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# THE NORTHERN TERRITORY

## COMMUNICABLE DISEASES BULLETIN



**DE** NT DEPARTMENT OF HEALTH  
AND COMMUNITY SERVICES

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### JELLYFISH AND TOP END WATERS

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Research

A collaborative study is underway to document morbidity and mortality from jellyfish stings in the Northern Territory. The study involves the NT Museum of Arts and Sciences, pathology staff at Royal Darwin Hospital, Darwin Private Hospital, Gove Hospital and health-care providers across the Top End. Clinical and laboratory information on stings is being collected and incorporated into the expanding expertise of the International Consortium on Jellyfish Stings.

Between 1978 and 1991 there were over 500 presentations to Royal Darwin Hospital with various marine envenomations and over 100 patients required admission. Of those admitted, 47 were provable *Chironex fleckeri* (the most dangerous box jellyfish) envenomations, of whom 17 were given CSL *C fleckeri* antivenum. Twenty cases of Irakandji syndrome<sup>(1)</sup> were admitted, with the responsible jellyfish remaining unidentified in all cases.

To date, there have been 28 deaths in the NT attributed to *C fleckeri*. Since 1978, there have been 9 deaths, all in children, all in remote NT coastal locations and most occurring within 30

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minutes of the sting. One of these deaths occurred during the dry season.

Utilizing a method of nematocyst ("stinging cell") identification (from scalpel blade skin scrapings) developed at the Royal Darwin Hospital histology laboratory, together with Stinger Report Forms and jellyfish specimens sent in by health staff, recent data include:

- 1) Seven presentations in Darwin with confirmed box jellyfish envenomation between October and December 1991 and one admission for Irakandji syndrome. October is the official beginning of the "no entering the water" season, which extends till the end of May. Most stings were in shallow water less than knee deep, and one case was a 5 year old.
- 2) Three confirmed box jellyfish envenomations in East Arnhem and 3 admissions to Gove Hospital with probable Irakandji syndrome between October and December 1991.
- 3) During the last dry season (June to September - "enter the water with caution") there were 6 presentations in Darwin; 2 were confirmed as box jellyfish stings and one was a moderately severe Irakandji syndrome.
- 4) In the middle of last dry season, large numbers of box jellyfish were netted at Gove, East

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Arnhem. The species was confirmed as Chiropsalmus sp. not Chironex fleckeri. While considered less toxic than C fleckeri, Chiropsalmus sp requires further study, and related species have caused deaths in the Philippines and recently a death in the USA<sup>(2)</sup>. Chiropsalmus sp has not been identified in the Darwin region.

5) There is clinical evidence for both cardiotoxicity and central respiratory toxicity with C fleckeri envenomation.

## SUMMARY

1) During the "wet season" (October through May), the message of absolutely refraining from entering the sea needs emphasis.

2) During the "off-season" (June through September) box jellyfish stings still occur, but are far less likely. Fatalities however may still happen.

3) Children are at greater risk of death, and parents must take responsibility for them.

4) Continuing studies are vital to better understand the jellyfish species involved, the actions of their toxins and optimal therapy.

5) Appropriate first aid can save lives. Prolonged cardio-pulmonary resuscitation (CPR) may be required and may be successful. Flooding the stung area with vinegar helps inactivate nematocysts and minimize further envenomation. Chironex fleckeri antivenom is available, and expert advice can be sought from Royal Darwin Hospital (ph: 089 22 8888) or the Marine 'Stinger' Hotline (ph: 008 07 9909).

6) People in Katherine, Tennant Creek and Alice Springs are fortunate.

## References:

<sup>(1)</sup> The Surf Lifesaving Association of Australia. The Marine Stinger Book 3rd Edition 1985.

<sup>(2)</sup> JAMA 266: 1404 - 1406; 1991.

## AUSTRALIAN SENTINEL PRACTICE<sup>2</sup> RESEARCH NETWORK (ASPREN)

ASPREN is a project of the Royal Australian College of General Practitioners and commenced in 1991.

The network has a variety of purposes. Of particular importance are monitoring of infectious diseases and examining the patterns of presentation of common or unique conditions in general practice so that their incidence or prevalence can be ascertained.

