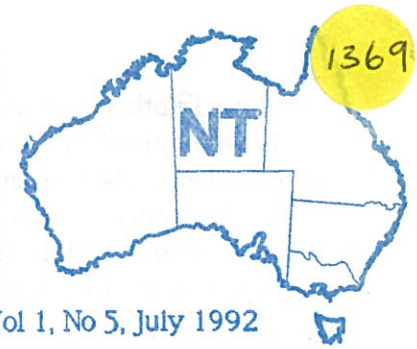
THE NORTHERN TERRITORY COMMUNICABLE DISEASES BULLETIN



1369

NT DEPARTMENT OF HEALTH AND COMMUNITY SERVICES

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DIPHTHERIA IN ALICE SPRINGS

Dr Rosie Brennan and Sr Dianne Brookes,
Communicable Disease Control Centre, Alice Springs

16 diphtheria isolates were detected in central Australia between 1/7/91 and 11/6/92. All were *Corynebacterium diphtheriae var mitis;* 10 wound isolates (not routinely tested for toxigenicity); 4 throat isolates (2 toxigenic); and 2 nasal isolates (both non-toxigenic). Contact tracing is carried out for cases of nasopharyngeal diphtheria.

On 20 May, an 11 year old child presented to the Alice Springs Hospital with a 6 week history of bilateral, purulent and offensive nasal discharge which yielded *C. diphtheriae var mitis* on culture. She had a past medical history of persistent *C. diphtheriae var gravis* in 1986.

Initial contact tracing involved taking nose and throat swabs from all household members, classmates, and several teachers. Diphtheria vaccination records were checked and vaccinations updated when required. The girl's mother was a nasal carrier of *C. diphtheriae*, but none of the other contacts were positive. We then excluded carriage of the organism among the mother's workmates.

The case and carrier had records of primary immunisation with Triple Antigen, including the 18 month vaccination, but neither had a record of subsequent diphtheria boosters.

The index case was given Bicillin AP 2ml IMI on 25 May, and her mother had Bicillin 4ml IMI on 28 May. *C. diphtheriae* was again isolated from nasal swabs of both cases on 2 June, and we then prescribed a 7 day course of oral erythromycin. The mother's nasal swab was negative on 10 June, but it was still positive in the index case. Further results are pending. On 9 June, CDCC was informed that the original isolates were non-toxigenic.

EDITORIAL COMMENT

C. diphtheriae toxigenicity studies take approximately 10 days, so outbreak control measures must begin while awaiting results. Early recognition of diphtheria is important as the case fatality rate of 5-10% has not changed appreciably in the last 50 years (Benenson, 1990). These recent cases in Alice Springs in which primary diphtheria vaccination was complete, support the need for the 5 year CDT and regular adult immunisation with ADT every 10 years.

Although immunisation against diphtheria confers protection against clinical disease in the majority of people and is strongly recommended,

CONTENTS

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a recent diphtheria fatality in Darwin in a previously immunised case (NT Communicable Disease Bulletin 1(4):5) demonstrates the need to offer chemoprophylaxis to all contacts regardless of immunisation status; there are other examples in the literature of cases of diphtheria in people with serum antitoxin levels well above the "protective" level of 0.01 units/ml.

What constitutes adequate chemoprophylaxis is unclear. A review of the literature has shown a wide range of recommended antibiotic regimens, eg single dose benzathine penicillin, 14 days of intramuscular procaine penicillin, and erythromycin for 5 to 10 days.

The role of diphtheria in wounds is also unclear, especially when toxigenic strains are found. CDC in Darwin is trying to collect as much information as possible on diphtheria, and would like information on all new cases. Following a comprehensive review on the subject new recommendations for chemoprophylaxis will be published.

REFERENCE

Benenson AS. Control of communicable diseases in man. 15th edn. Washington: American Public Health Association, 1990.

MEASLES IN ALICE SPRINGS

Dr Rosie Brennan, CDCC and Dr Peter Tait
CAAC, Alice Springs

Measles cases continued to be reported in Alice Springs during April-June 1992. There were five cases among Aborigines in one town camp (cases 1-5) and two cases among non-Aborigines (cases 6 and 7). Table 1 gives the line listing of the cases.

DISCUSSION

The index case was vaccinated in 1978 when a less temperature- stable vaccine was available, so she may represent either primary or secondary vaccine failure. Her 3 week old infant is a probable case, on epidemiological and clinical grounds.

