Measles outbreak in a remote community in the Katherine region

Ann Burton, CDC, Katherine

The Notification: On Tuesday, 22 October 1996 the Centre for Disease Control (CDC) in Katherine was notified by telephone of a possible measles case in a remote community in the Katherine region. The case was in a six-year-old girl who presented with a fever of 40°C, conjunctivitis, cough and a papular rash on her face and upper torso. A relative of this case had had a similar illness two weeks previously.

On Friday, 25 October the measles serology was confirmed IgM positive for both the index case and her relative. The clinic reported that they had three other cases presenting with similar symptoms and signs which fulfilled the case definition of measles. None of these possible cases were contacts of the other two cases nor of each other. The community has an estimated population of 850.

The source: The Alice Springs region was experiencing an epidemic of measles which started on 22 August and 12 cases had been confirmed. The Aboriginal people of the affected Katherine region community have close ties with communities in the Centre and there is regular movement of people between the affected community and Central Australian communities. After the outbreak was recognised the clinic staff recalled a case which presented on 26 September with similar symptoms. She was later confirmed as measles IgM positive.

Public Health Action: 1) Management of initial case
The management of the index case was undertaken according to the NT Measles Protocol. For surveillance purposes a probable case of measles is an illness characterised by all of the following clinical features:

1. Generalised maculopapular rash
2. A temperature of 38°C or higher if measured
3. Cough or coryza or conjunctivitis or Koplik spots

Contact tracing around the index case began immediately (ie without waiting for serological confirmation) and the vaccination status of all household, school and other contacts was determined. The immunisation status of most of the child contacts was determined from the Rural Immunisation Database in the Katherine CDC. There was a group staying with the family who had arrived 5 days previously from a Western Australian community. A search of the database in Derby and inquiries to their local community

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clinic failed to determine the status of some of these people who were then offered normal human immunoglobulin if they were aged 30 years or under.

A measles alert was faxed to all urban and rural Government and non-Government health services and medical officers in the Katherine region, the rural health clinics and Katherine Hospital Accident and Emergency Department. Active case finding was also undertaken through dissemination of information throughout the community by the clinic staff.

ii) Subsequent management: With three more presumptive cases and two confirmed it was decided (after discussion with the CDC Darwin) to undertake a community wide intervention. This was based on the recommendations of the NT Measles Protocol. The aim was to ensure that all those eligible under the age of 10 had received at least one MMR, all those 10 to 16 had received two and all those vaccinated prior to 1980 were given another vaccine as the first generation vaccine had a lower efficacy than the current vaccine. The intervention was aimed at all those in the community aged 30 and under. The age at immunisation was lowered from nine to six months as this age group is at risk due to declining maternal antibodies and has a high morbidity and mortality from measles. Those vaccinated at less than nine months will need to be revaccinated at 12-15 months. The senior Aboriginal health worker sought permission from the council to undertake the intervention. The council provided a list of all those living in the community and their dates of birth which allowed the health team to determine the approximate number of vaccines which would be needed. Contact tracing of all new possible cases was also undertaken as outlined above.

Investigations Serology for measles IgG and IgM was taken on the first seven cases.

Outcome Nine cases of measles were notified between 22 October and 9 November, 1996. All of the cases were female and the ages ranged from five to 25. All of the cases were in Aboriginal people. There were four children. Seven of the cases were confirmed measles IgM positive and the other two had a clinically compatible illness and were epidemiologically linked to other cases. More than 200 MMR vaccines were given during the outbreak. There were two cases notified after the community wide intervention who would have been incubating the illness at the time of the intervention. Thus the intervention was successful at arresting the outbreak. There were no hospitalisations related to measles complications and no deaths.

Discussion Eight of the nine cases had been vaccinated against measles. No vaccination history could be obtained on the ninth case. The older cases had all been vaccinated prior to 1980 and, as noted, this generation of the vaccine was known to have a lower efficacy than the current vaccine. The MMR-II has been used in the NT since 1989 and has an efficacy of 92-96%. Thus, between 4 and 8 primary vaccine failures would be expected per 100 people vaccinated. There were 158 children attending school at the community in the two weeks prior to the first notification of whom four were notified with measles. Therefore 2.5% of school age children contracted measles. Though this is not a measure of vaccine efficacy it illustrates that the outbreak was limited amongst the highly vaccinated school age population. It is not possible to calculate the age specific attack rates for this community as it is difficult to estimate the denominator at any one time. However an examination of the raw figures reveals that four of the cases were over 20 years of age. This high proportion of cases in older age groups is a pattern which has been increasingly seen in measles outbreaks since the advent of measles immunisation. All of these cases had been previously vaccinated as infants indicating a decline in immunity over time or primary vaccine failure. There were no cases in people that had received two measles vaccinations emphasising the importance of the MMR at 10 to 16 years to booster immunity or as a back up to some primary vaccine failures e.g. failure to maintain cold chain. There were no cases in the under five population reflecting the high vaccination coverage rates in this group. There were no cases over the age of 30. This age group would not have been vaccinated as children but the great majority would be immune due to infection with the wild virus. However, as the cohort of people that commenced measles vaccination in infancy grows older it is likely that there will be more cases in the over 30 age group due to a decline in immunity over time. This is more likely to occur in people that were too old to receive the booster dose at 10 to 16 years introduced in 1994. Although the numbers are small it is notable that all the cases were in females. At the time of the outbreak there were ceremonies in the community and a considerable number of men not involved in the ceremonies had left the community. It is also possible that there would have been less interaction than normal between males and females during the ceremonies. Thus, the absence of cases in males is probably a reflection of both the small number of cases, and the social circumstances at that time, rather than a difference in susceptibility to the measles virus or response to the vaccine.

