TERRITORY HEALTH SERVICES
Centre for Disease Control

THE NORTHERN TERRITORY

COMMUNICABLE DISEASES BULLETIN

Vol. 4, No 1, March 1997

Childhood immunisation uptake in the NT: Part 1 - The Top End

Angela Merianos, CDC, Darwin

Introduction

To the author's knowledge, this is the first attempt in the NT to determine the uptake of childhood vaccines at a district and NT-wide level for children aged 0-6 at the time of the analysis. Data are based on children appearing on the eight discrete computerised databases maintained for the Darwin Urban, Darwin Rural, East Arnhem, Katherine Urban, Katherine Rural, Barkly, Alice Springs Urban and Alice Springs Remote Districts. The article will be presented over two editions of the Bulletin; this edition focuses on the Top End while the next edition will summarise the epidemiology of vaccination in Central Australia.

A number of small studies have estimated coverage in rural communities in Darwin Rural District and Alice Springs Remote but there is a dearth of data on the urban situation. The most recent urban statistics come from the 1995 National Health Survey immunisation study of children aged 0-6 years. This survey found that only 53% of Australian children in this age group were fully immunised. Its sample of children was selected to be representative of children across Australia, but only included Darwin and Alice Springs urban children in the NT sample.

Objectives of immunisation registers

Immunisation registers fulfil two main functions.

(1) Client management.

Few children in the NT are vaccinated by a single vaccine provider and the most mobile children may see multiple providers. A well maintained database to which all vaccine providers contribute data enables a complete picture of a child's immunisation history. This is important for opportunistic immunisation to achieve best coverage and to avoid over-immunisation.

(2) Program evaluation.

The NT has adopted the immunisation targets and performance indicators recommended by the NHMRC ie a minimum 95% uptake for all vaccines, administered on time. Accurate coverage data enable vaccine providers to assess the success of their immunisation program, plan future initiatives and identify problems in uptake if they exist. The data requirements for a successful program include standardised collection of information, accurate recording by the vaccine provider and the centrally located data entry officer and quick turn-around time between provider and recorder. Because the NT operates eight independent databases at present, some children appear on more than one database and their immunisation histories are often

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fragmented. It is crucial that vaccines administered to a non-resident child in one district are reported to the database operator in the district of residence so that records are complete. This is not yet happening routinely in all districts.

In order to implement quality assurance across all regional databases, the Centre for Disease Control in Darwin created and secured a new staff position. This position has specific accountability for the NT childhood immunisation data and also provides a Help Desk for vaccine providers requiring immediate client information in their clinical or public health roles. This Immunisation Databases Support Officer has access to all Territory Health Services' immunisation via the local area network (LAN). Having access has enabled the downloading of information required for the determination of coverage rates.

Methods

Determination of population size (denominator calculations)

Copies of the files containing demographic details, location and immunisation schedules were merged using the hospital record number (HRN) as the unique linking identifier to generate a master file of immunisation histories for all children appearing on a particular database. Prior to analysis, the Katherine Urban and Rural database and the Alice Springs Urban and Remote database copies were cross-checked to remove duplicate client records. Denominators for the determination of coverage rates were calculated by selecting children aged 0-83 months (0-6 years inclusive) corresponding to the clinic and community codes within each district. Newborns are registered on the relevant Immunisation Database from hospital birth lists collected daily or weekly in most Districts. Denominator tables of months of age by year of birth were then produced for each database. These denominators were used to indicate the number of children that had reached each immunisation milestone.

Denominators derived from the immunisation databases were compared to the expected numbers published by the Health Insurance Commission (HIC) for the Australian Childhood Immunisation Register to determine what proportion of children living in the NT are actually registered on the regional databases.

Determination of the number of vaccines administered (numerator calculations)

Numerators were determined by generating tables of the number of vaccine doses administered by vaccine type, vaccine dose according to the NT Childhood Immunisation Schedule and year of birth.

Coverage rate calculations

Coverage rates (percent) were calculated by dividing the total number of vaccines administered by the total number of children at each immunisation landmark. These rates reflect gross coverage for each age group (ie the total number of children vaccinated by a certain age) and make no attempt to reflect the timeliness of immunisation. Because the age distribution of children is a true reflection of age groups at the time of analysis, some children were too young to be vaccinated. The percentage of fully immunised children was calculated for each birth cohort (all children born in a particular year) according to the NT and NHMRC recommended immunisation schedules. The NHMRC recommended immunisation schedule does not currently include BCG or hepatitis B vaccine.

Definition of age-appropriate immunisation

Children were considered fully immunised if they had received all age-appropriate doses of vaccine. A 5 year old was regarded in this instance, as fully immunised if they had received 4 of the 5 doses of diphtheria-tetanus-pertussis (DTP) vaccine, 4 doses of oral polio vaccine (OPV), at least one dose of Haemophilus influenzae type b (Hib) vaccine, 3 doses of hepatitis B (HB) vaccine and one dose of measles-mumps-rubella (MMR) vaccine.

Results

The total number of children aged 0-6 years registered on any of the eight NT Immunisation databases were compared to totals used by the HIC to calculate coverage rates for children appearing on the National Childhood Immunisation Register.

The total number of children varies by only 0.2% between the two information systems, but the distribution of children by age varies considerably in some age categories. For example, the NT database records 30% more newborns and 17% fewer 6 yr olds, than the HIC.

Table 1 shows the gross coverage of all NT children 0-6 years for each vaccine and dose, and age-appropriate coverage under the NT Immunisation Schedule and the NHMRC schedule. 77% of children were age-appropriately immunised under the NT Schedule and 76% under the NHMRC schedule at the time of this analysis. 81% of children had completed the primary series of three DTP injections and 52% had received the 18 month booster dose. The rates are similar for OPV as expected. The slightly lower value for OPV4 may reflect the change from administration at 18 months to 5 years. 79% of children had received at least one dose of Hib vaccine and 65% of children born since 1993 had received 3 doses. 70% of children had received 3 doses of hepatitis B vaccine since 1990. Of some concern is that only 77% of age-eligible children have a MMR recorded on the database.

Tables 2-6 present coverage rates of NT children aged 0-6 years by year of birth and Top End District of registration. Rates vary considerably across Districts with East Arnhem taking the lead in vaccination uptake.

Overall, 89% of East Arnhem children are age-appropriately immunised, with 97% MMR uptake. These levels are as good or better than any health jurisdiction in Australia. Generally, coverage rates are higher in rural and remote districts than in urban centres.

Conclusion

The statistics presented here show us the gross coverage rates in Top End Districts ie the percentage of children vaccinated irrespective of how old they were when vaccinated. Gross coverage can be used as a measure of the effectiveness of the NT Childhood Immunisation Program. Gross coverage rates help to answer the question "Are we reaching our immunisation goals and targets?"

It can be seen from these statistics that gross coverage of 0-6 year olds in the Top End is better the national average of 53% fully immunised with NHMRC recommended vaccines. The gross coverage for NHMRC across the Darwin District is 82% and 84% in Katherine. Vaccine providers in East Arnhem should be congratulated for their coverage rate of 89% that is among the highest in Australia.

Limitations of the data

Some of the calculations of coverage have inherent problems listed below.

1. The databases were analysed from August to October 1996 so the analysis does not reflect one point in time.
2. Duplicate records - because each dataset was analysed separately, there was no attempt to check for duplicate records except in Katherine and Alice Springs. Merging of datasets is a priority for the near future.
3. The denominators used for each District were determined on the basis of community and clinic codes. In urban areas, there has been less effort put into active tracking of children between districts so clinic codes may be out of date. Remote communities tend to have more up-to-date codes - hence less duplication.
4. Timing of the introduction of vaccines. A universal hepatitis B vaccination program was introduced for Aboriginal children in 1988 and for non-Aboriginal children in August 1990. However, it was not promoted as a universal vaccination policy for non-Aboriginal children by providers until 1993.
5. Changes in the number of vaccine doses. DTP has changed from 4 to 5 doses. Because timeliness has not been measured DTP4 reflects DTP4 given at 18 months or anytime thereafter (eg when DTP5 dose would be due at 4-5 years).
6. Catch-up programs for Hib vaccine. All children currently aged 0-83 months were eligible for at least one dose of Hib vaccine under the catch-up program and this is reflected in the data of the now 4-6 year olds. However, universal infant Hib vaccine was introduced in earnest in 1993 so the uptake of the second and third doses of Hib have only been calculated for children born since 1993. Some effort has gone into adjusting for these complex schedules and the assumptions made appear as comments adjacent to the Tables.
7. Not all vaccine providers have been consistently contributing data to their regional database so records are incomplete. The degree of under-ascertainment varies between Districts. At the time of writing, the Centre of Disease Control is negotiating Agreements with some non-Government vaccine providers for the exchange of immunisation data.

Additional reports

This analysis has not attempted to estimate the timeliness of immunisation ie what proportion of children are vaccinated at the right time for each vaccine. Timeliness can be used as a measure of the efficiency of our immunisation services ie "how well are we delivering immunisation services?" Timely immunisations are critical in the first 6 months of life because babies are most at risk of the severe complications of vaccine preventable disease. This is particularly important for the prevention of pertussis (whooping cough) and invasive Hib disease which require primary courses of 3 doses of DTP and 2 doses of Hib vaccine respectively in the first 6 months.

The next stage of this analysis is to produce timeliness statistics based on the recommended timing of vaccine doses in the NT Childhood Immunisation Schedule.

Coverage reports for vaccine providers (ie. communities, individual clinics, etc) for the evaluation of their own immunisation programs are additional reports which will be available in future. Vaccine providers will be able to compare the success of their program against the District coverage rate.

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Editorial

The above article represents a monumental effort on the part of vaccine providers and recorders and the Immunisation and Surveillance Section of CDC, THS. Though further 'fine-tuning' is ongoing, very useful and specific information is now available. This information wil be used to identify areas or age groups of lower coverage (e.g. those of 12 months of age and older). Strategies can be developed and implemented to target these areas and their impact can be monitored.

