	0	1	0
Legionnaires Disease	0	0	0	0	5	2	0	0	0	0	5	2
Leprosy	0	0	0	0	1	1	0	0	0	1	1	2
Leptospirosis	0	0	0	0	0	1	0	0	2	0	2	1
Malaria	2	1	0	0	33	28	0	1	4	0	39	30
Measles	258	0	11	0	116	8	3	0	16	0	404	8
Meningococcal Infect.	0	0	0	1	2	1	0	0	3	0	5	2
Mumps	0	-	0	-	3	-	0	-	0	-	3	-
Non Specific Urethritis	0	9	0	0	20	1	0	0	0	0	20	10
Ornithosis	0	0	0	0	0	3	0	0	0	0	0	3
Pertussis	47	2	1	0	68	5	1	0	23	0	140	7
Rotavirus	15	-	0	-	35	-	0	-	5	-	55	-
Rubella	3	0	10	0	35	12	0	1	1	0	49	13
Salmonella	90	85	24	22	240	166	34	41	89	70	477	384
Shigella	56	49	3	2	43	51	14	13	11	21	127	136
Syphilis	204	231	13	12	69	93	82	136	89	167	457	639
Tuberculosis	1	3	1	0	21	24	1	1	7	2	31	30
Typhoid	1	0	0	0	2	0	0	0	0	0	3	0
Yersiniosis	1	0	0	0	0	3	0	0	0	0	1	3
Total	**1507**	**1145**	**133**	**121**	**2197**	**1608**	**276**	**361**	**503**	**552**	**4616**	**3787**

Points to note regarding the above notifications:

- Acute Rheumatic Fever is a markedly under-reported condition which relies on doctor/hospital notification.
- Dengue cases are all imported.
- Diphtheria requires isolation of **toxigenic** *Corynebacterium diphtheriae.*
- Donovanosis has historically been under-reported. However, donovanosis research treatment trials and distribution of a case definition have been partially responsible for increased surveillance in 1994.
- Gonococcal Opthalmia Neonatorum will be included under the new listing of Gonococcal Conjunctivitis and be identified by age in 1995.

- The one case of Haemophilus influenza type B in 1994 occurred in a child too young to receive the vaccine.
- Herpes Genital and Herpes Other are under-reported and present great difficulty in differentiating primary from recurrent episodes as well as difficulty in obtaining definitive laboratory diagnosis. Both have been deleted from the NT Notifiable list for 1995.
- Hepatitis B is reported as incident cases in 1994. The Darwin figure for 1993 also represents incident cases but all other districts reported prevalent cases in 1993.
- Hepatitis C is reported as prevalent cases in 1993 and 1994. In 1995 incident and prevalent cases will be reported.
- Mumps and Rotavirus became notifiable in mid 1994.
- Non Specific Urethritis is so under-reported as to be meaningless and has been deleted from the NT notifiable list in 1995.
- Ornithosis has been deleted for the notifiable list in 1995.
- Adverse Vaccine Reactions, Botulism (food borne), Hepatitis D, HTLV-1, Listeriosis and Viral Haemorrhagic Fever will all be notifiable diseases in 1995.
- HIV yearly notifications will be listed with other notifiable diseases in 1995.



Notified cases of Vaccine Preventable Diseases in NT - by Report Date 1993-1994 Final data

DISEASES	TOTAL		No. cases among children aged <=5 years	
	'94	'93	'94	'93
Congenital rubella syndrome (CRS)	0	0	0	0
Diphtheria	0	0	0	0
Haemophilus influenzae type b	1	20	1	19
Hepatitis B	11	39	1	2
Measles	404	8	131	2
Mumps	3	-	1	-
Pertussis	140	7	32	6
Poliomyelitis, paralytic	0	0	0	0
Rubella	49	13	4	2
Tetanus	0	0	0	0

Correction to: Last issue Vol 2 No 4 pg 27, table "Notified cases of Vaccine Preventable Diseases..."

- Hib 1994 Total to date = 1. This case was age ineligible for vaccination.
- Hepatitis B 1994 Jan-Sep = 30, however all hepatitis B notifications for 1994 have been amended to only show incident cases.