References
An outbreak of influenza in the Top End and its impact on staff at Royal Darwin Hospital

Fay Johnston, CDC, Darwin and NCEPH, Australian National University, Canberra.

Background
A dramatic increase in influenza-like illness was recorded by the Tropical Influenza Surveillance System in the top End during July and August 1996. The rates of clinically diagnosed influenza jumped from ten to nearly ninety per thousand GP consultations over a four week period and peaked in August (figure 1). This increase was first noted in the Katherine region during the last two weeks of July and then in both urban and rural areas of the Darwin region during August (figure 2). There had also been eight admissions to the intensive care ward of Royal Darwin Hospital (RDH) of patients with severe respiratory conditions following a history of an influenza-like illness during this period. Nursing Administration of RDH reported a high incidence of absenteeism due to influenza-like illness which had resulted in cancellation of some elective theatre lists and the closure of a ward. One of the military bases in Darwin had also reported that high rates of "flu" had resulted in the cancellation of some planned exercises.

In spite of the high reported morbidity across the Top End, only three cases had been confirmed as influenza by diagnostic tests at the end of August, two from intensive care and one from urban Darwin Disease Control, with the support of Infection Control RDH conducted a survey of staff of RDH to investigate this outbreak.

Objectives of the Survey
1. To identify the aetiology of the outbreak of influenza-like illness in the Top End.
2. To determine what proportion of staff on selected wards had suffered from an influenza-like illness between and August 1996.
3. To determine what proportion of staff had been immunised against influenza prior to the outbreak.

Methods
Staff involved in direct patient care on four selected wards were asked to participate in the survey. These were: Accident and Emergency (A&E), the Coronary Care Unit (CCU), the intensive care unit (ICU) and the neonatal intensive care unit (NICU). Staff completed a questionnaire about their vaccination status against influenza and details of any recent respiratory illness. Those people who had been unwell with a flu-like illness in the previous three weeks (5 - 31 August) were asked to give a sample of their blood for respiratory viral serology. If they were acutely unwell at the time of completing the questionnaire they were also asked for a throat swab for culture for respiratory viral pathogens.

The clinical case definition of influenza used required six of the following clinical features to be present: Sudden onset of most symptoms (within 12 hours); cough; fever; rigor or chills; prostration and weakness; myalgia or widespread aches and pains; no significant respiratory physical signs other than redness of the nasal mucosa and throat; or influenza in close contacts.

The following laboratory results were considered to be diagnostic of influenza.

1. Culture of an influenza virus from an appropriate specimen which is usually a throat swab or nasopharyngeal aspirate.
2. A fourfold rise of antibodies against influenza virus in serum taken at least ten days apart during the acute and convalescent phases of the illness.
3. A single titre of at least 320 of antibodies against influenza taken at least one week after the onset of a compatible clinical illness (for specimens processed via the RDH laboratory).


Results

There were 93 completed questionnaires out of a possible 130 received from 62 nurses, 26 doctors and five others who included administrative staff, physiotherapy staff and patient care assistants. Thirty three had been unwell in the previous three weeks with an illness that met the clinical case definition for influenza. Of these, 19 had given a blood sample for serological testing and two had sent a throat swab for viral culture.

Response Rates

The response rate by ward is shown in table 1. In CCU responses were received from two doctors and six nurses. Five doctors and six nurses had worked on more than one ward.

Table 1 Staff response to the viral outbreak survey by ward

<table>
<thead>
<tr>
<th>WARD</th>
<th>nursing staff</th>
<th>medical staff</th>
<th>others</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;E</td>
<td>22 /28</td>
<td>14/15</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(79%)</td>
<td>(93%)</td>
<td></td>
</tr>
<tr>
<td>NICU</td>
<td>32/33</td>
<td>8/16</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(99%)</td>
<td>(50%)</td>
<td></td>
</tr>
<tr>
<td>ICU</td>
<td>14/38</td>
<td>8/16</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(36%)</td>
<td>(50%)</td>
<td></td>
</tr>
</tbody>
</table>

Staff Illness

Staff attack rates were at least double among medical and nursing staff of A&E than among nurses in the NICU presumably because of greater occupational exposure to virus circulating in the community (Table 2). Attack rates were not able to be calculated for other groups because of low response rates.

<table>
<thead>
<tr>
<th>WARD</th>
<th>Attack rate during the survey period</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;E</td>
<td></td>
</tr>
<tr>
<td>(medical and nursing staff)</td>
<td>33%*</td>
</tr>
<tr>
<td>NICU (nursing staff only)</td>
<td>15%</td>
</tr>
</tbody>
</table>

*This is the minimum rate calculated assuming that all seven people who did not return questionnaires had remained well.

Vaccination status

Two staff members had received the influenza vaccine for 1996 prior to the outbreak and a further five were immunised during the outbreak. Four staff, all doctors, had received the influenza vaccine in 1995. None of those who had been vaccinated against influenza in either 1995 or 1996 reported any illness during this outbreak. The effectiveness of the flu vaccine may last up to two years in young healthy people. However due to the continual antigenic change of the influenza virus which dictates a change in the composition of the vaccine each year and waning protective immunity for the vaccine, individuals need to be vaccinated every year.