Case 3 eluded the second measles vaccination which is the standard measles control measure followed by the Central Australian Aboriginal Congress (CAAC). She also visited a rural Aboriginal community during the infectious period, but due to prompt notification by CAAC, Rural Health staff were able to implement the Measles Protocol quickly and no secondary cases were reported in the rural community.

Case 4 is either a vaccine failure or a coincident mild measles-like illness, with the raised measles IgM due to vaccination.

The severity of Case 5's illness suggested that it was measles, but may have been vaccine-induced measles which is non-communicable, and usually occurs up to 12 days post-vaccination. Measles serology can't distinguish between wild measles and vaccine-induced illness.

Table 1 : Line listing of measles cases in Alice Springs

Case No.	Age	Sex	Onset Date	Vaccination with MMR/MM	Measles IgM	Known contact with other cases
1	18 yrs	F	1/4/92	MM 1978	+	Case 2
2	3/52	U/K	5/4/92	NA	ND	Case 1 (mother)
3	6 yrs	F	16/4/92	MMR age 9/12	+	Cases 1 & 2
4	8/12	M	5/5/92	MMR 3/4/92	+	Cases 1 & 2
5	11/12	M	18/5/92	MMR 6/5/92	NA	No
6	Infant	M	28/4/92 (notified 18/5/92)	NA	U/K	No
7	15/12	M	7/6/92	MMR	IgG+	No

U/K : unknown
NA : not applicable
ND : not done
MM : measles-mumps vaccine
MMR : measles-mumps-rubella vaccine

Case 7 serves to emphasize the importance of serology in guiding the extent of measles control measures. On the grounds of contact with case 7, we excluded an unvaccinated 10 month old child attending the same playgroup, while awaiting his serology result. He proved to be measles IgG positive (ie immune), and this result meant that the contact could return to playgroup within 4 days rather than the recommended exclusion period of 14 days.

ENTERIC DISEASE NOTIFICATIONS IN THE NORTHERN TERRITORY

Epidemiology

Notifications for campylobacter, hepatitis A, salmonella and shigella accounted for 34% of all communicable disease notifications in 1991 (1320/3838 reports). Salmonella was the most commonly reported enteric infection with an incidence rate of 270 cases per 100 000 (473 reports).

The following tables show case numbers by disease, age group and region, and stratified incidence rates per 100 000. We were unable to stratify by race with any confidence because 41% of notifications failed to specify ethnic group. The figure on page 4 shows the long term trends of salmonellosis in the NT and Australia for the period 1976 - 90 on a logarithmic scale.

In 1990 the incidence of salmonella, shigella and campylobacter infections was 257, 133 and 206 per 100 000 respectively in the NT and 27, 4, and 33 per 100 000 in Australia ie the NT rates were 9.5, 33.3 and 6.2 times the national rate for the corresponding infections. There has been little change in the local trends of salmonellosis and shigellosis in the last 12 years; the lower rates in 1976-77 reflect less consistent reporting practices (data not shown for shigella).

56.5% of all notifications for campylobacter, salmonella and shigella involved children aged 0 - 4 years, and infants aged 0 - 11 months (2% of the NT population) accounted for 9.5% of reports. The highest incidence rates also occurred in the under 5 year age group (Table 1). Failure to thrive, growth retardation and chronic malnutrition are sequelae of this enteric disease burden in the NT. The second peak in the 20-29 year age group reflects adult infection while rearing young children. The sex ratio in this age group is F : M 1.7 : 1.

Table 1 **Case numbers and age-specific incidence rates per 100 000* of the notifiable enteric diseases, NT 1991.**

Age Group	*Campylobacter*	*Hepatitis A*	*Salmonella*	*Shigella*	*Total*
0 - 11 mths	34 (1172)	0 (0)	82 (2828)	9 (310)	125
1 - 4 yrs	251 (2083)	13 (108)	187 (1552)	140 (1162)	591
5 - 9	25 (179)	5 (36)	20 (143)	24 (171)	74
10 - 14	8 (58)	5 (36)	4 (30)	6 (43)	23
15 - 19	7 (54)	5 (38)	8 (61)	11 (84)	31
20 - 29	28 (850	20 (61)	29 (880	47 (143)	124
30 - 39	24 (83)	17 (59)	26 (90)	45 (156)	112
40 - 49	6 (35)	0 (0)	17 (99)	17 (99)	40
50 and over	13 (75)	7 (40)	91 (522)	39 (224)	150
Unknown	14	2	9	25	50
Total	410 (234)	74 (42)	473 (270)	363 (207)	1320

* The numbers in paraentheses are the incidence rates per 100 000.

