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TENNANT CREEK MEASLES OUTBREAK FEBRUARY - MARCH 1992

*Dr Rosie Brennan, Communicable Disease Control Centre, Alice Springs,
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On 2 March, communicable diseases staff in Tennant Creek were notified of a measles outbreak in town.

The index case was an 11 year old student at Tennant Creek High School (TCHS) who had been to Cairns in the fortnight before his diagnosis.

Nineteen patients with measles presented to health practitioners in Tennant Creek between 14 February and 14 March. Of these 15 had measles antibodies.

All cases fulfilled the clinical case definition. (1)

Seventeen cases were adolescents (mean age 13 years; range 11.6 - 16.4 years) and one case was a 16 month old infant. Five patients were Aboriginal children.

Apart from the index case and two siblings who had been to Alice Springs, none of the cases had left the Tennant Creek area during the fortnight preceeding the onset of illness.

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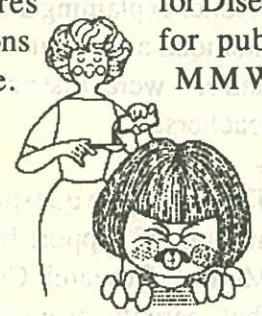
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Thirteen of the 19 cases had no personal or health service record of measles vaccination. Parents of one child claimed she had been vaccinated but the record was not sighted. Three cases were vaccinated in Tennant Creek in 1979 and two others were vaccinated shortly before their illness. The infant and a teenager who were both IgM positive, had MMR vaccine 19 and 3 days respectively before the onset of the rash.

The index case had blood taken on 14 February, but was not notified until 5 March. Immunisation of contacts was therefore delayed.

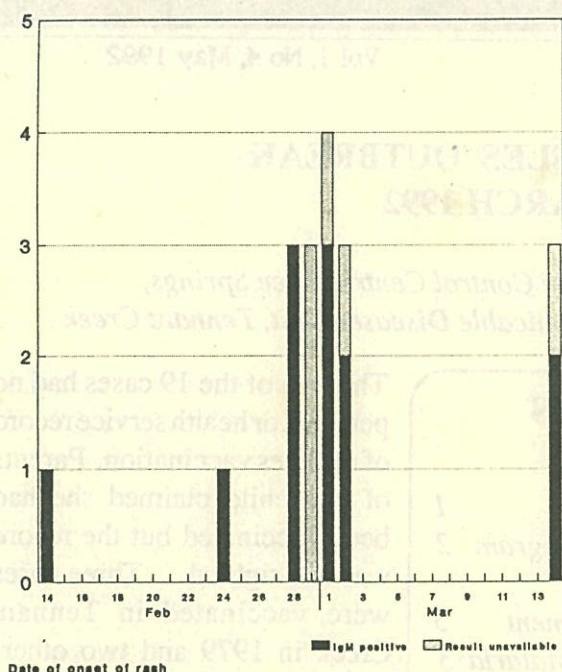
REFERENCE

1. Centres for Disease Control. Case definitions for public health surveillance. 1990;39 (No. RR-13):23.



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Measles cases in Tennant Creek 14 Feb - 14 Mar 1992



MEASLES VACCINATION PROGRAM, ALICE SPRINGS FEBRUARY 1992

*Dr Rosie Brennan and Sr Janet Stewart,
Communicable Disease Control Centre,
Alice Springs*

On 4 February, a 5 year old boy at an Alice Springs primary school developed measles. A vaccination program was implemented immediately at the school.

A letter explaining the need for vaccination which included a consent form, and a small questionnaire, were distributed to students by class teachers.

The aim of the questionnaire was to estimate the amount of support for the National Health and Medical Research Council (NHMRC) proposal that parents provide a copy of their child's vaccination record when the child first begins school (1). Parents were asked to indicate their response on a 4 point scale ranging from "strongly agree" to "strongly disagree".

RESULTS

There were 473 children enrolled at the school. 417 of them (88%) received letters but only 260 (55%) were returned.

Of the respondents, 213 agreed or strongly agreed with the proposal. This represents the parents of 45% of the student population (82% of respondents). Only 4 "disagree" or "strongly disagree" responses were received.