Laboratory Results

Serum for viral serology was submitted by 19 staff members. Of these a further two also sent throat swabs for viral culture and three sent a convalescent serum. Four people had serological results diagnostic of influenza A and two had a single high titre diagnostic of parainfluenza 3. A further three had single titres that were suggestive of parainfluenza 3. These numbers are small but show a similar pattern to the results of all respiratory virology that was forwarded to Disease Control during the same period (Table 4). RDH laboratory routinely send respiratory virology results to CDC but the private laboratories only send a copy to CDC if there is a positive result of a notifiable disease or if requested to do so by the doctor who ordered the test.

In addition to the staff survey the eight people admitted to ICU with severe respiratory conditions during August were investigated for influenza. Seven had respiratory infections of whom six required ventilation and one was admitted overnight with asthma. Of the six ventilated patients, four had influenza A as an antecedent illness confirmed by either serology or culture of whom two subsequently died.

Discussion

The outbreak was largely due to influenza A. In addition to the two parainfluenza 3 positive staff many others had a single titre of antibodies to parainfluenza 3 that, although high, did not reach the level considered to be diagnostic (320). Therefore it is likely that parainfluenza was also a major contributing cause of this outbreak. Influenza A is more likely to result in severe illness and secondary complications than the parainfluenza viruses and this was consistent with the finding that influenza A was the antecedent illness in four patients admitted to ICU with pneumonia.

Outbreaks of influenza that occur relatively late in Australia’s influenza season are important because knowledge of the subtypes is useful to predict which strains are likely to predominate the following year for inclusion in the vaccine. For this reason it is important to collect diagnostic specimens to identify the cause of influenza-like outbreaks.

As in other tropical countries the seasonal pattern of
Table 3  Results of specimens collected during the staff survey

<table>
<thead>
<tr>
<th>Virus</th>
<th>single specimen serology</th>
<th>paired serology</th>
<th>culture</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>influenza A</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>parainfluenza 3*</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Other including influenza B</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>no agent identified</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>13</td>
</tr>
</tbody>
</table>

*Three staff members had a titre of 160 to parainfluenza 3

Table 4  Respiratory virology specimens received by CDC during the same period
(Not including staff results shown in Table 3)

<table>
<thead>
<tr>
<th>Virus</th>
<th>single specimen serology</th>
<th>paired serology</th>
<th>culture</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>influenza A</td>
<td>13</td>
<td>2</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>parainfluenza 3*</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>influenza B</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>RSV</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>no agent identified</td>
<td>39</td>
<td>-</td>
<td>1</td>
<td>40</td>
</tr>
</tbody>
</table>

* 13 others had a titre of 160 to parainfluenza 3

Influenza in the Top End does not follow a regular winter pattern. Outbreaks have been documented as early as February and as late as October. For this reason vaccination of high-risk individuals in the Top End should commence each February and is worth offering to unvaccinated people until the end of September each year.

RDH staff suffered from very high attack rates during this outbreak of influenza yet their immunisation rates were universally low, even in wards caring for “high risk” patients. Immunisation guidelines for staff of RDH recommend influenza vaccination for those working on all four wards included in this survey. In A&E the recommendation is made because of high risk of exposure of staff to the virus and the potential for many concurrent staff absences due to illness. This was demonstrated by the particularly high attack rate among A&E staff during this outbreak. ICU, CCU, NICU and most staff on general medical wards work directly with patients who would be at risk of serious complications if influenza is acquired. The vaccine is recommended for these groups to reduce the risk of patients acquiring influenza from the staff as well as to reduce staff illness during outbreaks of influenza which are invariably associated with increased hospital admissions.

Several staff respondents commented that they were not aware of these recommendations for influenza vaccination nor that a staff immunisation clinic is held each Friday in the outpatients department from 1-2 pm. Disease Control will be working with RDH infection control to improve uptake of vaccination against influenza by staff in 1997.

A word from Infection Control
Several papers have shown that a much higher level of staff immunisation for influenza is achieved when the immunisation “clinic” is taken to the staff workplace rather than expecting staff attendance at a clinic remote to the work area. In February 1997 RDH Infection Control staff intend to visit work areas identified as “high risk” and offer “on the spot shots”. Records of numbers vaccinated will be kept and compared to sick leave rates if an epidemic of flu occurs.

Anne Arthur, Infection Control, RDH
Reminder

In the Top End, vaccination against influenza commencing in **February** each year is recommended for the following groups. In the Centre, vaccinations should commence in April.

- All people over 65 years of age.
- Aboriginal people over 50 years of age.
- Adults and children with chronic heart, lung and kidney disease, diabetes or other metabolic disorders and their carers.
- Adults and children on immunosuppressive therapy and their carers.
- Residents and staff of nursing homes and other chronic care facilities.
- Health staff with direct contact with patients in the above categories.*

* In RDH this includes especially those who work in A&E, ICU, CCU, NICU, AIDS/STD, medical and renal units. It also includes staff of rural community health centres.

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**Hepatitis A Outbreak at a Childcare Centre in Alice Springs**

*N. Williams and J. Rossiter, CDC, Alice Springs*

Laboratory notifications show the Northern Territory had the highest incidence of hepatitis A in Australia (39.7 per 100,000 population) in 1994 with a slight downward trend (30.5 per 100,000 population) in 1995. Since the disease is known to be hyperendemic in Aboriginal populations the laboratory notifications vastly underestimate the incidence.