Regional differences (Table 2) may reflect true differences eg unrecognised local outbreaks, but are influenced by laboratory and doctor notification practices, different laboratory protocols eg. the Alice Springs Hospital laboratory routinely plates all faecal specimens for Campylobacter, criteria for stool collection, and patient recognition of and attitudes towards milder forms of diarrhoea.

Table 2 **Case numbers and incidence per 100 000* of the notifiable enteric diseases by region, NT 1991.**

Disease	*Alice Springs*	*Barkly*	*Darwin*	*East Arnhem*	*Katherine*
Campylobacter	245 (958)	19 (546)	143 (183)	0 (0)	3 (32)
Hepatitis A	1 (4)	7 (201)	48 (61)	5 (106)	13 (139)
Salmonella	80 (313)	15 (431)	294 (376)	41 (868)	43 (459)
Shigella	151 (590)	31 (891)	126 (161)	21 (444)	34 (363)
Total	477	72	611	67	93

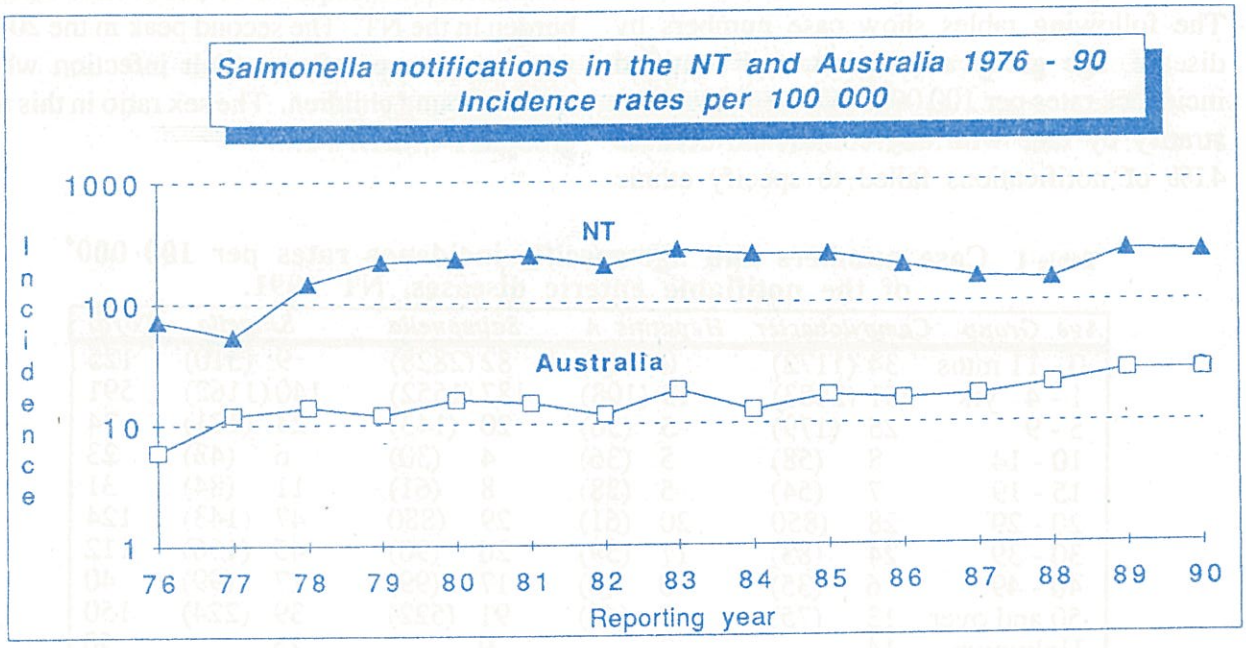
* The numbers in paraentheses are the incidence rates per 100 000.

Hepatitis A

Hepatitis A is under-reported in the Northern Territory (42 per 100 000). This probably results from earlier acquisition of the virus, and missed diagnoses of very mild clinical and subclinical disease in young children. Conversely, the transient nature of the NT adult population means that we have a constant influx of non-immune adults from low prevalence states, with the potential for large scale outbreaks. The national rate for hepatitis A in 1990 was 3 per 100 000.