Immunisation Update

Immunisation has received considerable Commonwealth attention since the launch of the National Immunisation Strategy in 1994. Implementation of the Strategy will involve substantial changes to the funding, accountability and data requirements for the childhood vaccination program. The Commonwealth has indicated that continuing Commonwealth funding of immunisation is contingent on: 1) the provision of timely epidemiological data, on age-specific and vaccine specific coverage rates, 2) vaccine utilisation and tracking and 3) targeted educational programs for vaccine providers and consumers. In addition the development of a certification scheme (documentation of immunisation status) for enrolment in child care facilities, preschools and schools is highly recommended.

Immunisation information systems and quality assurance have lagged behind other vaccine initiatives in the NT as they have across Australia. System infrastructure (such as appropriate and workable recording systems) and mechanisms for on-going user support and training have been largely inadequate in the past. As a result, there are serious deficiencies in the existing system in its intended role as a patient management tool and a system for efficient data entry, recall analysis and timely report generation. Current systems across the Territory do not allow the extraction of epidemiological data required by the Commonwealth on either specific coverage rates or vaccine wastage. These deficiencies also impact on our ability to respond to outbreaks of vaccine preventable disease in a timely fashion.

Recognising the inadequacies of the Territory's immunisation information systems and the requirements of the National Immunisation Strategy, Disease Control has established two positions for a twelve month period. The funding supplied by the Commonwealth for the Hib program has enabled NT government money to be redirected to fulfil the requirements of the strategy. An Immunisation System Co-ordinator and Immunisation Database Support Officer will provide on-going user support to improve systems currently in place across the NT and assist with immunisation data entry.

The Co-ordinator will also review legislative options for the implementation of mandatory documentation of childhood immunisation at entry into child care and schools.

Darren Mitchell will be taking up the position of Immunisation Systems Co-ordinator from April. The Immunisation Database Support Officer position has been advertised and hopefully will be in place by the end of April. Initially this position will undertake data entry and reports for the Darwin urban area and the Barkly district.

Cumulative Index

Vol. 1 Nos. (1-10) to Vol. 2 Nos. (1-5) (Nov 1991- Mar 1995)

Note: Bulletin numbers in bold type indicate major articles

PROFILES AND STAFF UPDATES

Katherine

Tanya Wallace

Communicable Disease Medical Officer, Katherine

Tanya comes to Disease Control from several years experience in rural communities and recently as the District Medical Officer for the Katherine Air Medical Service. The restructured position now permits a full-time emphasis on Disease Control. Jan Bullen who had her responsibilities split between Air Medical and Disease Control is on 12 months leave in Queensland.

Darwin

Darren Mitchell, Research Officer to Immunisation System Co-ordinator, Darwin

From April Darren will be transferring to this newly created position for a period of twelve months. During this period Darren will be co-ordinating immunisation data systems across the NT and will be available as a resource and support person for all immunisation providers.

Alice Springs

David Evans

A/Program Manager

Over the next six months David Evans is 'filling in' for Kirsty McNab's whilst she is on leave. David brings to Disease Control his experience as a histopathologist and venereologist. Local commentators note that he offers an innovative approach whilst enjoying the experience.

Other departures from the Alice Springs unit include Marion Maloney (CDO), Lynette Thompson, Steve Rawson and Fiona Wright.

Positions Advertised

Position	No	Level	Location	Closing Date
Project Officer	1783	AO5 (temp 12 months)	Program Directorate, Darwin	21/03/95
Immunisation Database Support Officer	15217	AO2 (temp 12 months)	Darwin Immunization and Surveillance	21/03/95
AIDS/STD Urban Educator	4231	AO5	Alice Springs	17/03/95
Male Aboriginal Educator	4232	AO4	"	TBA
Female Aboriginal Educator	4239	AO4	"	TBA end April
STD Clinical Nurse Consultant	3594	RN3A	"	TBA end April
Administrative Support	4346	AO1 (part-time)	"	TBA
TB Clinical Nurse Consultant		RN3A	Alice Springs TB Unit	TBA