On 24/10/96 CDC was notified of a confirmed case of hepatitis A in a 43 year old Caucasian woman in Alice Springs Hospital. Contact tracing revealed that her 21 year old daughter also had hepatitis A, and that her three year old grandchild had symptoms of hepatitis and was jaundiced. This three year old and a two year old siblings had both attended a childcare centre in Alice Springs during the preceding weeks. The childcare centre was contacted about the possible case in the three year old and the parent was requested to seek medical attention for the child and to keep the child away from the childcare centre until the jaundice settled.

On 28/10/96 CDC was notified that the three year old child had been brought to the centre despite the exclusion criteria. A decision was made together with the director of the centre to notify all parents that a hepatitis case had been at the centre and that children would be offered immunoglobulin (IG) preventive therapy the following day. At this stage there was one clinical case and one possible case (the two year old sibling).

On 29/10/96 two CDC staff attended the centre at closing time and gave a presentation to assembled parents and offered IG to all the children and staff who had attended the centre. Informed consent was obtained and 47 injections were administered. The following day ten more people presented to CDC for IG. All the parents and staff were given a ‘handout’ explaining hepatitis A. All GPs in town were notified by mail of the cases and asked to maintain high level of suspicion for further cases.

On 1/11/96 a staff member who had received IG at the centre was confirmed to have hepatitis A and another positive case was diagnosed in a four year old attending the centre. This brought the number of confirmed cases to five. Contact tracing was extended around these cases and IG was offered to their families. Harvix™ has been available to childcare centre staff in the NT since 1994. Despite active promotion of the vaccine, and its availability at the government price, only two childcare centre staff in Central Australia have taken
up the vaccination program since its inception. This probably reflects a reluctance of employers on the individual’s behalf to bear the cost of vaccination. It has been well recognised that childcare workers are at high risk of hepatitis A infection.

The outbreak generated wide community concern and media interest with interviews being conducted on radio and in the local newspapers. To date there have been no further notified cases.

**References**


**INFORMATION FOR PUBLIC HEALTH AUTHORITIES ON BAT LYSSAVIRUS**

 Recommendations of the Lyssavirus Expert Group Meeting 11 November 1996, endorsed by the Communicable Diseases Network Australia New Zealand.

A new lyssavirus has been identified during 1996 in three species of bat in Australia. The three species are the Black flying fox (*Pteropus alecto*), Little Red flying fox (*Pteropus scapulatus*), and the yellow-bellied sheath-tailed bat (*Saccopteryx flaveolens*). In November 1996, a woman in Queensland developed encephalitis, probably due to the virus, after being bitten and scratched by bats, and later died in hospital.

Until recently, the lyssavirus group of viruses included the classic rabies virus, Lagos bat virus, Mokola virus, Duvenhage virus and the two European bat lyssaviruses. These viruses have not previously been reported to occur in Australia. The newly identified lyssavirus is closely related to, but is distinct from, the classic rabies virus.

The newly identified lyssavirus is currently known to infect naturally two megachiropterans (fruit bats/flying foxes), one microchiropteran (insectivorous bat), and humans. We therefore have to assume that all Australian bats, both megachiropterans and microchiropterans have the potential to carry the new lyssavirus.

Rabies virus and other lyssaviruses are usually transmitted to humans via bites or scratches which provide direct access of the virus in saliva to exposed tissue. This means that most people would not be exposed to lyssavirus through casual contact with bats. Experience with other closely related viruses including classical rabies virus would suggest that contact such as petting bats or exposure to urine and faeces does not constitute an at-risk exposure.

Further research is being conducted into the distribution and transmissibility of the virus. Recommendations may be updated as more information becomes available.

**PREVENTIVE MEASURES**

Assume that all Australian bats have the potential to carry the new lyssavirus. The best protection against being exposed to the virus is to avoid handling bats. If you must handle bats, observe these safety precautions.

1. Handling bats: Before handling a bat, give some thought to whether you really do need to handle the animal. There may be alternatives such as simply covering a sick or injured animal. If you must handle a bat, make every effort to avoid being bitten or scratched.

2. Vaccination: Get vaccinated. A safe vaccine is readily available. It requires a course of injections over a month.

3. Protective clothing: Wear puncture-proof gloves, long sleeves, protective glasses and mask. Cover existing cuts, scratches and sores. Lyssaviruses are known to have been transmitted through open wounds (bites, sores etc), and through mucous membranes (eyes, mouth). Bats can easily bite through cloth or leather gloves, so you will still need to avoid being bitten as much as possible. You might consider wearing chain mail gloves.

4. Blood and saliva: Avoid direct contact with the blood and saliva of bats. Note that simple touching animals or coming into contact with their urine or faeces will not transmit other closely related lyssaviruses.

5. Hygiene: If bitten or scratched, immediately scrub the wound thoroughly with soap and water. Proper cleansing of the wound is regarded as the single most effective measure for reducing transmission of lyssaviruses.
6. Medical attention: If bitten, scratched or otherwise possibly exposed to lyssavirus, seek medical advice even if you have been vaccinated.

VACCINATION
As the bat lyssavirus is closely related to classic rabies virus, infection may be prevented by rabies vaccine and rabies immunoglobulin. Recommendations for administering these are provided below.

PRE-EXPOSURE VACCINATION
Pre-exposure vaccination is recommended if you have never been bitten by a bat, and are occupationally or recreationally exposed to bats, where there is a risk of being bitten or scratched, for example:

- Bat carers, bat banders, researchers and students
- Veterinarians
- Wildlife Officers (including local government officers)
- Veterinary laboratory staff
- Managers of display or research colonies of bats
- Members of indigenous communities who may catch bats for consumption
- Power line workers who frequently remove bats from power lines

You should see your doctor about the need for vaccination if you are in one of these groups.