Hospital with diarrhoeal disease and tested on 3 consecutive days, 75% of stool cultures were negative (Dr A Ruben, unpublished data).

As part of our activities to improve the control of communicable diseases in the NT, Communicable Disease Officers (CDOs) are contacting doctors to collect further information on the contact tracing carried out for priority diseases with outbreak potential (eg. the enteric and vaccine preventable diseases) and/or which require counselling (eg. hepatitis B, hepatitis C, and the sexually transmissible diseases).



Surveillance

Our enteric disease notifications under-estimate the true diarrhoeal disease problem in the NT, focusing only on some bacterial pathogens. Asymptomatic carriage and excretion of enteric pathogens are important in maintaining transmission. Single stool examinations are insensitive in diagnosis, and the early use of antibiotics further reduces isolation rates. In a survey of children admitted to the Royal Darwin

Key issues in enteric disease control

Does the patient work as a food handler, health care or child care provider?

If a young child, is the child toilet trained, and does the child attend a creche, day care centre, pre-school or play group?

Does the patient attend an institution (educational or residential)?

Has the patient travelled overseas or interstate?

Is there known contact with other cases of diarrhoea?

(Recent outbreaks of hepatitis A in gay men in NSW, Victoria and SA may make sexual preference/practices relevant when investigating HAV).

Guidelines for the period of exclusion of children from day care and educational facilities and adults from high risk occupations have been circulated to all doctors, Community Health Centres and the Education Department in the NT. CDC recognises the difficulties doctors and parents confront when a child is excluded from their day care centre or school, but our data clearly indicate the need for adherence to exclusion guidelines.

We are also planning to adopt the intiatives introduced in NSW where doctors notify *"food borne illness in two or more related cases" and "gastroenteritis among people of any age in an institution"*.

We request that doctors indicate on the notification form the patient's risk group for enteric disease transmission, and whether they have carried out contact tracing and hygiene education or prefer that a CDO is involved. These details will prevent duplication of control efforts and unnecessary phone calls to doctors.

GONOCOCCAL CONJUNCTIVITIS OUTBREAK IN AN ABORIGINAL COMMUNITY

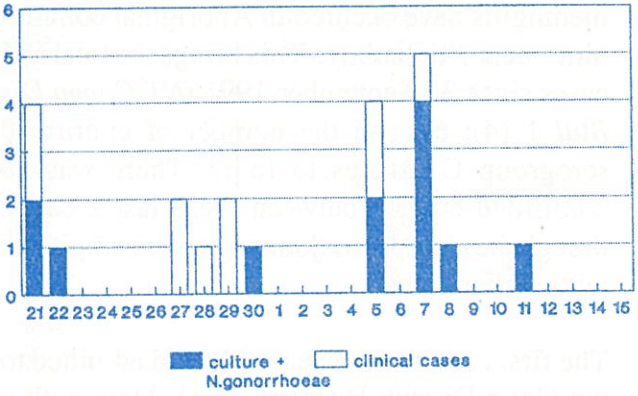
Kate Monger RN and Dr Rosie Brennan

20 cases of clinical gonococcal conjunctivitis occurred in a central Australian Aboriginal community from 21 April - 11 May. Active surveillance commenced in the community, all cases had a swab and smear taken and were treated with procaine penicillin or oral amoxycillin according to the CARPA (Central Australian Rural Practioners Association) protocol for gonococcal conjunctivitis, and with tetracycline ointment.

18 cases were in children less than 15 years, with a range of 6 months - 9 years. At least 50% of cases occured in children aged 0-4 years. There was no gender-related difference in case numbers. Eight cases were culture-confirmed *N. gonorrhoeae*, with one bacteriologically proven reinfection after treatment.

Early implementation of control measures prevented further cases after 11 May.

Table 1. Conjunctivitis outbreak: central Australia 21 April - 11 May 1992



In the figure, "clinical cases" include cases in which culture yielded another organism which may or may not have caused the conjunctivitis.

EDITORIAL COMMENT

Control measures include screening of affected families, especially children. Comprehensive contact tracing including history of travel to other communities, community gatherings and significant social events; hygiene education; and possible use of insect repellants/flyscreens.

Epidemiological treatment of household contacts with an appropriate antibiotic is effective in localised outbreaks.