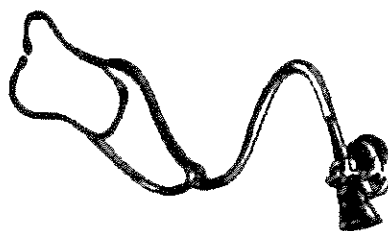
This type of network of general practices exists in many overseas countries. The creation of the national network means that Australia has joined what has become an increasingly important international activity.

A summary report is printed in the *Communicable Diseases Intelligence*, a fortnightly publication from Canberra, and all ASPREN recorders receive a copy. In addition, a personalised summary is forwarded to each recorder every three months.

In 1992, 12 conditions will be monitored across general practices in Australia: influenza, mumps, measles, rubella, pertussis, flu immunisation, tetanus immunisation, solar keratosis, naevi, asthma, genital herpes and gastroenteritis. The list is modified annually according to requests received from the participant.

There are now 77 participants across the country and the objective is to increase the number to 200 this year. There are as yet no recorders from the Northern Territory.

If you are interested in participating please contact Mahomed Patel at the Disease Control Centre, or write directly to ASPREN Management Office, 136 Payneham Road, Stepney SA 5069 Tel and Fax (08) 362 9954.

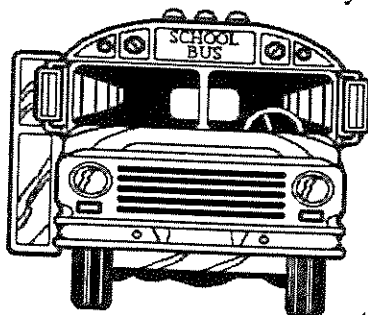


## EXCLUSION OF CHILDREN WITH INFECTIOUS DISEASES

The Disease Control Centre recently circulated a document titled *Minimum period of exclusion for children or staff with infectious diseases at day care centres and schools*. The guidelines are based on the recommendations of the NH & MRC.

This document has been circulated to all general practitioners, community health centres, day care centres and nursing staff of the Education Department. It should provide a standard reference for doctors and institutions, and thus minimise the chances of parents being given conflicting advice on the minimum periods for exclusion.

A laminated wall chart with this information is also available.



## SCRUB TYPHUS

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Three further cases of scrub typhus were confirmed during 1991 in visitors to Litchfield Park. No other focus has yet been identified in the NT, but further studies are needed. Despite the publicity following the first 2 cases, there was still a delay in diagnosis in all the subsequent 3 cases.

All 5 cases have had eschars, and the 2 oldest patients had near fatal illnesses. Three cases were in interstate tourists, and 2 were in Darwin residents. Public awareness of the scrub typhus focus in Litchfield

Park needs to be increased for both local residents and those returning interstate. Personal protection from mites with appropriate clothing, and DEET containing insect repellants needs emphasis. Education of local health care providers is also required, and the importance of a careful travel history within the NT once again becomes evident.

## INFECTIOUS DISEASE UPDATES

### MELIOIDOSIS

A further six patients with melioidosis were reported to the Disease Control Centre, Darwin since June 1991, two of whom died. One case was probably a recrudescence of existing asymptomatic infection. This high rate of "dry season" disease is unusual, but due to the variable incubation period, may still be a result of infection during the last "wet". Our heightened awareness of melioidosis and detection of milder forms of disease may also have contributed to this high incidence. Two of these dry season patients presented with skin lesions, and did not have any underlying medical risk factor.

Doctors are reminded to suspect melioidosis in immunocompromised and elderly patients presenting with PUO, atypical pneumonia, urinary tract and prostatic symptoms or unusual skin lesions, particularly in association with a history of soil contaminated injury to the extremities.

### SCRUB TYPHUS EDITORIAL COMMENT

The fifth case with scrub typhus since the middle of 1991 was diagnosed recently. As with all other cases, this patient had also visited Litchfield Park. He had the typical skin lesion (eschar) of scrub typhus. He had sought medical attention, but the correct diagnosis was only made on admission to hospital.

As a reminder of the clinical features of scrub typhus, we attach the report that was circulated in the NT in 1991. If undiagnosed, the condition could prove fatal.

### NHULUNBUY OUTBREAK

91 children and adults have been reported with symptoms and signs of a skin rash and/or joint pains since January 1992. Five of the patients had an infection with Bermah Forest virus, and two with Ross River virus. Tests are still in progress in the remaining patients.