POST-EXPOSURE VACCINATION
If a person is bitten or scratched by any Australian bat, the attached flow chart should be used to determine the appropriate post-exposure treatment. Contact such as patting bats or exposure to urine and faeces does not constitute an at-risk exposure. Pre-exposure vaccination should be offered if the person has on-going contact with bats.

In all cases, the wound should be scrubbed thoroughly, as soon as possible, with soap and water. Proper cleansing of the wound is the single most effective measure for reducing the transmission. Where possible, the bat should be kept for further investigation by the State veterinary laboratory.

Post-exposure vaccination consists of 5 doses of 1 ml of rabies vaccine given as deep subcutaneous or intramuscular injection, on days 0, 3, 7, 14 and 28. Doses should be given in the deltoid area, as rabies neutralising antibody titres may be reduced after administration in other sites. In children, administration into the anterolateral aspect of the thigh is also acceptable.

Rabies immunoglobulin, when required, should be given as a single dose at the same time as the first dose of the post-exposure vaccination course. The dose is 20 International Units per kilogram body mass. Where the site permits, half the dose should be infiltrated into the wound and half given intramuscularly. If vaccination has been commenced more than seven days prior, rabies immunoglobulin should not be administered.

Rabies immunoglobulin is currently in short supply worldwide. An assessment should be made of the risk of virus transmission before immunoglobulin is given. Considerations as to the level of risk of exposure include:

- facial bites or scratches are higher risk than peripheral injuries
- bites are a higher risk than scratches
- scratches that draw blood are at higher risk than other scratches
- if the bat appears to be unwell, a higher risk may exist.

For more information on rabies immunoglobulin and vaccine, see the NHMRC publication, The Australian Immunisation Procedures Handbook, 5th edition.

Note: Recommendations on post-exposure rabies vaccination for travellers returning from overseas currently remain unchanged.

For further information contact Dr Angela Merianos or Dr Vicki Krause on 89 228 044
BAT EXPOSURE FLOW CHART

BITTEN OR SCRATCHED BY ANY AUSTRALIAN BAT (includes fruit-eating and insectivorous bats)

ALL WOUNDS SHOULD BE VIGOROUSLY SCRUBBED WITH SOAP AND WATER

BITTEN OR SCRATCHED MORE THAN 3 MONTHS AGO

BITTEN OR SCRATCHED WITHIN PREVIOUS 3 MONTHS

ASSESS RISK
- facial bites or scratches are higher risk than peripheral injuries
- bites are a higher risk than scratches
- scratches that draw blood are at higher risk than other scratches
- if the bat appears to be unwell, a higher risk may exist

POST EXPOSURE VACCINATION ONLY (not rabies immunoglobulin)

LOW RISK

HIGH RISK

GIVE RABIES IMMUNOGLOBULIN + POST EXPOSURE VACCINATION
Immunoglobulin should not be administered if vaccination commenced more than 7 days prior
Bat chat from East Arnhem
Ivor Alexander, CDC Nhulunbuy

As a result of the recent alert from Queensland in relation to bats and lyssavirus it was decided to contact rural communities and well experienced bat handlers in East Arnhem Land. All rural community clinics and rural councils were contacted by fax on 19/11/96 and asked to supply the following information to us.

1. Do members of your community catch flying foxes for food?
2. If so, how many and how often?
3. What method/s are used to catch them? i.e. nets, guns, spears, slingshots?
4. How are they cooked?
5. Are bites/scratches from flying foxes common?
6. Are any kept alive as pets by Yolngu or Balanda? (Aboriginals or non-Aboriginals).

It was emphasised that this information was important and of some urgency and that we would be grateful for any help. The response was both rapid and extensive with some senior health workers contacting homeland centres for information from traditional owners and elders of their own volition, before supplying the information to us. In part I have attributed this quick and interested response to greater “ownership” of this problem compared to some of the other health problems which may be seen as “imported”. Traditionally flying foxes have been hunted and eaten in Arnhem Land and are an important food source for many people.

Aboriginal people are reported to eat more flying foxes at this time of the year than at any other. Although this may be due to their greater number at this time it may also be due to their greater accessibility before the wet season really sets in. Aboriginal people also report that the flying foxes taste better at this time of year due to their late “dry” season diet of mangoes, bush fruits and nuts.

A recently published report stated that approximately 170,000 flying foxes are killed and eaten annually in the NT and that 55% of the Aboriginal population eat fruit bats at least once per year.

There was wide variation among communities as regards the number of fruit bats eaten, with none at all being reported from Groote Eylandt to large numbers being eaten on a regular basis in some Top End communities. On Groote Eylandt the bats are hunted with slingshots by 'Flying Fox Patrols' which are groups of young boys killing them. The bats are seen as competing with the local people for mangoes and other fruits and are regarded as pests and not a food source.

The main way of hunting is in small groups using shotguns. We also received reports of groups of women hunting them using long poles to knock them out of the trees and also reaching up to the low hanging ones, grasping them by the neck and strangling them. Bites and scratches are not reported to occur during these hunting trips which could be seen as surprising considering the methods used!

There appears to be three main ways in which fruit bats are cooked:

1) If bats are caught away from the main community then it is usual to cook them “as is” on an open fire; the bats are just thrown on to the fire and this of course removes the fur at the same time!