Definite documentation of previous measles vaccination was available for only 182 students.

DISCUSSION

During a measles outbreak, contacts who do not have proof of measles vaccination should be revaccinated or excluded from school until 14 days after the onset of rash in the last case. Revaccination in a previously immune person produces no ill effects.

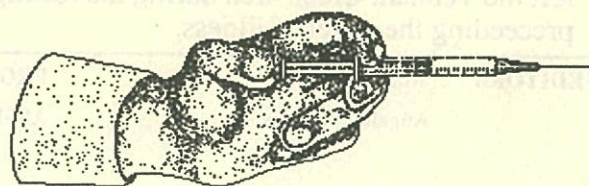
Early notification allowed a prompt response to vaccinate susceptible children, and secondary spread was prevented.

If all parents were required to provide documented evidence of vaccination at the time of entry into school, and if unvaccinated children were encouraged to accept the vaccine at that time, crisis induced programs for the control of vaccine-preventable diseases could have been avoided.

A suspected clinical case should be discussed immediately by telephone with the local CDC to assess the need for instituting urgent control measures. It is safer to over react and start measures than to delay action.

REFERENCE

1. NHMRC. Immunisation Procedures. 4th Edition AGPS, Canberra, 1991.



EDITORIAL COMMENT

Measles is a highly infectious disease of great public health importance. It is a difficult disease to diagnose clinically with absolute certainty, but control measures should begin on suspicion while awaiting serological confirmation. A measles IgM test done early in the course of the illness may be negative and should be interpreted in the context of clinical case criteria. A phone call to CDC is warranted on suspicion of a case. The delay in reporting the disease to the regional CDC, and failure to institute control measures while awaiting serology results, resulted in 15 secondary cases and three tertiary cases in Tennant Creek and in a total 76 known cases during the Darwin measles outbreak last year. The index case in Tennant Creek had visited Cairns in early February. When the Tropical Centre for Disease Control in Cairns was notified of this patient, 35 other cases had been identified in the Cairns district (reported by Dr Jeffrey Hanna in the Communicable Disease Intelligence 16:119).

The IgM positive infant who received vaccination 19 days before the onset of symptoms may have had vaccine induced IgM and a coincident infection mimicking measles. The older child would have been incubating measles at the time of vaccination.

The second article in this series emphasizes the importance of documentation of vaccination status at the time of school entry in outbreak control.

A CASE OF FALCIPARUM MALARIA IN ALICE SPRINGS

Dr Rosie Brennan, Communicable Disease Control Centre, Alice Springs and Dr Mishak Kirubakaran, Alice Springs Hospital

INTRODUCTION

On January 28, a 23 year old tourist from Denmark presented to an Alice Springs general practitioner with a 5 day history of fever, headache and anorexia. Symptoms were intermittent but not clearly cyclical. Bilirubinuria was present

and a thin film done at Alice Springs Hospital showed *Plasmodium falciparum*.

Travel history

The patient flew from Denmark to Thailand on October 9, 1991 and travelled successively through Thailand, Malaysia, Singapore and Indonesia, flying to Darwin on January 3, 1992. She had complied with a prophylactic regimen of chloroquine, two tablets weekly from late September 1991 until the last dose on January 24, 1992.

On 28 December the patient attended a hospital in Bali, with a one day history of a fever of 40°C and a sore throat. A blood film was negative for malaria parasites, so antibiotics were prescribed for pharyngitis. She appeared to recover within 24 hours.

In the Northern Territory the patient travelled extensively and camped out in many locations. She was bitten by mosquitoes in Darwin, Litchfield Park and Kakadu.

The positive findings were: temperature 38.7°C, mild tender hepatosplenomegaly, serum bilirubin slightly elevated, haemoglobin 10g/dL.

A thin film on 28 January showed a parasitaemia of <1% with trophozoite forms of *P. falciparum*. Treatment was commenced with quinine sulphate 600mg TDS and tetracycline 250mg TDS. Defervescence occurred within 48 hours. The thin film was negative for parasites and serum bilirubin was normal within 72 hours.

DISCUSSION

The World Health Organization (WHO) has reported the worsening global malaria situation, the increasing proportion of malaria cases due to *P. falciparum* and the increasing resistance of *P. falciparum* to antimalarial treatment (1).