## SCRUB TYPHUS FOCUS IN THE NORTHERN TERRITORY

(Bart Currie (Menzies School of Health Research, Darwin), Liam O'Connor (Fremantle Hospital, Western Australia), Frank Rhodes, Peter Whelan (NT Department of Health and Community Services, Darwin), David Pritchard (NT Department of Primary Industries and Fisheries, Darwin), Phil Bell (NT Conservation Commission, Darwin), Brian Dwyer (Fairfield Hospital, Victoria))

Two cases of scrub typhus (*Rickettsia tsutsugamushi*) have been confirmed in visitors to Litchfield Park, Northern Territory (approximately 70km S of Darwin).

The infections were acquired in August and October 1990, with incubation periods of 9 and 11 days. Both patients developed eschars, and both showed a greater than four-fold rise in titres to scrub typhus specific antigen on paired serology. One of the cases became unwell after leaving the NT and developed near fatal multisystem complications.

There have been extensive studies in north Queensland, Papua New Guinea and elsewhere on the clinical and epidemiological aspects of scrub typhus<sup>1-5</sup>. After an incubation period averaging around 12 days, swinging fevers and constitutional symptoms are accompanied, within a week, by lymphadenopathy and a maculopapular rash in over half of the cases. An evolving eschar is often present. Neurological complications may be fatal and include delirium, convulsions and encephalitis. Respiratory, cardiovascular and renal systems can also be involved. Mortality without anti-rickettsial antibiotics is around 5% overall, but is up to 25% in previously debilitated patients. Tetracyclines or chloramphenicol are considered appropriate therapy, and response is usually within 48 hours.

Differences in virulence between strains of *R tsutsugamushi* are observed. Weil-Felix serology shows rising titres to OXK antigen in only half of cases, and was negative in the one of these two cases tested. Testing with *R tsutsugamushi* specific antigen on paired specimens is therefore often necessary for confirming the diagnosis.

The vector in Australia for scrub typhus is the mite *Leptotrombidium deliense*, and a number of native mammals act as reservoirs<sup>5</sup>. The distribution of the vector and the disease is characteristically patchy. In north Queensland most of the circumscribed foci ('mite islands') have been rainforest areas, while in Asia foci are often 'scrub' (mixed vegetation in a previously cleared area).

Scrub typhus has not generally been considered to be endemic in the Northern Territory, although a small number of possible cases have been reported pre-

viously<sup>4</sup>. The distribution of *L deliense* within Australia has to date included Western Australia but not the Northern Territory. Following the two recent cases of scrub typhus a trapping expedition to Litchfield Park collected numbers of confirmed *L deliense* from several native mammal species (confirmed R Domrow). Litchfield Park was only opened in 1986, and includes accessible rainforest. The number of visiting tourists has increased from 5 000 in 1986 to 130 000 in 1990.

Tourists leaving the NT and their medical practitioners need to be aware of the possibility of scrub typhus, as the institution of appropriate therapy may be life saving. With tourist numbers increasing, and with expansion of military exercises occurring, the distribution of both vector and *Rickettsia* needs clarification. It is possible that the vector could be widespread in suitable habitats across the top of the Northern Territory. People visiting potential foci of infection can use DEET\* containing insect repellents; permethrin impregnated clothing should be considered for those working in areas of transmission.

\*N,N-diethyl-m-toluamide (DEET) is one of the most commonly used components of commercially available insect repellents. An article and associated comment on the use and toxicity of DEET appeared in CDI 89/23.

### References

1. Williams SW, Sinclair AJM, Jackson AV. Mite-borne (scrub) typhus in Papua and the Mandated Territory of New Guinea: report of 626 cases. *Med J Aust* (1944) ii:525-39.
2. Doherty RL. A clinical study of scrub typhus North Queensland. *Med J Aust* (1956) ii:212-20.
3. Southcott RV. Observations on the epidemiology of Tsutsugamushi disease in North Queensland. *Med J Aust* (1947) ii:441-50.
4. Derrick EH. The incidence and distribution of scrub typhus in North Queensland. *Australas Ann Med.* (1961) 10:256-67.
5. Domrow R, Cook I. Relevant studies of the epidemiology of scrub typhus in North Queensland. *Acta Medica et Biologica.* (1967) 15(suppl):43-48.