2) If caught at the main community they may be cooked in a camp oven (baked in-ground) which has the same effect as roasting.

3) One of the commonest ways of cooking them is to remove the wings and boil them in a billy, which may be a recycled jam tin or powdered milk tin.

There are no reports of bats being kept as pets in rural communities in East Arnhem Land. Some non-Aboriginal people do care for sick/injured bats at their homes and have done so for many years.

We are fortunate in Nhulunbuy in having an A class bat and bird “Bander” living here. He is very familiar with bat habits and of the location of large colonies on the Gove Peninsula. None of the non-Aboriginal people who regularly handle sick or injured bats has ever reported being bitten and they have had many years of exposure to flying foxes.

All of the main communities, including clinics and councils, have now been contacted and given information about the perceived risk from bats. This information with the health alert warning has been translated into Gumatj and Djamandinuyu, two of the main languages in East Arnhem Land. These messages will be broadcast over the BRACS (Broadcasting Remote Aboriginal Communities System).

The Art class at the Nhulunbuy High School is also preparing two bat posters for us in A4 and A3 sizes. These should be suitable for laminating and photocopying.

Reference
Newsflash on lyssavirus
There have been a number of new developments since the first reports of lyssavirus in Queensland.

The flying fox that recently injured two people in the Currumbin Valley in Queensland on 11 November was not infected with lyssavirus. The men had been successfully traced and started on post-exposure human diploid rabies vaccine and received rabies immune globulin (RIG) before the error was recognised.

This story attracted considerable media attention on 23-24 November as an unprovoked attack. It has since been confirmed that the bat had recently been released from an “orphan” release cage nearby and was displaying tame behaviour when it landed on an elderly man. The two men were bitten when attempting to remove the bat. The infected specimens came from the most recent of 7 flying foxes with neurological symptoms.

The error in identification of the infected bat occurred in a temporary data recording system established by the Queensland Department of Primary Industries (DPI Queensland) to register information related to flying fox test results. The source of the error has been investigated and appropriate changes have been made to the system.

An eighth infected animal was identified in the week starting 24 November. That animal was an insectivorous bat, the Yellow-bellied Sheathtail Bat (Saccolimus flaviventris), a microbat, found unable to fly near Toowoomba. S. flaviventris is one of the species that bit the Rockhampton woman who died of lyssavirus infection on 15 November. Microbats include bats that are found in caves.

Detection of the virus in insectivorous bats may be important in establishing the history and ecology of the lyssavirus in Australia. It is consistent with experience overseas in which insectivorous bats account for most rabies cases acquired from bats.

Identification of the virus in insectivorous bats and the mislabelling of bat specimens has led to additional funds from the Queensland Government for bat virus research for DPI Queensland. The Australian Animal Health Laboratory (AAHL) in Geelong which is the reference laboratory conducting most of the lyssavirus tests has also received funding from the Commonwealth Department of Health and Family Services. AAHL has been collaborating closely with rabies experts at the Center for Disease Control and Prevention, Atlanta, Georgia. One of AAHL’s research priorities is the development of a rapid ELISA test for use by state reference laboratories throughout Australia. AAHL has also been funded to accommodate testing of bat specimens from around Australia until the rapid diagnostic test is available.

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Melioidosis - kava drinking added to the risk factors?
Bart Currie, Royal Darwin Hospital and Menzies School of Health Research.

Since the onset of the wet season there were four new cases of melioidosis in November 1996. Three were diabetics and one was a heavy kava drinker from an East Arnhem community. Three were septicaemic and all remain alive.

During the 1995-6 wet season there were 30 cases of melioidosis (including 2 relapses from prior disease) and 4 deaths. This compares with 21 cases and 3 deaths in 1994-5, 28 cases and 6 deaths in 1993-4 and 33 cases and 12 deaths in 1990-1. During the 1996 dry season there were 5 additional cases with no deaths.

Melioidosis Summary
1. Melioidosis is caused by Burkholderia (formerly Pseudomonas) pseudomallei. It is the commonest cause of fatal community acquired bacteraemic pneumonia at Royal Darwin Hospital (and possibly also Katherine and Gove Hospitals).

2. Other presentations of melioidosis include skin abscesses or ulcers, abscesses in internal organs such as prostate, spleen and liver, fulminant septicaemia with multi-organ abscesses and an unusual neurological illness (such as brainstem encephalitis). Persons without symptoms or a known history of disease have also been found to be serologically positive.

3. An ongoing prospective study has documented 160 cases of melioidosis at Royal Darwin Hospital. Of these, around 35% are diabetic and 45% heavy
alcohol consumers. 20% have chronic lung disease and 10% have chronic renal failure.

4. Occasional cases occur in children.

5. The likelihood of diagnosis is increased by using selective culture media (modified Ashdown’s broth), frequent sampling (sputum, throat, rectal and ulcer swabs) and collection of blood cultures. Clinicians should liaise with laboratory staff to ensure selective media are available.

6. Mortality is decreased by early diagnosis and appropriate antibiotic therapy.

7. Follow up of cases and ensuring compliance with eradication therapy (usually three months of antibiotics after discharge) is critical to prevent relapse, which can be fatal.

8. The Top End empirical treatment protocol for adult community-acquired pneumonia is devised to cover both melioidosis in patients with risk factors, as well as other important pathogens (Table).

9. Once melioidosis is confirmed the treatment recommended is:

   Initial intensive therapy for usually 7 to 14 days of
   - intravenous high dose ceftazidime
     plus either
     - high dose cotrimoxazole
     or
     - high dose doxycycline.