Table 1

NT TOTAL

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	81	95	88	85	72	92	88	86	73	61	NA	NA	46	47	42	79	82	82
90	79	91	87	84	71	91	86	85	73	64	NA	NA	59	56	52	82	75	81
91	82	93	89	85	71	93	87	86	71	67	NA	NA	84	79	73	81	82	82
92	81	93	89	85	64	93	89	86	62	77	NA	NA	90	85	77	78	82	81
93	81	93	90	85	66	93	89	85	62	92	86	70	91	86	77	79	83	83
94	76	93	88	84	60	92	85	84	31	90	86	71	90	85	75	77	79	78
95	78	91	85	74	22	90	76	74	NA	89	83	53	92	85	68	62	74	72
96	75	72	56	37	NA	72	54	37	NA	71	54	64	91	68	35	134	59	57
NT Total	79	91	86	81	52	91	84	82	46	79	82	65	86	79	70	77	77	76

Table 2

Darwin Urban Total

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	46	95	86	82	65	89	84	82	66	71	NA	NA	27	30	24	75	66	79
90	49	90	84	81	66	89	81	82	67	71	NA	NA	40	37	34	75	68	79
91	55	92	87	83	66	92	82	84	66	71	NA	NA	81	74	68	76	77	80
92	56	93	89	84	61	93	87	85	60	72	NA	NA	89	84	75	75	79	80
93	59	96	93	89	71	95	90	89	66	89	89	78	91	87	78	82	84	86
94	52	95	91	88	62	95	85	88	29	89	89	76	89	84	76	79	79	80
95	70	92	87	77	10	92	70	77	NA	89	86	53	92	86	70	51	73	71
96	58	67	49	14	NA	67	46	15	NA	66	49	NA	93	70	13	NA	63	57
Total	57	91	87	84	63	91	81	82	57	79	84	71	83	76	68	74	77	79

Table 3

Darwin Rural Total

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	100	100	100	100	91	100	100	100	94	73	NA	NA	100	100	94	94	96	95
90	93	95	92	91	85	95	93	92	88	75	NA	NA	96	93	90	94	91	90
91	98	98	96	95	87	98	97	97	90	84	NA	NA	100	97	95	97	95	94
92	95	95	94	93	76	96	95	94	77	88	NA	NA	97	95	94	94	92	90
93	94	95	93	93	91	95	94	93	91	95	95	84	95	95	91	92	93	93
94	93	95	93	93	73	95	93	92	52	95	93	88	94	94	91	93	89	88
95	94	97	94	87	31	97	94	88	NA	97	93	68	97	95	87	89	87	85
96	87	57	33	19	NA	56	33	18	NA	55	43	NA	95	51	20	NA	57	46
Total	94	92	87	86	79	92	88	86	83	85	84	80	96	90	85	90	87	86

Notes for the calculation of rates

1. OPV4 coverage may be under-estimated because of the change in schedule from 18 months to 5 years in 1995.
2. Hepatitis B vaccination for all newborns was introduced for Aboriginal children in 1988 and for non-Aboriginal children in August 1990 but uptake was not actively promoted for non-Aboriginal children until 1993. Gross coverage for HB in non-Aboriginal children (0-6 years) is calculated from 1990.
3. NHMRC vaccines and coverage rates are for DTP, OPV, Hib and MMR.
4. NT vaccines and coverage rates include NHMRC vaccines plus BCG in Aboriginal children and hepatitis B as per #2.
5. Some children would not be old enough in YOB 96 to receive eg. DTP2, DTP3, OPV3, HIB2, HB3.

Limitations of the data

The main limitations of the data include:

1. missing data;
2. incomplete data in duplicate records;
3. inaccurate denominators (poor archiving of children who have moved out of the region).

Table 4

Darwin Total

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	73	98	93	91	78	95	92	91	80	72	NA	NA	64	65	59	84	81	87
90	71	92	88	86	75	92	87	87	78	73	NA	NA	68	65	62	85	79	84
91	76	95	92	89	76	95	90	90	78	77	NA	NA	90	86	81	86	86	87
92	76	94	91	89	68	95	91	89	68	80	NA	NA	93	90	84	84	85	85
93	76	95	93	91	81	95	92	91	79	92	92	81	93	91	85	87	88	89
94	72	95	92	90	67	95	89	90	40	92	91	82	92	89	84	86	84	84
95	82	95	91	82	21	95	82	82	NA	93	90	60	94	91	78	70	80	78
96	73	62	41	17	NA	61	39	16	NA	61	46	NA	94	61	17	NA	60	52
Total	75	91	87	85	71	91	84	84	70	82	84	75	90	83	76	82	82	82

Table 5

East Arnhem Total

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	90	95	94	92	86	95	96	96	93	79	NA	NA	81	80	80	82	91	91
90	93	97	97	96	93	97	97	97	87	85	NA	NA	77	76	75	95	90	94
91	99	99	98	97	93	96	98	97	81	90	NA	NA	83	83	81	95	92	94
92	100	99	98	97	92	97	99	99	73	95	NA	NA	88	87	86	97	93	95
93	99	98	98	97	89	98	98	97	71	97	96	88	83	82	81	97	91	94
94	100	98	95	91	67	95	96	92	34	97	94	74	90	90	84	92	86	85
95	98	97	91	79	13	81	92	79	NA	96	92	55	94	92	75	102	81	80
96	97	69	45	11	NA	66	43	11	NA	65	43	NA	90	61	0	NA	60	55
Total	98	96	94	93	85	92	95	94	71	91	90	75	86	83	80	97	89	89

Table 6

Katherine Total

	VACCINATION COVERAGE (%)																0-6 YRS	
	BCG	DTP1	DTP2	DTP3	DTP4	OPV1	OPV2	OPV3	OPV4	HIB1	HIB2	HIB3	HB1	HB2	HB3	MMR1	NT TOTAL	NHMRC
YOB																		
89	93	96	93	91	85	97	94	94	86	45	NA	NA	84	83	78	95	88	88
90	94	96	94	92	86	97	95	93	87	66	NA	NA	85	83	81	92	89	90
91	94	95	94	91	85	96	94	92	85	83	NA	NA	94	92	88	90	91	91
92	94	97	94	92	80	97	94	92	77	88	NA	NA	93	90	86	89	90	90
93	97	96	92	88	74	96	92	88	72	95	90	71	94	92	84	82	88	86
94	90	96	92	89	62	96	93	89	38	98	91	68	93	90	82	86	85	83
95	93	92	81	69	40	92	82	69	NA	91	79	31	96	87	69	72	76	73
96	88	71	42	29	NA	71	42	29	NA	70	42	0	94	68	29	NA	65	56
Total	93	94	90	86	77	95	90	87	72	85	84	66	93	88	81	86	85	84

Impact of the 1996 NT Adult Immunisation Campaign

Sue Reid and Vicki Krause, CDC, Darwin

Childhood immunisation programs have markedly reduced the overall burden of vaccine preventable diseases in children. Adult immunisation, however, has not received the same priority even though deaths from vaccine-preventable diseases (eg. influenza, pneumococcal disease and tetanus) occur predominantly in adults. In an effort to address the "forgotten adult" the Centre for Disease Control (CDC) of the Territory Health Services launched its first adult immunisation campaign in February 1996.

The campaign objectives were:

1. To heighten the awareness and importance of adult immunisation for both the public and the health care providers throughout the NT.

2. To increase the uptake of adult immunisations against vaccine preventable diseases.

The campaign ran over a four week period and included Territory wide TV and newspaper advertising in conjunction with community and health care provider education. Promotional items utilised throughout the campaign included posters, pamphlets, drink coasters and coffee mugs which were displayed and distributed throughout the hospitals, Community Care Centres, GP surgeries, nursing homes, public libraries and a variety of venues associated with the 'Council of the Aging'. The campaign message 'Make Time - Get Immunised' featured as the central logo on all visual components of the promotional materials.

To assess the overall impact of the campaign, the following three parameters were monitored across the Northern Territory:

1. The distribution of influenza vaccine for 1994 and 1995 versus 1996.

2. The distribution of pneumococcal vaccine for 1994 and 1995 versus 1996.

3. The distribution of ADT six months pre-campaign (August 1995 to January 1996), compared with the six months post-campaign (February 1996 to August 1996).

Data on influenza and pneumococcal vaccine distribution for 1994 could not uniformly be supplied for the NT and therefore comparisons were made between 1995 and 1996 only. Vaccine distribution data, obtained from the hospital pharmacies across the NT and the two wholesale outlets (Sigma and Faulding, Darwin), suggested that there had been an overall increase in the uptake of adult immunisations during 1996. Results showed a 55% increase in the uptake of influenza vaccine and a 113% increase in pneumococcal vaccine when compared to 1995. ADT vaccine distribution showed a 35% increase post-campaign (Table). A specific pneumococcal program including project officers, vaccine register and free (THS funded) vaccine also enhanced pneumococcal coverage.

In response to the success of the 1996 campaign, CDC repeated the campaign in February of this year. The intention is to make this an annual health promotion event in the hope that adult immunisation will one day become as routine as it is for children.

% change in vaccines dispensed from NT hospital pharmacies and two wholesale outlets

	1995-1996 % change		*Post-campaign % change*
Pharmacy	Influenza vaccine	Pneumococcal vaccine	ADT
RDH	+64%	+132%	+52%
ASH	-0.3%	+134%	+35%
KDH	+16%	+57%	+17%
GDH	+214%	+102%*	+155%
TCH	+4%	incomplete	+40%
Pharmaceutical wholesalers (combined)	+112%	+96%	+16%
Total	**+55%**	**+113%**	**+35%**

*Figures for 1996 only available up to 22 July

Immunisation promotion activities in Alice Springs

Alyson Alway and Jenny Rossiter, CDC, Alice Springs

February and March provided the Alice Springs team with three opportunities to promote both adult and childhood immunisation programs to a wide audience.

First was a February breakfast to launch the 1997 influenza vaccine, sponsored by CSL. This gave the team an opportunity to present to GPs, District Medical Officers and health professionals an introduction and update on the Central Australian Pneumovax program. It was an enjoyable occasion and prompted lots of discussion. As a result, the GP Practices are now actively participating in the program and are sending in regular lists of vaccinated patients for inclusion in the Pneumovax register.

The second opportunity was a lunchtime stall held in Todd Mall to promote adult immunisation. It was a good chance to talk to the public, hand out information and was brightened up by helium balloons printed with the Adult Immunisation message. This event received media coverage in the local Centralian Advocate newspaper.

The diptheria-tetanus-acellular pertussis (DTPa) vaccine was launched at another successful breakfast (which we are now becoming famous for and sought after). This breakfast was sponsored by SmithKline-Beecham. Dr Angela Merianos presented the NT criteria for free DTPa. The attending health professionals indicated their appreciation of the NT's early response and prompt initiative to incorporate the appropriate use of this vaccine.

The criteria for free DTPa are as follows:

- Temperature of 40.5°C within 48 hours, not due to another identifiable cause.
- Collapse or shock-like state (hypotonic/ hyporesponsive episode) within 48 hours.
- Persistent, inconsolable crying lasting 3 hours, occurring within 48 hours.
- Convulsions with or without fever, occurring within 3 days.
- Family history of febrile convulsions.
- Severe local reaction involving most of the circumference of the injected limb commencing within 48 hours.

PROVISION OF FREE PAEDIATRIC HEPATITIS B VACCINE TO GPs

At the 18 February meeting of the General Practice Forum Centre for Disease Control, Territory Health Services, agreed to issue free paediatric hepatitis B vaccine to general practitioners providing childhood immunisation services. The change in policy addresses concerns by doctors that asking parents to pay for hepatitis vaccine is a disincentive for opportunistic immunisation.

Orders for hepatitis B vaccine will be dealt with in the same way as all other vaccines currently available free of charge to GPs. Doctors will be required to complete details of immunisations administered as they already do for the other childhood vaccines. The program will target children currently eligible for hepatitis B vaccination in the NT, namely children 0-6 years. Other vaccines available free of charge to GPs include DTPw, DTPa (conditions apply), OPV, Hib and MMR.

Free paediatric hepatitis B vaccine will be available on 1 April 1997.

Hepatitis A Vaccination for Health Staff REMINDER!

Does your occupation put you at 'high risk' of hepatitis A infection?

The risk of exposure to hepatitis A in the NT is high for health care staff working in: paediatrics; rural health centres; and rural environmental health.

The good news is that you can be protected, with just 1 primary injection of hepatitis A vaccine, for up to one year and for extended protection (10 years), a single booster 12 months after the primary dose. A pre-blood test with determine if you need vaccination.

For 'high risk' THS staff, the vaccine is provided free of charge by the relevant THS department. Other THS staff may also participate, but the cost must be met by the individual or in some cases specific units choose to cover the cost.

Don't risk hepatitis A infection! Get vaccinated NOW!!

Contact your staff immunisation clinic (hospital) or CDC (health centres) for more information on this program.

HOW TO APPLY FOR FREE ACELLULAR PERTUSSIS VACCINE

SmithKline Beecham Biologicals has announced its launch of Infanrix™, the first diphtheria-tetanus-acellular pertussis (DTPa) vaccine to be made available in Australia. DTPa has been licensed for both the primary course and booster doses of Triple Antigen.