Australia was certified free of malaria by the WHO in 1981 but the conditions for its transmission still exist in some tropical areas and introduced malaria has occurred more recently in the Torres Strait (2).

Species of the *Anopheles farauti* complex are efficient vectors of malaria and are abundant in Kakadu (personal communication, David Logan, Entomology Branch, NT DH & CS). The patient reported that she was bitten repeatedly by mosquitoes at a particular camp site in Kakadu. Malaria transmission could occur if visitors to such areas have gametocytes in their blood. Should mosquitoes in Kakadu become infected, their eradication by available pesticide spraying techniques would be made extremely difficult by the physical inaccessibility of many parts of the park.

It is difficult to comment on the progression of stages in the life-cycle of the malaria parasite when chemoprophylaxis has been used. A recrudescence of a subclinical infection, which is consistent with low level (R1) chloroquine resistance (3), appears to explain best the chronology of this case.

The mean incubation period of *P. falciparum* is 12 days but it may be prolonged by chemoprophylaxis (4). The negative blood film in Bali does not preclude malarial infection at the time. Chemoprophylaxis may have contributed to a low parasitaemia and it is characteristic of *P. falciparum* that the late asexual stages sequester at capillary endothelia.

The hepatosplenomegaly and haemolysis indicate that the parasite's erythrocytic cycles were well established, but initial clinical features were probably suppressed by the chloroquine. Although it is possible that gametocytes may have developed, none was seen on the blood films, and it is unlikely that the density or maturity of any gametocytes in this case would have been sufficient for the patient to act as a reservoir of infection when bitten by mosquitoes.

Most cases of falciparum malaria in Australia present within a week of arrival (2) but the onset may be delayed in a compliant patient until chemoprophylaxis is ceased. Thus it is important to include malaria in the differential diagnosis even if some time has elapsed since leaving the country of exposure.

This case reminds us that malaria should be taken

seriously in order to prevent the re-establishment of the disease in Australia.

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2. Forsyth S, Leoskow K, Pearce M, et al. Final Report of the Australian Malaria Register for 1990. University of Queensland.
3. Report of a WHO Scientific Group. Chemotherapy of Malaria. WHO Tech Rep Ser. No. 375. WHO, 1967 Geneva.
4. Bradley DJ, Newbold CI, Warrel DA. Malaria. In: Weatherall DJ, Ledingham JGG, Warrel DA, eds. Oxford Textbook of Medicine. London: Oxford University Press, 1988:5.474-5.502.

EDITORIAL COMMENT

The last recorded indigenous case of malaria in Australia occurred in the NT in 1962, and north of the 19°S parallel remains receptive to possible reintroduction of malaria.

The NT malaria program to prevent introduced cases includes:

- ongoing entomological surveillance
- longer term physical control measures around areas of population
- strict supervision of therapy of imported cases
- active case finding and eradication therapy in certain risk groups
- improved malaria prophylaxis advice for people travelling overseas to endemic areas(1)

The number of imported malaria cases in the NT has increased steadily, with 46 in 1991. The proportion of *P. falciparum* cases has also increased, with 21 (46%) in 1991. Most of these cases spend time in the receptive area of the NT, making early diagnosis, prompt notification to CDC and adequate follow-up essential components of our malaria program.

REFERENCE

- (1) Health guidelines for International travel 1991 NHMRC

INFECTIOUS DISEASE UPDATES

Diphtheria in the NT

A 48 year old European man from rural Katherine was recently diagnosed with fatal faucial diphtheria. In the same week, 2 cases were diagnosed with mild diphtheritic pharyngitis in Alice Springs. One of the diphtheria strains was toxigenic. These patients should serve as a reminder to check on vaccination for adults. Adult diphtheria and tetanus (ADT) boosters are recommended at 10 yearly intervals. Where the history of childhood vaccinations is uncertain, 3 doses of ADT given at least two months apart are recommended.

ARBOVIRUSES

Nhulunbuy

Over 180 patients with possible acute arboviral disease have been screened for the Barmah Forest and Ross River viruses in East Arnhem region since the start of the outbreak in early February. Most of the patients are from Nhulunbuy, but cases have also been reported from Yirrkala (the Aboriginal community near Nhulunbuy), and Groote Eylandt.