   This is followed by

   Eradication therapy for at least three months of
   - oral monotherapy with either high dose cotrimoxazole or doxycycline.

10. Each monsoon, cases of melioidosis occur in travellers returning from tropical Australia to southern states or overseas countries.

Melioidosis and Kava
Over the last few years health staff in East Arnhem have noted that the majority of Arnhem Land patients referred to Gove and Royal Darwin Hospitals who have melioidosis diagnosed are kava drinkers, often without other risk factors for melioidosis. Melioidosis has therefore been added to the growing list of health concerns related to kava drinking. As with the other health issues, it is important to now critically evaluate the situation:

   • Is kava drinking an independent association with melioidosis?
   • If so, is it due to increased exposure of kava drinkers to the soil/water bacterium, B. pseudomallei, or due to increased susceptibility to disease?
   • If there is increased disease susceptibility, is it immunologically or metabolically based?
   • What measures need to be taken to improve the situation?

Studies are currently underway to address these questions in collaboration with staff in East Arnhem.

Reference

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### Table. Initial therapy of adult community-acquired pneumonia in the Top End

<table>
<thead>
<tr>
<th>Risk factors present</th>
<th>Mild pneumonia</th>
<th>Moderate pneumonia</th>
<th>Severe pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk factors</td>
<td>Penicilllin</td>
<td>Penicilllin</td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>Risk factors</td>
<td>Penicilllin</td>
<td>Ceftriaxone</td>
<td>Ceftriaxone (or Ceftazidime) plus Gentamicin</td>
</tr>
</tbody>
</table>

1. For 'atypical pneumonia' consider erythromycin.
2. Risk factors include: alcohol, diabetes, chronic lung disease, chronic renal failure and steroid therapy.
Trachoma is the leading cause of blindness in the world. It is a preventable disease, yet despite this a number of rural Aboriginal communities in the Katherine region of the Northern Territory still have hyperendemic prevalence rates of trachoma in the childhood population. This is characterised by a constant cycle of reinfection, which can progress to cause complications, including blindness, later in life. History has shown that trachoma usually disappears with socio-economic development, however in communities where trachoma still causes blindness "reliance on economic development is an insufficient means of prevention, and interim solutions must be found".

The present lack of trachoma control programmes in the Northern Territory reflects, until now, the absence of effective interventions against the disease. It is clear from the literature that azithromycin is the drug of choice for treatment of trachoma, given as a single dose. Azithromycin is easy to administer, safe, and decreases the problem of compliance. It is the recommended treatment in the 1995/1996 Antibiotic Guidelines. In addition to azithromycin an appropriately designed intervention strategy using a public health approach to alter hygiene practises should have a lasting impact on trachoma at the community level. However there have been few evaluations of the effectiveness of azithromycin in ‘the field’.

**Table 1  Comparison of Trachoma Grading Systems**

<table>
<thead>
<tr>
<th>Trachoma Grades</th>
<th>World Health Organization (WHO) Grading System</th>
<th>Better Vision for All. The Five Sign System for Trachoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF Trachomatous inflammation-Follicular</td>
<td>5 or more follicles in the upper tarsal conjunctiva. Follicles must be more than 0.5mm in diameter.</td>
<td>Whenever follicles are seen in the conjunctiva.</td>
</tr>
<tr>
<td>TI Trachomatous inflammation-Intense</td>
<td>Pronounced inflammatory thickening of the tarsal conjunctiva which obscures half the normal deep tarsal vessels.</td>
<td>When no normal tarsal vessels are seen in the everted upper lid.</td>
</tr>
<tr>
<td>TS Trachomatous conjunctival-Scarring</td>
<td>Visible scars in the tarsal conjunctiva.</td>
<td>When scars are seen in the conjunctiva of the everted upper lid.</td>
</tr>
<tr>
<td>TT Trachomatous Trichiasis</td>
<td>At least one eyelash rubs on the eyeball, or evidence of recent removal of in-turned lashes.</td>
<td>When one or more eyelash touches the eyeball.</td>
</tr>
<tr>
<td>CO Corneal Opacity</td>
<td>Visible corneal opacity over the pupil which is so dense that at least part of the pupil margin is blurred through the opacity.</td>
<td>When an opacity of the cornea is dense enough to obscure a view of the pupil (were it so placed) is seen.</td>
</tr>
</tbody>
</table>
various stages of trachoma to discuss the disease process,
a video about prevention of trachoma aimed specifically
at Aboriginal children, posters about prevention of
trachoma at clinics and schools and a colouring in book
about trachoma prevention, used as a competition in
the schools.

The treatment protocol used was based on the WHO
guidelines, determined by the prevalence rates of
trachoma in the communities, but differed in treating
only children and not adults. A single oral dose of
azithromycin (20mg/kg) was given under supervision,
thus compliance was assured, which is the major benefit
of this treatment. Treatment in the hyperendemic
communities aimed to decrease the reservoir of
folicular trachoma by treating all children. The school
aged population and the under 5 year old population
(>6kg & >6mth old) were treated. Treatment had to be
completed within 14 days to prevent re-infection.