Reactogenicity studies have shown that DTPa produces fewer side effects than whole cell pertussis (DTPw). The NHMRC has followed the American Academy of Pediatrics in recommending DTPa for the 18 month and preschool boosters, but the recommendation was made before the vaccine was licensed for the primary course. It remains to be seen whether the NHMRC changes the recommendation to include the primary course as well.

Inclusion of DTPa into the routine childhood immunisation schedule has not yet been funded by the Commonwealth. DTPa is a much more expensive vaccine at $25 per dose wholesale than DTPw vaccine at $4.71 per dose. In order to provide the vaccine free of charge to children with medical contraindications to DPTw, the Centre for Disease Control (CDC) has developed a set of guidelines to identify children eligible for free vaccine (see top of previous page) .

Doctors will be required to complete the attached questionnaire and return it to CDC to release DTPa free of charge. CDC will send the completed form to the regional pharmacy but doctors must also send a script to the pharmacy. Parents wishing to vaccinate their children with DTPa who do not fulfil the criteria for free vaccine will be able to purchase the product from the private sector.

Doctors should also be aware that adverse reactions following vaccination are reportable in the NT and are a specific item on the NT Notification form for doctors and hospitals.

The case definition of a reportable vaccine associated event follows:

Clinical features of early adverse reactions following immunisation

- Persistent screaming (for more than three hours)
- A temperature of 40.5°C or more, unexplained by any other cause
- Anaphylaxis
- Shock
- Hypotonic/hypertonic episodes

Case definition of early adverse reactions following immunisation

The occurrence of one or more of the above conditions within 48 hours of the administration of a vaccine.

Clinical features of late adverse reactions following immunisation

- Encephalopathy
- Convulsions
- Aseptic meningitis
- Thrombocytopaenia
- Death
- Hospitalisation
- Prolongation of hospitalisation
- Other serious event thought to be associated with a vaccination

Case definition of late adverse reactions following immunisation

The occurrence of one or more of the above conditions within 30 days of the administration of a vaccine.

Clinical notification. Special national surveillance form to be completed (phone CDC 8922 8044).

Public health action: Investigation of the episode. Follow-up in six months time.

REQUEST FOR FREE DTPa

TERRITORY HEALTH SERVICES

Please complete this form and fax it to:

Head, Surveillance & Immunisation
Centre for Disease Control, Darwin
Fax no: 8922 8310

Child's details

HRN (if known) _____

Child's name _____ DOB ____/____/____

Address _____

Doctor's details

Name (or surgery/clinic stamp) _____

Surgery/clinic address _____

Phone number _____

Reasons for DTPa

Please tick which events were temporally associated with DTPw.

☐ Temperature of ≥ 40.5°C within 48 hours, not due to another identifiable cause.

☐ Collapse or shock-like state (hypotonic/hyporesponsive episode) within 48 hours.

☐ Persistent, inconsolable crying lasting ≥ 3 hours, occurring within 48 hours.

☐ Convulsions with or without fever, occurring within 3 days.

☐ Family history of febrile convulsions.

☐ Severe local reaction involving most of the circumference of the injected limb commencing within 48 hours.

☐ Other _____

How many doses of DTPw has the child received? _____

Date of the most recent DTPw ____/____/____

Date of adverse event ____/____/____

Was the adverse event reported to CDC? Yes / No

_____

Doctor's signature

Date ____/____/____

"Commendation for Excellence"
200 Years of Immunisation
1996 Jenner Health Professional Awards

The Commonwealth has awarded the Territory Health Services (THS) for its long standing commitment to the advancement of childhood immunisation and more recently, to adult immunisation.

THS has been a forerunner in the introduction and implementation of programs to increase awareness and uptake of vaccines and in the development of an effective Territory wide vaccine 'cold chain'.

While Australia overall is still coming to grips with antenatal testing for hepatitis B and universal neonatal hepatitis B (HB) vaccination, THS has had at least a six year head start.

Universal antenatal testing for hepatitis B was implemented in the NT in 1987 and is ongoing. All women who present for at least one antenatal visit (>95%) are screened for hepatitis B surface antigen (HBsAg) and antibody. Neonates born to HBsAg positive mothers are given HB immunoglobulin and HB vaccine within 72 hours of birth. HB vaccination was available to other high risk babies in hospital. This was very successful in reaching Aboriginal neonates but not other high risk newborns. Universal hepatitis B was introduced in August 1990 to overcome this problem and to make the vaccine available to all NT babies. This program was promoted with an information pamphlet for all new parents and advertised in all childhood vaccination clinics. By 1993, universal hepatitis B vaccination was actively promoted. In 1994, coverage rates for HBV1, HBV2 and HBV3 were 91%, 87% and 80% respectively for Darwin district.

In addition, THS was instrumental in obtaining funding for two Aboriginal Health Services to actively vaccinate Aboriginal children up to 6 years of age against hepatitis B.

THS has responded quickly to changes in national immunisation policy such as the introduction of the second dose of measles, mumps, rubella (MMR) which started as a school based program in January 1994 and more recently the implementation of the Australian Childhood Immunisation Register.

During measles outbreaks, THS promptly provides MMR vaccine free of charge for all susceptible members of the public up to 35 years of age. Access to vaccination is given priority with extended hours at THS health centres and vaccination days in schools and child care facilities when needed.

In Australia, the NT had the highest incidence of invasive Hib disease before effective Hib vaccines became available. Therefore, THS designed and funded a Hib vaccination program in anticipation of the release of the vaccine well ahead of the National Hib Immunisation Program in August 1993.

In April 1993, THS implemented a Hib vaccination program for all children born after 1 December 1992. A more costly but more appropriate vaccine for Aboriginal infants was fully funded by THS. In June 1993 the program was extended to include all children born after 1 July 1988. This latter 'catch-up' program meant that all children from two months to five years of age were covered. A vaccine usage audit in October 1993 suggested high uptake rates in rural Aboriginal communities (90%) but low uptake in urban areas (50%). In response to this, a promotional campaign aimed at urban children was initiated.

The campaign was launched in December 1993. Initially it was conducted over a three week period and included TV, radio and newspaper advertising. A two week repeat campaign was conducted in January 1994. A unique feature of the campaign was the introduction of a cartoon character, the Horrible Hib Monster, which featured on all visual components of the campaign (posters, stickers, postcards and banner). The 30 second TV commercial (played during prime time) and the radio commercial were pitched at an emotional level, to be seen as fun for children rather than an instructive level for parents. Tabloid style posters throughout the Darwin area announced the campaign with "Horrible Hib Monster in NT" and postcards were sent to all households. Additional information was available via a Hib Infoline which sought to reduce barriers to access for information. Special clinics were set up in schools and child care centres and extended clinic hours were made available in urban health centres. A pre and post campaign telephone survey was conducted to evaluate awareness and acceptance in the community. Hib vaccination coverage increased significantly in the greater Darwin area from 46 % to 73%.

Adult immunisation has never received the same priority as childhood immunisation. To address this, a Territory - wide adult immunisation campaign was implemented early in 1996 to heighten awareness for both the public and the health care providers and to increase the uptake of adult immunisation against vaccine preventable diseases. A media campaign was launched in February 1996 by the THS Minister for Health. The campaign ran for four weeks and included three 15 second TV commercials and weekly newspaper advertising with the logo message 'Make Time - Get Immunised' featuring on all visual materials. Other promotional items included posters, pamphlets, drink coasters and

coffee mugs displayed in hospitals, health centres, general practice surgeries, nursing homes, libraries and venues associated with the 'Council of the Ageing'. A post-campaign evaluation of vaccines dispensed suggested that there was an overall increase in vaccine uptake by 55% for influenza vaccine and 113% for pneumococcal vaccine (see also next paragraph) when compared to 1995. Adult diphtheria-tetanus vaccine showed a 35% increase six months post-campaign.

THS implemented a pneumococcal vaccination program in late 1995 to cover persons at risk for pneumococcal disease. The program is fully funded by THS and initially included two full time project officers, one each for the Top End and central Australia. An electronic register assists staff in identifying those who have been vaccinated at least once, thus supporting opportunistic vaccination. Pneumococcal vaccines dispensed in 1996 was 5241 compared to 2457 for 1995 representing a 113% increase in uptake.

In 1994, THS endorsed and partially funded a hepatitis A vaccination program for 'at risk' THS and other occupational groups (WHO recommendations) and low risk THS staff (user pays). The program was advertised to all eligible occupational groups. Participation in the program was voluntary. In order to facilitate informed consent an information booklet was developed and given to all enrollees. Over 542 persons participated in the program between August 1994 and March 1996.

The THS has researched, implemented and evaluated many strategies for the safe transport and storage of vaccines which is critical to administering a potent vaccine. Initially an intensive training program for staff handling and administering vaccines was conducted. Ongoing training is a priority with THS and training workshops are conducted regularly through Batchelor College, health centres and Aboriginal Medical Services in the handling and administration of vaccines. Through representation on the National Childhood Immunisation Committee, THS was instrumental in the development of a national system for the transport and storage of vaccines throughout Australia.

In summary, the NT/THS:

- is the first State/Territory, by at least six years, to introduce universal hepatitis B vaccination for neonates and make it work;
- has an action plan to reach most susceptible members of the community up to 35 years of age during outbreaks of measles;
- had the highest rates of invasive Hib disease in Australia and now it has the lowest rate;
- funded pneumococcal vaccine and the infrastructure to deliver it to all those at risk for pneumococcal disease;
- actively promotes adult immunisation;
- has an active program for hepatitis A vaccination of at risk groups; and
- contributed to the standards for the National Cold Chain by providing the expertise for the chapter 'Storage and transport of vaccines' of NHMRC "Australian immunisation procedures handbook fifth edition" and the NHMRC publication "Keep it cool: the vaccine cold chain".

TERRITORY HEALTH SERVICES

Congratulations to the staff of
Territory Health Services and Vaccine Providers

On behalf of Territory Health Services Executive, I congratulate and thank you on your dedication in the continuing fight against preventable childhood diseases.

The Commonwealth Department of Health and Family Services have recognised this effort with a "Commendation for Excellence" in the 1996 Jenner 200 Years of Immunisation Health Professional Awards.

A copy of the letter from the Commonwealth is enclosed and your efforts have also been heralded in "Newsround," the official newsletter of Territory Health Services.

You should all be very proud.

Regards

Peter Plummer
Chief Executive Officer.

14 March 1997

COMMONWEALTH OF AUSTRALIA

GPO Box 9848 Canberra ACT 2610
Telephone: (06) 289 1555 Fax: (06 281 6946

Commonwealth Department of
Health and
Family Services

Territory Health Services
PO Box 40596
CASUARINA NT 0811

Dear Staff of the Territory Health Services

On behalf of the Commonwealth Department of Health and family services, I would like to congratulate you for receiving a Commendation for Excellence in the *Jenner 200 Years of Immunisation Health Professional Awards*. This commendations in recognition of the dedication you have demonstrated in the continuing fight against childhood diseases.

Immunisation is a priority of the government, and the Minister for health and Family services, Dr Michael Wooldridge, is committed to the National Immunisation Program and the National Health and Medical Research goals.

These goals concentrate on achieving immunisation levels by the Year 2000 including:

- greater than 90% coverage of children at 2 years of age for all diseases specified in the Standard vaccination Schedule;
- near universal coverage of children of school entry age for diphtheria, tetanus, pertussis, polio, measles, mumps and rubella;
- near universal coverage of girls and boys under 17 years of age for measles, mumps and rubella.

These targets are only achievable through the continued outstanding efforts of health professionals such as the Territory Health services.

Yours sincerely

Dr Cathy Mead
Head
National Centre for Disease Control
February 1997

Non-Communicable Diseases Update: No.2. Message: Treat lipids aggressively in patients with known cardiovascular disease.