Results to date indicate 27 patients with Barmah Forest virus, 22 patients with Ross River virus and 6 with dual infections. In most cases, the diagnosis of an infection is based on the presence of virus-specific IgM, but we hope to confirm results with a four-fold rise in titre on paired sera. This is the largest known outbreak of Barmah Forest virus infection in Australia.

Seronegative patients will be screened for other alpha, flavi and bunyaviruses.

Darwin

Barmah Forest virus has been diagnosed in 8 patients whose sera was forwarded by general practitioners to the CDC. One of these patients was IgM positive for both BF and RR viruses. This virus should now be considered in the differential diagnosis of acute polyarthritis, rash and fever anywhere in the Northern Territory.

We are notifying doctors of the results of BFV serology requested through the CDC as quickly as possible upon receipt from the Perth State Health Laboratory Service. We remind colleagues to submit a convalescent specimen of blood from patients who have been tested so far.

Ross River virus surveillance

Approximately 63 cases of RRV have been reported to the Communicable Diseases Centre, Darwin, from 29 December 1991 to 31 March 1992. This is a 83% reduction in the number of cases compared to the same period last year when 369 cases were reported.

MOSQUITO INVESTIGATIONS - NHULUNBUY FEBRUARY 1992

Peter Whelan, Medical Entomology Branch

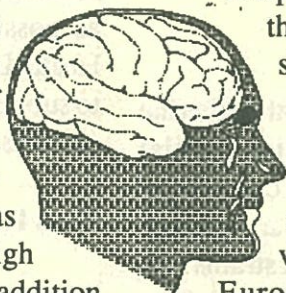
Mosquito investigations were carried out by the Medical Entomology Branch in Nhulunbuy from 12 - 13 February, soon after the possibility of an arbovirus outbreak in Nhulunbuy became evident. The aim of the investigation was to liaise with the local authorities on vector control operations, to carry out additional vector monitoring around the area to determine the source, relative density and mosquito species present, and to collect live mosquitoes for virus isolation studies to determine the probable vector.

Two arboviruses were isolated from mosquitoes collected on 12 and 13 February. Barmah Forest virus was isolated from *Aedes vigilax* and one isolate of Ross River virus was made from *Culex annulirostris*. Studies are still being conducted by the Department of Primary Production & Fisheries on blood from both domestic animals and a number of small wild mammals and birds collected in the area, in order to gain an insight into the zoonotic picture of the outbreak.

From the mosquito monitoring data and from the human case data, it is probable that *Aedes vigilax* was the principal vector for at least the majority of the first part of the epidemic. *Culex annulirostris* could have possibly been involved

in the latter part of the epidemic.

The increased vector control operations and the mosquito awareness campaign after the Medical Entomology visit of the 12 and 13 February resulted in a dramatic decrease in the number of new cases. A new source of *Aedes vigilax* was found originating from unexplained high salinity water in the Gove lagoon. In addition new water management procedures in a pond system at Wallaby Beach are reducing the numbers of salt marsh mosquitoes in that area.



an audit of the log book of the Gove District Hospital pathology laboratory revealed that no other cases had been diagnosed since 1980.

Three patients were Aboriginal, and two of the serogroup were children aged 2 and 6 years. One of the patients was a chronic petrol sniffer. The European adult developed group B meningococcal septicaemia. The diagnosis was culture-confirmed (CSF and/or blood) in 3 cases.

Two of the patients came from the same community, but there was no history of direct contact.

They may be linked through an adult who frequented the petrol sniffer's house and the home of the six year old child. Contact tracing was extensive in all communities. Follow-up of three of the patients identified 134 contacts for chemoprophylaxis. There were no secondary cases.

Chicken Pox

Eight cases of chicken pox were reported by the Palmerston Community Health Centre staff on 27 March. All were in the junior classes of Berry Springs Primary School.

The incubation period of chicken pox is 2-3 weeks, usually 13-17 days, but may be prolonged in the immunocompromised. The period of communicability is usually 1-2 days before onset of the rash, and up to 5 days after the appearance of the first crop of vesicles (Benenson, 1990).