Clinic staff should collect a conjunctival smear and swab for culture from all patients presenting with purulent conjunctivitis. [1,2] STD screening of adults should also be considered especially if cases are sporadic.

REFERENCE

(1) Merianos A, Mulvey G, Jayathissa S et al. Outbreak of non-sexually transmitted gonococcal conjunctivitis in central Australia, 31 January to 6 June 1991. *CDI* 1991; 15(16): 264-266.

(2) Paterson B. An outbreak of *Haemophilus influenzae* conjunctivitis - Katherine Region, Northern Territory. *CDI* 1992; 16(9): 183-186.

INFECTIOUS DISEASE UPDATES

Meningitis in Nhulunbuy

Hartley Dentith and Jane Donaldson, Communicable Disease Officers, East Arnhem Region

Two further cases of serogroup C meningococcal meningitis have occured in Aboriginal communities near Nhulunbuy. This brings the total to 6 cases since 30 September 1991 (*NT Comm Dis Bull* 1 (4): 6); and the number of confirmed serogroup C isolates to four. There was no confirmed contact between these last 2 cases, though they lived on adjoining beach camps, nor with earlier cases.

The first case was a 3 year old child admitted to the Gove District Hospital on 18 May, with a history of fever, tiredness and irritability. Her clinical condition deteriorated rapidly, and she was transferred to the RDH on the following day. Her blood culture subsequently grew *Neisseria meningitidis*. She made an uneventful recovery.

The second child, aged 10 years, was admitted on 20 May after a two day history of fever and malaise. His level of consciousness was clouded on admission with signs of cerebral irritation, he was shocked and required ventilator support. He died of overwhelming meningococcal infection within 48 hours of admission.

Chemoprophylaxis with either rifampicin or ceftriaxone was given to all contacts, and Mencevax AC vaccine was administered to children aged 1-15 years in the affected communities. There have been no further cases.

RDH INVESTIGATION OF UNDIAGNOSED FEVER

Dr Dale Fisher, Infectious Diseases Registrar, Royal Darwin Hospital

The Royal Darwin Hospital Department of Medicine is attempting to better elucidate causes of undiagnosed fever in patients presenting to the public or private hospital Accident and Emergency Departments or to general practitioners. It is of particular interest if the patient gives a history of recent tick or mosquito bite. Please contact Dr Dale Fisher or Dr Bart Currie at the Royal Darwin Hospital, telephone 22 8888, who will help arrange for appropriate specimens to be taken and a short questionairre to be completed. Over the next 6 months we hope to better understand the spectrum of disease and the incidence of various viruses, rickettsia, leptospira etc and the possible existence of lyme disease and ehrlichiosis in the Northern Territory.

In the next edition of the Bulletin, we will publish details of the current viral meningitis outbreak in Darwin.

VISITING LECTURER

Dr Michael Lane, a WHO consultant with the National Centre for Epidemiology & Population Health at the Australian National University, will be visiting Darwin in July. He will be giving the following talk.

"Expert Error in the Third World
or
Why Not to Trust Professors"
(RDH Auditorium
Monday 20 July at 12.00 PM.)

All are welcome.

NOTIFICATION OF HEPATITIS C

CDC received 10 laboratory reports of positive Hepatitis C (HCV) serology in 1991, and 17 from 1 January - 18 June this year (6 in June). Recent media attention has increased public

awareness of HCV, and we anticipate the increase in pathology requests to escalate.

HCV is a notifiable disease in the NT (formally reported as "hepatitis - other"). The NT blood transfusion service maintains a database on HCV positive donors, but in order to establish surveillance of HCV in the NT community, CDC would appreciate the following patient history on notification forms.

* risks category
  - post transfusion
  - haemophiliac
  - injecting drug user
  - homosexual contact
  - heterosexual contact
  - biohazard injury
  - perinatal transmission
  - other/unknown

* evidence of acute hepatitis
  - clinical
  - biochemistry
  - liver biopsy

* reason for HCV testing
  - acute hepatitis
  - screening including partner notification
  - self referral
  - biohazard injury
  - unexplained abnormal LFT's

For the purposes of patient confidentiality, the patient identification system used for HIV/AIDS notifications may be preferable to doctors.

Personal identifiers:

* first two letters of the last name and first two letters of the first name;
* date of birth;
* gender;
* and postcode or suburb

This will enable us to exclude patients previously notified.