Tarun Weeramanthri, Community Physician, CDC, Darwin

This update will summarise the results of two studies: the Scandinavian Simvastatin Survival Study (SSSS)[1] and the Cholesterol and Recurrent Events trial (CARE)[2] and discuss their implications for health care providers. The SSSS study in particular has changed the whole approach to lipid treatment since it is the first study ever to show a statistically significant benefit in terms of overall mortality after drug treatment for hyperlipidaemia.

SSSS was a prospective placebo-controlled double blinded clinical trial of 4,444 patients conducted in 94 centres across Scandinavia. The patients were aged 35-70 years (81% male) with angina or previous myocardial infarction and total serum cholesterol levels between 5.5 - 8.0 mmol/L and triglyceride levels ≤ 2.5 mmol/L on a lipid-lowering diet. They were randomly assigned to receive either simvastatin (20 mg before the evening meal) or placebo. Patients with a history of myocardial infarction in the previous six months or with heart failure, atrial fibrillation or an enlarged heart were excluded from the study. The subjects were followed up for a median period of 5.4 years.

The goal of treatment was to achieve a total cholesterol of 3.0 to 5.2 mmol/L. Dosage was adjusted (from 20 mg simvastatin to 40 mg nocte) at 12 weeks and six months as necessary. Overall, simvastatin led to a 25% fall in total cholesterol, a 35% fall in LDL cholesterol (the atherogenic or 'bad' sort) and a 8% increase in HDL cholesterol (the protective or 'good' sort). In the placebo group, there was an average rise of 1% in total, LDL and HDL cholesterol levels and patients were switched onto drug therapy if total cholesterol rose above 9.0 mmol/L. Side effects attributable to simvastatin were uncommon with 6% of both simvastatin and placebo groups discontinuing their medications because of adverse effects.

The difference in outcomes between the two groups was dramatic. Major coronary events occurred in 28% of the placebo group, but only 19% of the simvastatin group. There was a corresponding reduction in coronary heart disease (CHD) deaths and no difference in non-cardiovascular deaths. Mortality from all causes was 12% in the placebo group and 8% in the simvastatin group. The reductions in major coronary events, cardiovascular mortality and overall mortality were all statistically significant. The reduction in risk with simvastatin applied irrespective of the baseline level of LDL.[3]

The hypothesis that hypercholesterolaemia is a risk factor for CHD has long been proven. SSSS proved the subsequent and clinically relevant hypothesis that lowering cholesterol levels with drugs can lessen mortality from CHD, at least in those who have already been diagnosed with CHD. The cost effectiveness of this approach in those with known CHD has been demonstrated by the SSSS group and estimated to be $A12,400 per year of life saved, comparable to bypass grafting for the usual indications.[4]

The CARE trial showed a similar effect with pravastatin on coronary events, as SSSS did with simvastatin. The CARE study population of 4159 patients had all had a myocardial infarction 3-20 months previously, and were 21-75 years of age. The entry criteria were different in that it only included patients with total cholesterol levels < 6.2 mmol/L (and provided their LDL was between 3 and 4.5 mmol/L). This was a group whose baseline mean total cholesterol was lower than the SSSS study (5.40 mmol/L vs 6.75 respectively). There was no significant reduction in overall mortality, however, perhaps because the rate of reduction in coronary events diminished as the baseline level of LDL cholesterol diminished. In fact, there was no reduction in coronary events among patients with baseline LDL levels below 3.23 mmol/L. (The mean baseline LDL in SSSS was 4.87 mmol/L and was 3.59 in the CARE trial, so this possible 'threshold effect' may not have been noticed in the SSSS.) Adverse events led to discontinuation of the medication in 2.2% of the pravastatin group and 3.6% of the placebo group.

Serious adverse side effects of the statin group of drugs (including simvastatin, pravastatin and fluvastatin) are uncommon but include muscle disorders and liver toxicity. Previous prevention studies had suggested that lowering cholesterol with drugs might increase the risk of death from cancer and violence. SSSS and CARE have reassured us as to the safety of the statin drug group and a recent meta-analysis[5] of cholesterol lowering trials suggests that the increased non-cardiovascular mortality seen was confined to those trials using fibrates (clofibrate, gemfibrozil) and hormones (oestrogen and thyroxine) and was independent of the degree of cholesterol lowering.

Clinical implications

In general, anyone who has had a myocardial infarct or angina (and by extension anyone with other known cardiovascular disease such as transient ischaemic attacks, previous stroke, or peripheral vascular disease) with a total cholesterol over 5.5 mmol/L, an HDL cholesterol over 1.0 mmol/L and a triglyceride level under 2.0 mmol/L after 6-8 weeks of dietary therapy should be treated with a statin drug. The aim of treatment

should be to reduce total cholesterol to less than 4.5 mmol/L. The National Heart Foundation (NHF)[6] and the Australian Diabetes Society[7] provide a range of additional treatment options for patients, such as diabetics, who may have other lipid patterns such as a predominant hypertriglyceridaemia.

The benefit of cholesterol lowering in those with known cardiovascular disease starts to be expressed within 6-12 months of starting therapy and its magnitude is considerable. A meta-analysis of secondary prevention studies, that included the SSSS data, concluded that for every 10% fall in serum cholesterol, overall mortality was reduced by 8-10%.[5]

An important feature of the SSSS and CARE trials was the high initial dose of statins used (20 mg simvastatin and 40mg pravastatin) as a single daily dose. These are higher, in fact, than the recommended starting doses in MIMS. In the SSSS, 37% of patients taking simvastatin had their doses raised to 40 mg nocte during the first six months after randomisation. After one year, 72% of those on simvastatin had achieved the total cholesterol goal of <5.2 mmol/L. In the CARE trial, cholestyramine was added if 40 mg pravastatin was not effective. At these doses, the efficacy of these drugs in reducing total and LDL cholesterol levels was striking. Overall there was a 35% fall in LDL seen in SSSS and a 28% fall in CARE (from a lower baseline). Previous studies of medical treatments had achieved on average only a 10% fall in LDL.

Given the low incidence of adverse effects seen in the trials, it would seem reasonable to use a higher starting dosage of statins in routine clinical practice except in the elderly and in those with significant hepatic or renal dysfunction.

The role of dietary change

Dietary advice is still the cornerstone of lipid management and lipids should be measured at least twice before treatment is commenced. However the effectiveness of dietary advice is limited. Moderate dietary advice given on a one-to-one basis leads only to an average 2% decrease in cholesterol in trial participants.[8] Similar average falls for moderate dietary advice are seen when the advice is given through a population education approach. More intensive dietary advice can lead to greater falls in cholesterol in those with high dietary fat intakes to begin with. It is not too far from the truth to say that acceptable dietary changes have a very modest effect on serum cholesterol, whereas diets that do lower cholesterol to a greater degree are close to unpalatable.

The recommended time for giving diet to work before introducing drugs seems to be diminishing. For example, the 1992 Consensus Statement on the Management of Hyperlipidaemia recommended a six month trial of dietary therapy under normal circumstances.[9] The new NHF guidelines recommend a trial of 6-8 weeks in those with existing CHD and three months in other groups.[6] However, dietary advice should always continue through a period of drug therapy.

In the next edition of this Bulletin, the treatment of hyperlipidaemia to prevent coronary heart disease in the asymptomatic population will be considered.

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Ross River virus transmission in Darwin, Northern Territory, Australia

Peter Whelan[1], Angela Merianos[2], Gwenda Hayes[1] and Vicki Krause[2]
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Introduction

The alphavirus Ross River virus (RRV) is responsible for most of the confirmed cases of arbovirus disease in Australia and is responsible for periodic outbreaks of arbovirus disease in the Northern Territory (NT).[1,2,3]

A mosquito monitoring program utilising CO2 baited traps has been in place in Darwin since 1979. There are currently 17 traps set weekly in various positions in the Darwin suburban area between sources of mosquitoes and urban areas. The usual pattern of adult abundance is high *Aedes vigilax* numbers from September to January and high *Culex annulirostris* numbers from January to June.

There have been six isolates of RR from four species of mosquitoes in the Darwin area from 1982 to 1992.4 Two isolates each were made from *Cx. annulirostris* in February and March and *Ae. vigilax* in January, with one isolate each from *Aedes phaecasiatus* in March and *Aedes notoscriptus* from pooled collections made from January to March. *Aedes vigilax* and *Cx. annulirostris* have been considered the principal suspected vectors of RR in the Darwin area.[1]

An arbovirus disease surveillance program was established in the NT in 1980 and has continued to monitor the number of laboratory confirmed cases of RR infection. The aim was to utilise this data to identify vector control requirements by the timely detection of geographical and temporal clusters of arbovirus infections.[1]

The largest number of confirmed cases in the Darwin region occurred in 1990/91 when there was a large outbreak over a wide area of the NT.[3] During the outbreak the highest attack rate (cases per 100,000 population) in the general Darwin area was in the surrounding rural Litchfield shire (886) followed by Darwin urban (228) and the satellite city of Palmerston (165). In this outbreak *Ae. vigilax* was regarded as the probable vector in the early part of the outbreak, with *Cx. annulirostris* the probable additional vector during the peak of the outbreak.[1]

There have been consistent numbers of laboratory confirmed cases of RRV infection in Darwin over the last ten years. The usual pattern of RRV infection in Darwin has been for most cases to occur between December and March with a January peak.[3]

Darwin, together with the satellite city of Palmerston and the extensive rural shire of Litchfield, has a large proportion of the population of the NT. Most mosquito control efforts are centred around urban Darwin which has a number of northern residential suburbs relatively close to an extensive seasonally brackish swamp. There is little organised or regular mosquito control in Palmerston because it was regarded as having relatively little proximal mosquito breeding places after the storm water drainage system and water features were constructed to specifically reduce mosquito problems. The Litchfield shire has no organised mosquito control program and has variable sources of mosquitoes ranging from small seasonally inundated areas to extensive wetlands.

It was decided to investigate the incidence of RRV cases in the three residential regions of Darwin and within the various suburbs of urban Darwin to determine whether the pattern of disease indicated a need for more focused mosquito control and mosquito awareness resources. This paper outlines the annual incidence of RRV disease in the three residential regions of Darwin and examines the vector and environmental variables in various suburban groupings of urban Darwin to determine if they could help explain the distribution of cases and hence assist in the prediction of risk periods for proactive mosquito control or disease awareness programs.

Conclusions

The highest incidence of RRV disease in the Darwin area was in the rural area of Litchfield. This was probably due to the proximity of sources of vector mosquitoes, increased exposure to vectors, proximity to possible hosts and the lack of a mosquito control program in this area.

High RRV incidence also occurred in the satellite city of Palmerston. This was probably due to small localised sources of mosquitoes, and the dispersal of mosquitoes, particularly *Ae. vigilax*, from relatively distant areas not under vector control. It is also possible that Palmerston residents have closer contact and hence vector exposure with the nearby rural and semi rural areas.

The highest incidence in urban Darwin was in the Leanyer suburb group which was adjacent to the large seasonally inundated coastal swamps. These are large sources of both *Ae. vigilax* and *Cx. annulirostris* vector mosquitoes. It is possible that the RRV incidence in this area would be significantly higher if it was not for the vector control operations in these swamps.

There was an appreciable buffer effect of RRV incidence by the Leanyer suburb group for the Northern suburb group. This supports the suggestion that various types of buffers could appreciably reduce the incidence of RRV disease.

The high incidence in the Rapid Creek area raises the possibility of urban RRV transmission by *Ae. notoscriptus* and this should be further investigated.

The logistic regression model used in this study did not reveal significant relationships between RRV incidence and vector and environmental variables, except for the reduced incidence with high tides which was probably a proxy for mosquito control.