Children diagnosed with chicken pox should be excluded from school until fully recovered, or at least one week after the lesions have appeared. High risk susceptibles for whom varicella-zoster immunoglobulin (VZIG) should be considered, are the immunocompromised and neonates. VZIG must be given within 96 hours of exposure to be effective in preventing disease. As only limited supplies of VZIG are available, issue is strictly controlled. All enquiries should be directed to the CDC.

MENINGITIS IN EAST ARNHEM

*Hartley Dentiith and Jane Donaldson,
Communicable Disease Officers,
Gove District Hospital*

Four cases of meningococcal meningitis have occurred in East Arnhem region from 30 September 1991 to 27 March 1992. In comparison,

HAEMOPHILUS B VACCINATION

*Dr Alan Ruben,
Communicable Diseases Centre, Darwin*

A vaccine against Haemophilus B has recently been licenced for use in Australia. The National Health and Medical Research Council recommends that all children be offered the vaccine at 18 months of age.

It is anticipated that a vaccine for younger children will be available later this year.

At present, the vaccine has to be paid for by parents, and it is only available through local doctors.

The National Health and Medical research Council recommended that the vaccine be placed on the routine schedule of immunisations once the most suitable vaccine is selected and funding arrangements are agreed upon.

If more information is required, please contact the Communicable Diseases Centre in Darwin.

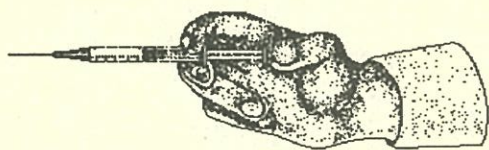
INFLUENZA IMMUNISATION FOR THE 1992 WINTER

Chris Noonan, Research Officer, CDC

The National Health and Medical Research Council (NH&MRC) recommends that the influenza vaccine be given in May or June each year to defined risk groups.

This year a particularly virulent strain, A-Beijing, is expected in Australia and susceptible people are already being advised to be immunised. The 1992 vaccine which contains the A-Beijing strain is recommended for the following people in whom the risk of complications is high.

- . Adults and children with chronic debilitating disease, especially those with cardiac, pulmonary, renal and metabolic disorders.
- . Patients on immunosuppressive therapy.
- . All people over age 65.
- . Residents of nursing homes and other chronic care facilities.



EPIDEMIOLOGY REGISTRARS IN COMMUNICABLE DISEASES IN DARWIN

*Dr Mahomed Patel, Director, NT Disease
Control Program, Darwin*

Angela Merianos joined the CDC in Darwin in 1991 as an epidemiology registrar. She had previously been working as the Project Manager of CDC in Alice Springs after having completed her course work and treatise for the Master of Public Health degree at Sydney University.

This year we welcome Alan Ruben as the second epidemiology registrar at the CDC. Alan, a paediatrician, has been working at the Royal Darwin Hospital for the last two years.

Angela and Alan are here as students for the Master of Applied Epidemiology in communicable diseases. They are on scholarships with the National Centre of Epidemiology and Population Health (NCEPH) at the Australian National University in Canberra. Their studies include 3 months of coursework in Canberra and the balance of two years of fieldwork in the Northern Territory.

The objective of the program is to provide expert training in communicable disease control in Australia, and specifically to improve the services provided by communicable disease units in each of the States and Territories.

Over the last year, Angela's work has included a study of risk factors for melioidosis, an investigation of the large outbreak of gonococcal conjunctivitis in pre-pubertal children in central Australia, the follow-up study to determine the chronicity of symptoms of patients with Ross River virus infections, and most recently, investigation of the outbreak of arboviral disease in Nhulunbuy. She has also been co-editor of this bulletin since its inception at the end of 1991.

Alan Ruben's initial interests will be collaboration with rural health services to focus on the epidemiology and impact of diarrhoeal diseases in the NT, and on serosurveys to determine efficacy of measles vaccine.

Both Angela and Alan will work towards improving the surveillance system for infectious diseases, and particularly towards improving feedback to health professionals and the community. We welcome suggestions for optimising their participation in efforts to improve control of communicable diseases in the Northern Territory.