Summary data averaging environmental variables across all suburban groups introduced co-linearity between numbers of the two main suspected mosquito vectors and rainfall, which limited the usefulness of this model. We will need to investigate a more appropriate model. It is possible that better disease data with point of infection for each of the RRV cases, and an analysis of the incidence of RRV cases with environmental variables and vector numbers for smaller suburban areas and smaller periods of time would reveal relationships between environmental variables, vector numbers and RRV disease. These could then be used as indicators for the requirement for vector control or public avoidance and self protection strategies to reduce RRV disease.

References

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Full paper will be available as proceedings of the Arbovirus Research in Australia, 7th Symposium/2nd Mosquito Control Association of Australia, National Conference 25-29 November 1996, Gold Coast. Copies can be obtained by contacting Peter Whelan on 8922 8333.

Control and treatment of active trachoma in the NT

Tanya Wallace, CDC, Darwin

Trachoma is still an important health problem in parts of the Northern Territory (NT). With the introduction of azithromycin as an effective, safe and easy to administer treatment for active trachoma in children, there has been a renewed interest in trachoma control programs, both at an international level, and at a national level. We are providing recommendations for control of active trachoma in the NT and some information about useful material for trachoma control programs, to encourage development of trachoma programs in the NT.

A. Recommendations for Control of Active Trachoma in the NT

1. **Improved environmental and socio-economic conditions** are acknowledged as the most important factors in preventing trachoma.

2. **Diagnosis of trachoma**
The World Health Organisations Grading system should be used.

3. **Assess prevalence rates**
- Assess prevalence rates in school aged children at annual school screening.
- From this identify :
  1. **Hyperendemic areas**: prevalence rate > 20%
  2. **Endemic areas** : prevalence rate 5-20%
  3. **Non endemic areas** : prevalence rate < 5%
- In communities with less than 5% prevalence, screening can cease.

4. **Treatment**

(i) ***Hyperendemic Areas :***
- These communities should be targeted for treatment and health promotion.
- The aim is to decrease the reservoir of active trachoma by treating all children school aged and under (> 6mths and 6 kg), and if possible women who are care givers of children.
- Treatment must be completed within 14 days.
- Re-treatment of all children, and if possible women who are care givers of children should occur at 6 months. Re-screening at this stage is not necessary.

(ii) ***Endemic Areas :***
- Treat the case and all household contacts.

(iii) ***Non-endemic areas :***
- Treat the individual case only.

5. **Medication**
- **Azithromycin** orally as a single dose,is the treatment of choice if over 6kg and over 6 months old,
- If azithromycin is contraindicated, discuss alternative treatment with the district medical officer.
- Refer to the Antibiotic Guidelines 1996/1997 or Antibiotic Dose Table 1996/1997 for doses.

B. Useful Material

Aids to screening

- ***WHO trachoma grading cards.*** These are a coloured pictorial guide to trachoma diagnosis and grading.
- ***WHO slides of trachoma.*** These come with a written description of the slides and are useful to train staff in the diagnosis and grading of trachoma.

Aids to treatment

- ***Trachoma treatment charts.*** These are useful for recording treatment. Azithromycin is available through the Therapeutic Goods Administration (T GA), which requires notification of drug usage. This means that you will need to send this information within one month of treatment to whoever is coordinating the trachoma control program in your district, for notification to TGA.
- ***Antibiotic dose table*** 1996/1997. This is a laminated wall chart made by THS with doses for the commonly used antibiotics, including azithromycin. This should be in all clinics and is useful to have accessible at the time of treatment.

Aids to health promotion

- ***A video called "Jabbys friend. A story about trachoma".*** This was made by the Kimberley Public Health Unit in the Health Department of Western Australia, and is aimed specifically at Aboriginal children with Aboriginal cartoon characters used to give culturally appropriate and entertaining information. It includes information about the disease process of trachoma and ways to prevent trachoma. It is great!!
- ***The trachoma sickness colouring in booklet.*** This is about prevention of trachoma and was made by the health promotion unit in Katherine. It is aimed at school children.
- ***Photos of trachoma*** on the trachoma grading card which is useful to discuss the various grades of trachoma.
- ***Information sheet on azithromycin and trachoma.*** This is useful for providing information to people involved with the trachoma program such as such as health workers, nurses, and the health promotion team, who can use this information to inform others in the community such as council members, education department staff and community members.

Other useful information from the WHO

- World Health Organization. ***Achieving community support for trachoma control.*** A guide for district health work. Geneva: WHO, 1995.
- World Health Organization. ***Primary health care level management of trachoma***. Geneva: WHO, 1989.
- World Health Organization. ***Future approaches to trachoma control.*** Report of a global scientific meeting. Geneva: June 1996.

The above is available within regions from:

Darwin:	CDC	ph 8922 8020/8922 8898
Katherine:	CDC	ph 8973 8766
East Arnhem:	CDC	ph 8987 0358/8987 0356
Alice Springs:	CDC	ph 8951 7808
Barkly:	CDC	ph 8962 4303

C. Drug Supplies of azithromycin

Azithromycin is available from the drug company Pfizer. There is now a suspension available for children. However it has not been officially approved for use in children in Australia, and is listed as a Special Access Scheme (SAS) Category A drug with the TGA. This means that they need to be notified by the treating doctor within a month of treatment. The usual notification to TGA requires separate forms for each patient treated. However, in the case of treatment of trachoma using azithromycin in children, the TGA are happy to have the information sent to them "in bulk" and not for individual children. The above information was confirmed with the TGA in February 1997.

Treatment sheets are available (see B. Useful Material), which you may find useful to record treatment information in communities to forward the necessary information to the TGA.

In summary, to use azithromycin suspension all you need to do is arrange for pharmacy within your district to order in supplies of azithromycin suspension, and once treatment has been given, to notify the TGA within a month.

Useful addresses and telephone numbers are:

Notification of treatment to:
Drug Safety and Evaluation Branch
Therapeutic Goods Administration
PO Box 100 Woden ACT 2602
ph (06) 2891555, fax (06) 2898709
contact person for problems: Kirsten Garlic

Azithromycin available from:
Pfizer Australia
38-42 Wharf Rd,
West Ryde NSW 2114
ph (02) 98503333, fax (02) 98503399
contact person for problems: Christina Jameson

For THS programs drug supplies of azithromycin are being coordinated within regions by:

Darwin and East Arnhem Region
Dr Tania Wallace
Disease Control, Darwin ph 8922 8898

Katherine Region
Dr Jan Bullen
Disease Control, Katherine ph 8973 8766

Alice Springs Region
Dr Nick Williams
Remote Health, Alice Springs ph 8951 7808

PROTOCOL FOR STD TESTING
(GUIDE FOR THE CLINICIAN)

The following is an outline of STD testing recommended by the AIDS/STD Unit. It is not meant to be exhaustive, rather to provide a clear guide for managing common scenarios. The AIDS/STD Unit, within the Centre for Disease Control (CDC) in Darwin is available to provide assistance whenever required (Ph: 8922 8077).

STD TESTING FOR WOMEN

- ALL WOMEN HAVING A WOMEN'S CHECK DESERVE:

1. Careful **history** (eg. bleeding, pain, discharge, itch, sores, lumps, partners).
2. Genital **examination** (especially for pain, unnoticed ulcers, lumps and rashes).
3. **Tampon test** for chlamydia, gonorrhoea, trichomoniasis and HPV; regular cervical and vaginal tests may be taken (see below).
4. **Blood tests** for syphilis and HIV serology. These are encouraged especially if at risk.

ADDITIONALLY:

1. When due, perform a **PAP smear**.
2. When **pregnant**, take a vaginal specimen for air dried smear and swab for microscopy, culture and susceptibility (MC&S) for Group B strep and bacterial vaginosis and take antenatal bloods (refer Top End Women's Health Protocol or Women's Business Manual Central).
3. When **genital tract symptoms** are present
   - Cervical swabs x 2 for:
   i. gonorrhoea and chlamydia PCR
   ii. gonococcal culture and antibiotic susceptibility (MC&S), preferably using charcoal (Amies) media
   - Vaginal swab and slide for MC&S (thrush, bacterial vaginosis, trichomoniasis)
4. Other blood tests for hepatitis/HTLV1 etc if there is concern because of clinical picture or risk of exposure.

• FURTHER EXAMINATION AND OTHER TESTS WHEN CLINICALLY INDICATED (eg. ulcers)

STD TESTING FOR MEN

•ALL MEN HAVING A MEN'S CHECK DESERVE:

1. Careful history (eg. pain on passing urine, discharge, sores, lumps, partners etc).
2. Genital **examination** (especially for **ulcers**, lumps and rashes).
3. **First void urine (FVU)** - first 20 mls of urine passed into sterile urine specimen container, for PCR for chlamydia and gonorrhoea.
4. **Blood tests** for syphilis and HIV serology. These are encouraged especially is at risk.

ADDITIONALLY:

1. When **urethral discharge** is present:
   - swab drop of discharge for air dried smear and gonococcal culture and antibiotic susceptibility testing [preferably using charcoal (Amies) media]

   Note: Iolation of *Trichomoniasis vaginalis* in males is difficult, but may be a cause of a persistent discharge.
2. Other blood tests for hepatitis/HTLV1 etc if a concern because of clinical picture or risk of exposure.

• FURTHER EXAMINATION AND OTHER TESTS WHEN CLINICALLY INDICATED (eg ulcers)

LAB DIAGNOSIS OF THE GENITAL ULCER

Common infectious causes of genital ulcers are:

1. Syphilis
2. Herpes simplex virus (HSV1 & 2)
3. Donovanosis

Other causes are trauma, neoplasia, candidiasis, drug reaction (fixed drug eruption), inflammatory skin condition (eg. lichen sclerosus). Streptococci and staphylococci cause superficial ulcers.

* REMEMBER CLINICAL DIAGNOSIS IS NOTORIOUSLY UNRELIABLE: A LABORATORY DIAGNOSIS IS PREFERABLE

TESTING (initial)

1. For **HSV**:
   - swab ulcer base or vesicles vigorously (this hurts) and place in viral transport medium. **Refrigerate**, don't freeze.

2. For **Donovanosis**
   - Air dried impression smear (press slide onto ulcer). If lesion is in an area which is inaccessible to a slide, a smear can be made from a swab of the lesion.
   - Ulcer swabs x 2 from clean areas, preferably ulcer edge for:
   i. PCR - place in sterile container with 5 mls saline.
   ii. Culture - place in donovanosis transport medium (to be supplied).

ALL SPECIMENS MUST BE REFRIGERATED

3. **For syphilis:**
   - Serological testing. May not be positive early in primary syphilis.
4. **Bacterial** skin infections:
   - Swab for MC&S (charcoal media).

STANDARD TREATMENT PROTOCOL FOR SEXUALLY TRANSMITTED DISEASES

Gonorrhoea (genital)

i) acquired in the NT
Amoxycillin 3.0 g orally
PLUS
Probenecid 1.0 g orally stat
ii) acquired outside of the NT or contact of known PPNG (excluding SE Asia)
Ceftriaxone 250 mg IM stat
OR
Ciprofloxacin 500 mg orally stat
iii) Acquired in SE Asia
Ceftriaxone 250 mg IM stat
iv) *extra-genital*
Ceftriaxone 250mg IM stat
OR
Ciprofloxacin 500 mg orally stat
(NB. Ciprofloxacin should not be used in pregnancy)

Chlamydia

Azithromycin 1.0 g orally stat
OR
Doxycycline 200 mg orally daily for 10 days
(NB. Doxycycline should not be used in pregnancy)

Trichomoniasis

Tinidazole 2.0 g orally stat
OR
Metronidazole 2.0 g orally stat
OR *(if pregnant or breast feeding)*
Clotrimazole 100mg vaginal tablet, inserted at night for 6 nights
OR *(after first trimester)* Metronidazole 2g stat.

Herpes Simplex 1 & 2

Primary attack
Acyclovir 200 mg orally five times a day for 7 - 10 days
Prophylaxis
Acyclovir 200 mg orally two to three times daily
OR
Acyclovir 400 mg orally twice daily
If pregnant or breastfeeding seek specialist advice.

Donovanosis

Azithromycin 1.0 g orally once a week for 4 weeks or 500mg daily for 7 days
OR
Doxycycline 200 mg orally daily, continue for two weeks after lesions have healed
(NB. Doxycycline should not be used in pregnancy)
OR
Cotrimoxazole 160/800 one tablet orally twice daily, continue for two weeks after lesions have healed

Syphilis

Primary and secondary
Benzathine penicillin 2.4 million units IM stat
Latent
Benzathine penicillin 2.4 million units IM stat weekly for three weeks
Tertiary
Refer to specialist

"SYNDROMIC" TREATMENT REGIMENS

Urethritis/Cervicitis *(acquired in the NT)*

Azithromycin 1.0 g stat
PLUS
Amoxycillin 3.0 g stat
PLUS
Probenecid 1.0g stat
In areas of high Trichomoniasis prevalence add:
Tinidazole 2.0 g orally stat
OR
Metronidazole 2.0 g stat

Urethritis/Cervicitis *(acquired outside the NT)*

Azithromycin 1.0 g stat
PLUS
Ceftriaxone 250 mg IM *(if acquired in SE Asia)*
OR
Azithromycin 1.0 g stat
PLUS
Ciprofloxacin 500 mg orally stat *(if not acquired in SE Asia)*
(As above for Trichomoniasis)

These guidelines cover the commonly encountered problems. STDs in pregnancy and in children should be referred for specialist management. Azithromycin is now category B1 for use in pregnancy.

Phone: **Tennant Creek 89624218** **Katherine 89738795** **Nhulunbuy 89870359**
Alice Springs 89517549 **Darwin 89228007**

More detailed information concerning treatment can be found in the '1995/96 Antibiotic Guidelines' or local protocols e.g. 'Top End Women's Health Protocol'. A comprehensive guide to the treatment of STDs is the '1993 Sexually Transmitted Diseases Treatment Guidelines' produced by the U.S. Department of Health and Human Services. Copies are available through the Disease Control Centre in each district .

Pilot screening program for intestinal parasites and anaemia in adults in a Top End Aboriginal community

Dr Dale Fryar, District Medical Officer, Top End Rural Health
Simon Hagan Medical Student, Top End Rural Health

Introduction

Intestinal Parasites are endemic in top end aboriginal communities. Control programs currently focus on children, with protocols recommending regular screening for anaemia, and deworming every three to six months. However, there is no regular deworming of adults, and they are generally only dewormed if thought to be symptomatic, although in some centres opportunistic deworming of asymptomatic adults does occur.

Recently, a pilot program of adult screening and deworming was conducted in one community and information gathered in an attempt to establish if a regular program would be feasible and worthwhile. A recent case note review of the 114 adults from the community and outstations looked at the Full Blood Counts (FBC's) performed in the last 2 years and found that 65% had eosinophilia and 47% showed anaemia. Many FBC will have been done for investigation of known or suspected anaemia. Nevertheless, the rates of both eosinophilia and anaemia are high. Data was therefore collected during this pilot screening program in an attempt to get an estimate of true anaemia prevalence. In addition, the results of stool cultures from this program give an indication of the parasite infestation pattern.

Methods

A community meeting was held to explain the purpose and procedure of the program, and educate the local population regarding intestinal parasites. Over the following 2 weeks in June 1996, people were screened as they presented themselves for screening to the clinic, or during the routine outstation visits. Screening consisted of haemoglobin (Hb) testing, using the direct capillary sampling method and measured by the Haemocure Haemoglobinometer. All people presenting were asked to produce a stool specimen. The opportunity was taken to do other screening tests including blood sugar, blood pressure and urinalysis.

An individual was identified as anaemic if the capillary Hb was less than 11.5g/dl for women or less than 13.5g/dl for men. These levels correspond with those used by the clinics' usual Haematology laboratory, but are 0.5g/dl lower than those recommended in the Top End Region Adult Standard Treatment Protocols. If a person was found to be anaemic, confirmation was sought with venous FBC sent to the routine Haematology laboratory.

Stool specimens were preserved in formalin and underwent microscopy, using concentration techniques for ova, cysts and parasites. All people with positive stool microscopy or confirmed to be anaemic were treated with a three day regime of albendazole 400mg daily, except if the stool showed giardia, when they received tinidazole 2g stat. People found to be anaemic were also given iron treatment, and followed up.

Results

The programme was well received by the community, with an enthusiastic response for inclusion.

There were 28 stool specimens produced, of which 9 had one or more parasite species identified, ie 32% were positive. The number of times each species was identified is shown:

Trichuris trichuria	7
Hymenolepsis nana	2
Entamoeba coli	2
Strongyloides	1
Giardia	1
Hookworm	1
Multiple species	4

There were 67 people screened for anaemia. Six had a low Hb on Haemocue testing, but only 2 were verified truly anaemic on FBC. These were one male who had iron deficiency anaemia and eosinophilia on FBC and trichuris and hookworm identified on stool testing. One female had iron deficiency anaemia and eosinophilia, but did not produce a stool specimen.

Discussion

This program found an overall prevalence of 32% of intestinal parasites in participating adults. This is likely to be an underestimate of the community prevalence, because worm/egg shedding in faeces for some species is known to be intermittent, and therefore stool microscopy is not 100% sensitive, especially if only a single stool is examined. In addition, the program ran in the dry season, when infestation levels are lowest. This rate is less than expected when compared against unpublished rates elsewhere in the top end. This may reflect the widespread mass regular deworming of all children in this community, which approaches 100% coverage every three months, thus reducing the reservoir for infestation of adults. Also, opportunistic use of antihelminthics in this community in adults has been fairly liberal, and may have had an impact.

Trichuris was the commonest parasite identified on stool microscopy, with 25% of tested adults affected, whilst hookworm, once thought to be highly prevalent, was not found often. Once again, this probably reflects

the local usage of antihelminthics. It is likely only that the widespread use of pyrantel over several years has decreased the rate of hookworm infection, but has had little impact on *Trichuris*. Similarly, the more recent use of albendazole, which is not entirely effective against *Trichuris*, may be influencing this. A reduction in hookworm prevalence in other areas in Australia using antihelminthics has been well documented.[1]

Only 2 people out of 68 screened were found to be anaemic. Since the Hemocue system, with capillary specimens has a sensitivity in the order of 70%[2], it is likely that the true prevalence is about 3 per 68 (4.4%). This is better than expected.

Nevertheless, at least 32% of the adult population is infested with at least one intestinal parasite. The effect of this is difficult to ascertain, as evidence based knowledge of effects in adults is far from complete. Of some concern also is that it is possible that the adults act as a reservoir for reinfection of the children, between deworming.

It is not clear at the moment if adults should be regularly dewormed en masse in a similar fashion to the children in top end aboriginal communities. It is hoped that this data, along with other as yet unpublished data will form the basis for informed discussion in the near future, and a policy formulated.

References

1. Prociv P, Luke R. The changing epidemiology of human hookworm infection in Australia. *Med J Aust* 1995;162:150-154.
2. Mills AF, Meadows N. Screening for anaemia: evaluation of a haemoglobinometer. *Arch Dis Child* 1989;64:1468-1471.

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Editorial Comment

Intestinal parasites and deworming protocols in central and northern Australia

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

The report above highlights two points likely to be relevant elsewhere in the top end of the NT.

1. *Trichuris trichiura* is now the commonest intestinal worm found, although both hookworm and *Srongyloides* are also still present.
2. Adults are also being infested.

Limited data from other top end regions[1] and Royal Darwin Hospital[2] support these. A recently published study from the Kimberley[3] showed one community to have a much higher rate of hookworm in children (93%), although subsequent worm programs including albendazole therapy are likely to have substantially decreased the rate of hookworm. As noted in the paper the stool collection method may have led to an underestimate of the rate of *Trichuris*, although earlier reports from the Kimberley[4] suggested both *Trichuris* and *Strongyloides* may be less than in the top end of the NT. A past vigorous approach to deworming in Queensland, at least in part accounts for lower hookworm rates there for many years.[5]

At present the Top End Adult and Children Standard Treatment Protocols have regimens for specific worms and a recommended regimen for routinely deworming of children aged 6 months to 12 years with albendazole, single dose every 3 - 4 months.

The rationale for routinely deworming is the overseas data which show that, in some situations of heavy intestinal worm infestation, age-targeted chemotherapy improves nutrition and growth. In addition, a link with anaemia (long recognised with hookworm) has been suggested for *Trichuris*. However what is not known for the NT is (1) the uptake, comprehensiveness, consistency and sustainability of the worm programs across the top end and (2) whether there are objective health benefits with the program as it is now occurring.

Of particular concern are the persisting high rates of *Trichuris*; while single dose albendazole decreases *Trichuris* worm numbers in the individual ,eradication is difficult. Furthermore, in situations of difficulties with sanitation and hygiene, reinfestation of *Trichuris* through ingestion of eggs from the contaminated local environment is rapid. In the next edition of Antibiotic Guidelines, while the community deworming program will continue with single dose albendazole, the treatment for confirmed *Trichuris* infestation is likely to be changed from single dose albendazole to albendazole, daily for 3 days. The alternative of mebendazole twice daily for 3 days remains the same.

Issues to be considered include:

1. Can worm programs be better rationalised by more comprehensive data on regional parasite burdens across northern and central Australia? Alternatively, do current local and overseas data support a generic worm program, especially for northern regions, without more data collection?

2. How can community worm programs be best supported and implemented, including through school screening initiatives currently developed?

3. What specific information can be useful to assess the benefits of community worm programs, including informing the decision about when the program can stop in a particular community or region?

4. How far should assessment and treatment of children over 12 years and adults be taken? (Note that albendazole should not be used in pregnancy).

5. How can the complex issues of housing, sanitation, water supply and hygiene be best incorporated into initiatives addressing intestinal parasite (and bacterial) burdens?

References

1. Various unpublished community and laboratory reports.
2. Fisher D, McCarry F, Currie B. Strongyloidiasis in the Northern Territory. Under-recognised and under-treated? *Med J Aust* 1993; 159:88-90.
3. Hopkins RM, Gracey MS, Hobbs RP et al. The prevalence of hookworm infection, iron deficiency and anaemia in an Aboriginal community in north-west Australia. *Med J Aust* 1997; 166:241-244.
4. Meloni BP, Thompson RCA, Hopkins RM, et al. The prevalence of *Giardia* and other intestinal parasites in children, dogs and cats from Aboriginal communities in the Kimberley. *Med J Aust* 1993; 158: 157-159.
5. Prociv P, Luke RA. The changing epidemiology of human hookworm infection in Australia. *Med J Aust* 1995; 162: 150-154.

TO THE EDITOR

Blood Culture collection and Rural Health Care Professionals

I am writing to promote appropriate and needed blood culture collection for rural health care professionals. Blood cultures, together with cerebrospinal fluid (CSF), are the most critical specimens submitted to the Microbiology Laboratory. I will outline the reasons for the collection of blood cultures; discuss the correct collection technique; the timing of collection; and the cost of processing.

Reasons for collection

Blood cultures are usually collected in patients who are febrile and considered to be at risk of bacteraemia/ septicaemia. Many conditions predispose to bacteraemia, e.g., urinary tract infection, pneumonia, and endocarditis. Usually the aetiology is determined by culturing the relevant clinical specimens, however, sites like the respiratory system have their own potentially contaminating normal flora.. For example, a patient with pneumonia may grow *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis* from his sputum. Because all of these organisms can be part of the normal flora of the respiratory tract, the question remains...*What is the likely pathogen*? If this patient's blood grew a *S. pneumoniae* it would be excellent presumptive evidence that he had pneumococcal pneumonia.

The cause of a patient's fever is often unknown and the focus of infection may be difficult to determine. While a positive blood culture may not always pinpoint the source of infection, it will assist in designing a rational approach to antimicrobial management.

Correct collection technique

Technique is everything when it comes to correct blood culture collection. For peripheral collection, the skin at the collection site must be as clean as possible. Alcohol swabs should be used to vigorously rub the site as well as the palpating finger. This mechanical scrubbing action is essential. The alcohol should be allowed to dry on the skin for maximal antiseptic action. This process should be repeated as often as necessary to get a clean swab. Please note that contamination is a very real problem. The incidence here is much higher when compared to other centres.

If you have access to the BACTEC blood culture bottles please collect 20 mL in a syringe and then dispense into the appropriate blood culture bottles. If you like you can also use the Vacutainer system (however, please note the volume when filling-see side of bottle). **Ten millilitres** should be dispensed into each of one aerobic and anaerobic bottles. A set of blood cultures is constituted by one venipuncture. Two sets requires two distinct venipunctures.

The emphasis is on collecting at least one set before administering antimicrobials. A second set should be collected from a second venipuncture site.

Because the RDH uses a modern high quality blood culture system, viz., BACTEC 9240, the old textbook regime of three "sets" of blood cultures per 24 hours per septic episode no longer holds true. The RDH system uses a high volume protocol so that two sets is the equivalent of the old three sets. Importantly, one set is never enough! To separate contamination from true bacteraemia, two sets is the minimum and two sets should ordinarily be the maximum except in special

circumstances, e.g., endocarditis, where three sets may be acceptable. If in doubt please first consult with me or my registrar.

Most rural health facilities only have access to the Becton Dickinson BBL-Septichek bottles, and the same rules apply. These bottles are manually examined rather than using the fluorescent technology used for the BACTEC system. To obtain an accurate growth curve, the BACTEC system requires fairly immediate transfer to the laboratory after venipuncture.

An important aspect of blood culture collection is specimen labelling. Each bottle should be HAND LABELLED to avoid the confusion that can and does occur with the use of "STICKY IDENTIFICATION LABELS". Please do NOT use the sticky labels. Patient details including the name and date of birth MUST be included. For correct interpretation, the date and time of collection is essential. Clinical microbiologists are not small-scale market-gardeners who grow bacteria and display results. Our job is to help answer diagnostic questions, it is our role to interpret results. Correct specimen labelling helps to provide the essential data needed to interpret the results.

Timing of collection

The timing of blood culture collection has already been alluded to, however, it should be emphasised, there is little value in collecting two sets of blood cultures at the same time. Ideally there should be a distinct period of time between collections, e.g., 20 to 40 minutes. A common practice has emerged to collect blood cultures from each arm at the same time. In an emergency situation where antimicrobial agents are to be administered immediately, this is not unreasonable. (Please label bottles appropriately). However, if a patient is suspected of having endocarditis the protocol should be to collect three sets preferably one hour apart because the level of bacteraemia is often low.

Cost

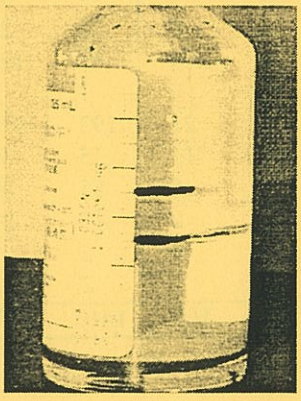
As with all things in health care provision, cost is a paramount consideration. At present e.g., the RDH Microbiology Laboratory Cost Centre is charged for the service component. In future if each unit is responsible for their own budgets, the cost of pathology tests will be incurred by the referring unit. These figures of course do not include the overhead costs associated with the equipment required to process them.

BACTEC Aerobic Bottle	~$5.00
BACTEC Anaerobic Bottle	~$5.00
Technician/Scientist time	~$20.00 - $25.00/hr
ID of a single organism (organism dependent)	~$20.00
Susceptibility testing (organism dependent)	~$10.00

Blood culture are expensive and time consuming but provide invaluable information if collected and labelled properly. If you have any concerns about blood cultures or any aspect of the Microbiology Laboratory service, please contact me or my registrar at any time on 8922 8091 or E-mail at *glum@ozemail.com.au* or *gary.lum@nt.gov.au*

Gary Lum
Director of Microbiology
Royal Darwin Hospital

BACTEC 9000 series blood culture bottle



BBL-Septichek blood culture set

NT NOTIFICATIONS OF DISEASES BY DISTRICTS
1996 and 1995

DISEASES	ALICE SPRINGS		BARKLY		DARWIN		EAST ARNHEM		KATHERINE		TOTAL	
	'96	'95	'96	'95	'96	'95	'96	'95	'96	'95	'96	'95
Acute Rheumatic Fever	10	5	0	0	17	11	9	1	8	4	44	21
Adverse Vaccine React.	3	0	0	3	8	7	0	0	1	0	12	10
Amoebiasis	0	0	0	0	0	1	0	0	1	0	1	1
Arbovirus infections												
Barmah Forest Virus	1	0	0	0	21	9	3	1	2	4	27	14
Dengue	0	0	0	0	6	8	0	0	0	0	6	8
Kunjin Virus	0	0	0	0	1	0	0	0	0	0	1	0
Ross River Virus	1	35	5	5	84	288	17	21	24	41	131	390
Campylobacter	64	144	2	3	163	184	3	2	39	20	271	353
Chlamydia	232	200	21	10	232	216	59	47	111	69	655	542
Cong.Syphilis	0	8	0	0	0	1	0	0	1	2	1	11
Donovanosis	8	16	3	1	4	13	1	1	5	14	21	45
Gastroenteritis	0	0	0	0	2	4	0	0	7	0	9	
Glomerulonephritis	4	8	0	6	6	16	4	29	2	9	16	68
Gonococcal Disease	343	300	15	20	210	87	81	43	163	95	812	545
Gonococcal Conjunct.	0	1	0	0	0	1	1	1	1	3	2	6
Haemophilus Inf type b	3	3	0	0	2	1	0	0	0	1	5	5
Hepatitis A	17	13	6	5	33	20	7	0	16	15	79	53
Hepatitis B	2	5	0	1	1	2	1	1	1	5	5	14
Hepatitis C (incidence)	0	0	0	0	3	5	3	0	0	0	3	5
Hepatitis C (prevalence)	31	44	3	1	174	253	3	2	6	9	217	309
Hepatitis E	0	0	0	0	0	1	0	0	0	0	0	1
HIV infections	1	0	0	0	6	1	0	0	0	0	7	1
HTLV-1	21	20	1	0	3	4	0	0	2	4	27	28
Legionnaires Disease	0	0	0	0	1	2	0	0	1	0	2	2
Leprosy	0	0	0	0	3	1	2	0	1	0	6	1
Listeriosis	0	0	0	0	0	1	0	0	0	0	0	1
Malaria	2	2	0	1	23	31	1	1	0	2	26	37
Measles	13	1	0	3	4	59	0	34	9	16	26	113
Meningococcal Infect.	0	1	0	0	7	5	1	2	1	0	9	8
Mumps	1	0	0	0	4	8	0	0	0	0	5	8
Pertussis	5	12	9	4	1	90	1	16	0	55	16	17
Pneumococcal Disease	43	62	5	0	26	21	0	3	10	9	84	95
Rotavirus	77	97	6	4	60	124	2	33	10	45	155	303
Rubella	0	0	0	0	7	9	0	2	0	0	7	11
Salmonella	120	78	17	21	192	175	39	34	63	61	431	369
Shigella	71	80	10	11	35	57	17	33	21	18	154	199
Syphilis	161	213	1	5	55	46	31	24	47	62	295	350
Tuberculosis	8	8	0	0	15	24	2	2	6	5	31	39
Typhus	0	0	0	0	2	1	0	0	0	0	2	1
Yersiniosis	0	0	0	1	2	1	0	0	0	0	2	2
Total	**1242**	**1356**	**104**	**105**	**1413**	**1788**	**285**	**333**	**559**	**568**	**3603**	**4150**

Points to note regarding notifications:

- Australian Encephalitis (MVE), Botulism, Brucellosis, Chancroid, Cholera, Congenital Rubella Syndrome, Diphtheria, Hepatitis D, Hydatid Disease, Leptospirosis, Lymphogranuloma venereum, Poliomyelitis, Typhoid and Viral Haemorrhagic Fever are all notifiable but had "0" notifications in this period.

NT Notifications for 1996

Comments

Adverse vaccine reactions.
Adverse reactions to vaccines became notifiable in 1995 and a similarly low number were notified in 1995 and 1996. These may be an underestimate of the true incidence of adverse reactions.

Arbovirus infections
There was a small rise in the number of Barmah Forest cases in 1996 compared with 1995 and a large fall in the number of notified cases of Ross River Virus. There was a lower rainfall in 1996, however the fall was most dramatic in the urban Darwin area where an extensive salt marsh mosquito control program was carried out.

Gastrointestinal diseases
There was a 32% decrease in the number of notified cases of campylobacter, and an almost 50% reduction in notifications of rotavirus. This is likely to reflect a real fall in the incidence of these conditions as there was no change in diagnostic or reporting procedures during this time.

Glomerulonephritis/Acute post-streptococcal glomerulonephritis (APSGN)
Outbreaks of APSGN in several remote communities in 1995 accounted for most of the 68 notifications in that year. The 16 cases notified in 1996 are likely to reflect the background incidence of sporadic cases of this disease.

Tuberculosis
39 cases in 1996 from 31 cases in 1995 represents an increase in Aboriginal cases mainly in central Australia where a well defined miniepidemic began in mid 1995 and peaked in 1996 with 8 cases in that year.

Leprosy
There were 6 cases of leprosy all diagnosed within a 4 month period in 1996. This compares with an average of 2 cases per year in the previous 5 years. The 6 cases were all men, Aboriginal and between 20 and 72 years old. An epidemic of clinical awareness?

Measles
The number of reported cases of measles has fallen dramatically since 1994 when the nation wide epidemic peaked. The NT had 402 notifications that year which fell to 113 in 1995 and 26 in 1996.

Pertussis
The NT experienced outbreaks of pertussis in 1994/95. The 16 cases that were notified in 1996 was a dramatic fall from 177 notified in 1995. An increase in pertussis had recently been noted in other parts of Australia. If the NT follows the national trend as it has with previous outbreaks of this disease, notifications in the NT may again start to rise.

Hepatitis C
There was a 30% decrease in notifications of prevalent cases of Hepatitis C in 1996. It is likely that this represents the tail end of a "catch-up" effect as the people who became infected over the last 20 years have been progressivley identified over the seven years since testing first became available. The data relating to incident cases is unreliable.

AIDS/STD General and Specific Comments

In July 1996, cases of gonorrhoea, chlamydia which were diagnosed using DNA amplification techniques (e.g. polymerase chain reaction - PCR) were included in the routine surveillance data. PCR has a higher sensitivity than conventional testing for each of the above mentioned pathogens and increases in the number of notified cases was anticipated.

Chlamydia
There was a 20% increase in the notifications of *Chlamydia trachomatis* in 1996 compared to 1995. This is in accordance with the anticipated increase in sensitivity of the PCR tests used and also as a result of the increase in screening activities related to the tampon testing technique now widely employed in the NT.

Donovanosis
Notification of donovanosis is principally practitioner-based and is known to be unreliable. The decrease in notifications in 1996 is unlikely to reflect a true decrease in disease incidence.

Gonorrhoea
The 49% increase in *Neisseria gonorrhoeae* notifications in 1996 represents the biggest jump of any of the notifiable diseases reported to Disease Control. Increases in screening activity partially explain the rise but the major factor is the improvement in diagnosis of patients in rural areas. The tampon study revealed that there was a near 10-fold increase in yield of positive results when PCR was used instead of conventional techniques for the diagnosis of *Neisseria gonorrhoeae*. Although it is well known that *Neisseria gonorrhoeae* is a fastidious organism, the fact that as much as 80% of the disease present in remote areas was being missed has not been appreciated until now. It is hoped that the ability to simply and accurately diagnose gonorrhoea in men (urine PCR) and in women (tampon PCR) will lead to a sustainable decrease in the prevalence of the disease in the near future.

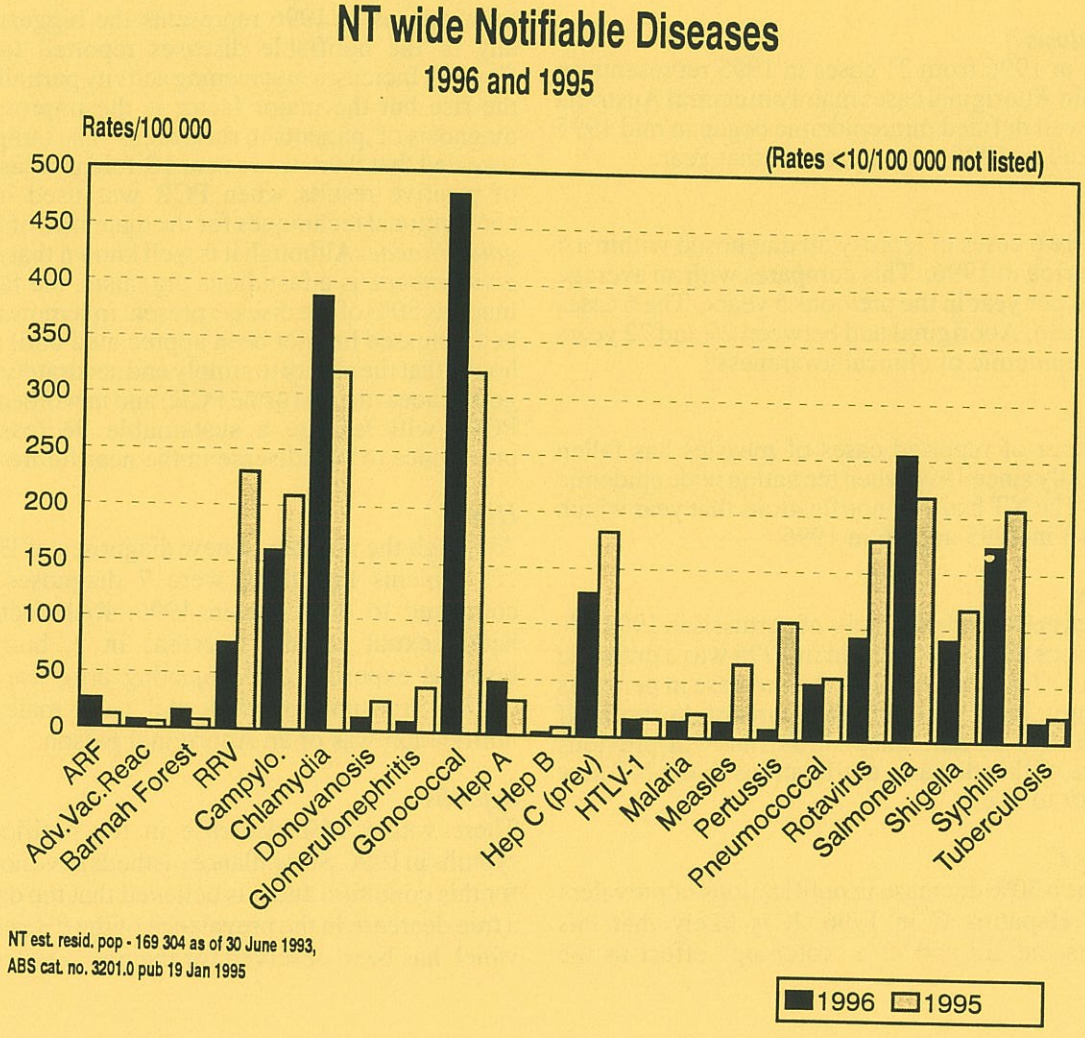
HIV
Although the number of new diagnoses of HIV in the NT remains low there were 7 diagnoses in 1996 compared to only one in 1995. Risk factors were heterosexual contact overseas in 2, homosexual/bisexual exposure in 3, injecting drug use in 1 and vertical transmission in 1. All were male and one notification was of an Aboriginal person.

Syphilis
There was a 16% decrease in the notifications of syphilis in 1996. Surveillance methods have not changed for this condition and it is believed that the data reflect a true decrease in the prevalence of the disease, a trend which has been observed for the past 4 years.

Notified cases of Vaccine Preventable Diseases in NT by Report Date 1996 and 1995

DISEASES	TOTAL		No. cases among children aged 0-5 years	
	'96	'95	'96	'95
Congenital rubella syndrome	0	0	0	0
Diphtheria	0	0	0	0
Haemophilus influenzae type b	5	5	3	4
Hepatitis B	5	14	0	1
Measles	26	113	14	36
Mumps	5	8	1	3
Pertussis	16	177	3	47
Poliomyelitis, paralytic	0	0	0	0
Rubella	7	11	4	3
Tetanus	0	0	0	0

- Mumps is largely under-reported.



MALARIA NOTIFICATIONS, NORTHERN TERRITORY
October to December 1996

Compiled by Peter Knibbs, CDC, Darwin

Four notifications of malaria have been received for the fourth quarter of 1996. The following table provides details about where the infection was thought to be acquired, the infecting agent and whether chemoprophylaxis was used.

ORIGIN OF INFECTION	REASON EXPOSED	AGENT	CHEMO-PROPHY-LAXIS	COMMENTS
PACIFIC				
PNG	Family visit	*P.vivax*	Yes	Developed symtoms 3 months after returning.
PNG	Attend wedding	*P.falciparum*	No	Developed symptoms while on Elcho Island.
ASIA/SE ASIA				
India	Indian resident	*P. falciparum*	No	Developed symptoms while at Kakadu.
Indonesia	Diving holiday	*P.vivax*	Yes	Developed symptoms 6 months after returning.

Total notifications for 1996 was 25 cases.

New Protocols/Guidelines

The 3rd edition of the *Malaria Protocol - Guidelines for health professionals in the Northern Territory* is now available. Have you had to use it yet? Try answering these questions.

1. Who would you contact for assistance with possible malaria cases during:
   i. working hours
   ii. after hours
2. When can patients with malaria be discharged from hospital?
3. Where is the register of all confirmed malaria cases maintained?
4. What is considered to be the receptive area for malaria in Northern Australia?
5. Which drug regimen is completely safe and effective against malaria?
6. When should patients have a G6PD screen?

Guidelines for *Leprosy Control in the Northern Territory (1996)* have also been recently distributed. The following questions are based on these new guidelines.

1. Who should be screened for leprosy?
2. What are the indications and procedure for skin smears?
3. What is the most common serious problem encountered on commencing leprosy chemotherapy and what is the treatment?

Please send your answers to:
Sue Reid, CDC, Block 4, Darwin (or E.mail: suereid@casrdh.health.nt.gov.au)
Those who answer the questions correctly will receive their own personal Communicable Diseases Bulletin binder!!

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PROFILES AND STAFF UPDATES

DEPARTURE

ALICE SPRINGS:
Nick Williams
Population Health Unit
Medical Officer
Nick left Disease Control in February to take up the position of senior DMO for Remote Health, Alice Springs. The Medical Officer position in the Population Health Unit is currently unfilled.

TEMPORARY TRANSFERS

ALICE SPRINGS:
Jenny Rossiter
Population Health Unit
Public Health Nurse
Jenny is transferring to Alice Springs Hospital from 1 April to fill Alison Pyper's Infection Control position for 12 months. Alison is off to Saudi Arabia for a change of scene. For the month of April, Fiona Wright (former TB nurse, Alice Springs) will temporarily fill the Public Health Nurse position on a part-time basis.

Annette Coppola
Sexual Health Unit
Tri-state Co-ordinator
Annette has transferred into the position of Tri-state co-ordinator, following Kerry Arabena's recent departure to Queensland. Penny Kenchington has moved into Annette's position as Co-ordinator of the Sexual Health Unit and Trina Cornwall, Annie Corey (part-time) and Rachael Morgan (part-time) are overseeing the syphilis database as well as working on other projects within the Unit.

DARWIN:
Angela Merianos
Head, Immunisation and Surveillance
Angela left for Nepal three weeks ago to embark on a 6 month hepatitis E research project. Fay Johnston (who recently completed the Master of Applied Epidemiology, through ANU) is filling in for Angela until September and can be contacted on 8922 8265.

Frank Bowden
Head, AIDS/STD Unit
Frank has recently been appointed the interim co-ordinator of the THS Co-operative Research Centre (CRC) in Aboriginal and Tropical Health. He is located in the new Menzies School of Health Research Building and can be contacted through the CRC secretariat on 8922 7713. Jan Savage is acting in Frank's position in his absence.

Sue Dubow
AIDS/STD Unit
Assistant Co-ordinator
Sue has transferred across to Merryn Hare's position as Assistant Co-ordinator while she is overseas on a scholarship posting.

Elizabeth Maxwell
Public Health Nurse, TB/Leprosy
Elizabeth is currently on a three month temporary transfer from her position as Community Resource Co-ordinator (discharge planning).

NEW STAFF

ALICE SPRINGS:
Margaret Stebbing
Population Health Unit
Public Health Nurse - TB Control
Margaret hails from Melbourne where she has worked as project manager in a diverse range of fields including disabilities, cardiovascular research, clinical genetics, HIV and hepatitis C. She has also worked in Nepal and has an interest in International Health issues.

James Ward
Sexual Health Unit
Aboriginal Health educator
James recently joined Christine Franks to make up the team of Aboriginal Health Educators in the Sexual Health Unit.

TENNANT CREEK:
Marianne Pascoe
Public Health Nurse
Marianne has recently moved across from the Barkly Mobile to take over from Sarina White who is currently on 12 months maternity leave. Her Australian work experience (since 1989) is wide and varied and includes midwifery at RDH and Thursday Island, remote nursing in Oenpelli, flightnurse for RFDS in Derby, WA, dental assistant in Katherine servicing all rural communities in the region and pathology work in Bowen, Queensland.

DARWIN:
Naomi Oliver
AIDS/STD Unit
Special Project Officer
Naomi joined the AIDS/STD Unit in December 1996. She has extensive experience in the education field, having worked for Family Planning as the Education Co-ordinator from 1989 to 1996. She has also worked with the Northern Territory University in the migrant education field and Batchelor College developing educational resources. She is currently working on the hepatitis C community awareness strategy.

Liz Stephenson
AIDS/STD Unit
Public Health Nurse
Liz (who previously worked as a remote area nurse in Maningrida) has transferred into Sue Dubow's position as a Public Health Nurse in the AIDS/STD Unit while she is acting as Assistant Co-ordinator.

Steve Morton
Non-communicable Diseases
Project Officer
Steve is the new project officer working with Tarun Weeramanthri in area of non-communicable diseases. His responsibilities include establishing a Chronic Diseases Network and carrying out specific projects within the framework of a Chronic Diseases Strategy.