Results
In 1995 school aged children were screened in 15 rural
communities in the Katherine Region and 9 of these
had hyperendemic rates of trachoma (>20%), 4 had
endemic rates (5-20%), and 2 had non endemic rates
(<5%). Of the 9 hyperendemic communities, 6 were
able to be evaluated with screening pre-and post-
treatment. The interval between treatment in 1995
and rescreening in 1996 ranged from 2 months to 6
months. The coverage rate for screening was 71%, in
1995, 77% in 1996, and 83% for treatment. A
summary of numbers and mean ages is provided in
table 2.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>mean age</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screened 1995</td>
<td>8.5</td>
<td>241</td>
</tr>
<tr>
<td>Screened 1996</td>
<td>8.4</td>
<td>289</td>
</tr>
<tr>
<td>Trachoma +ve 1995</td>
<td>8.6</td>
<td>118</td>
</tr>
<tr>
<td>Trachoma +ve 1996</td>
<td>8.3</td>
<td>55</td>
</tr>
</tbody>
</table>

The overall change in trachoma prevalence rates was
49% in 1995, falling to 19% post treatment in 1996
(P<0.01). Individual community prevalence rates can
be seen in the graph below.

Following treatment the risk of trachoma in 1996 in
children with trachoma in 1995 was reduced by 69%.

Children with trachoma in 1995

<table>
<thead>
<tr>
<th>Treated in 1995</th>
<th>Trachoma in 1996</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>16</td>
<td>55</td>
</tr>
<tr>
<td>-</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>58</td>
</tr>
</tbody>
</table>

Discussion
It is clear from the literature that it is the large infective
pool of trachoma in children which contributes to the
constant cycle of reinfection resulting in chronic
sequelae later in life. Thus hyperendemic communities
need to be identified and targeted. Success in decreasing
this infective pool is reflected in a decrease in the
prevalence of trachoma. This study has been successful
in reducing rates to subendemic levels at 2 to 6 months
follow-up, which means that subsequent retreatment
can be targeted to cases and household contacts.
Rescreening and treatment in hyperendemic
communities should probably occur at 6 months, on the
presumption that children will have been missed, and
that in communities with such a large infective pool an
interval of one year may result in significant reinfection.

Prevalence rates were obtained from the 5-15 year old
school aged population, which varies from the WHO
method that uses the under 10 year age group to
estimate prevalence rates. Our estimate is probably an
under-estimate of the true prevalence rates, as the
literature shows that the under 5 year olds have the
highest rates of trachoma. This may mean that the
prevalence rates we have used to determine
hyperendemic communities should be lowered. The
main reasons for not screening the under 5 year olds
were 1) there is already routine annual school screening
in the region (including trachoma screening) so no
extra resources were needed 2) the health staff had
concerns regarding difficulty eveting eyelids, and
examining young children effectively 3) there was
concern that younger children and their parents found
examination unpleasant and 4) finally the under 5 year
old group was treated regardless as part of the childhood
treatment program.

WHO recommends treating adults and children. Adults
were not treated in this program for a number of
reasons including the epidemiological evidence shows
most active disease is in children, problems with
acceptability of mass treatment programs in the NT,
implementation issues regarding resources needed to reach all adults and the cost of treating adults. This approach was clearly successful in decreasing the massive infective pool in the hyperendemic communities, but may not be appropriate in trying to manage trachoma when rates are lower. The literature shows that it is the women who also have disease, so consideration should be given to including them in treatment in subendemic areas.

Health promotion should be an integral part of any treatment program. Health promotion provides not only the individual, but the community with steps that they can take to solve problems. It is very important not to "medicalise" a problem which is fundamentally a socio-economic community based issue.

Recommendations for Trachoma Control

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

2. **Diagnosis of trachoma**
The World Health Organization's grading system should be adopted.

3. **Assess prevalence rates**
   - Assess prevalence rates in school aged children at annual school screening.
   - From this identify:
     1. **Hyperendemic areas** - prevalence rate above 20%
     2. **Endemic areas** - prevalence rate 5-20%
     3. **Non endemic areas** - prevalence rate less than 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 15 years and under (>6mths and 6 kg).
   - Treatment must be completed within 14 days.
   - Rescreening and treatment should occur at 6 months.

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

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

(iv) **Drugs**
   - **Azithromycin**: orally stat, if over 6kg and over 6 months old is the treatment of choice.
   
   OR
   - **Erythromycin**: orally 12 hourly for 14 days, if under 6kg, and under 6 mths old.
   
   Refer to the Antibiotic Guidelines for doses.

**Editorial**
Azithromycin suspension for children is available under the Special Access scheme through the Therapeutic Goods Administration. Azithromycin has now been approved as a category B1 drug in the ADEC pregnancy category book, so can be used in pregnant and lactating women.

**References**

**Acknowledgments**
Thank you to all of the rural health staff who worked so hard to make this program a success, and to the local schools for cooperating so readily, to Territory Health Services staff in Katherine who helped including CDC staff, the Health Promotion Unit, especially Raenae Reeves, Malcolm Abbott at Katherine District Hospital pharmacy, and to Bart Currie for his ongoing encouragement and support.
The rationale for restricting azithromycin use in the Northern Territory.
Bart Currie, Royal Darwin Hospital and Menzies School of Health Research.

At present azithromycin use in remote Northern Territory (NT) communities is generally being restricted to the three indications where azithromycin has clear and major advantages over previous treatments, namely:

1) Single dose azithromycin for treatment of genital chlamydial STDs.
2) Single dose azithromycin for treatment of trachoma cases and contacts (see above article).
3) Supervised azithromycin therapy for donovanosis.

These are the three specific indications in Antibiotic Guidelines 9th edition (1996/1997).

The advantages of azithromycin over erythromycin and roxithromycin are its increased tissue/cell penetration and prolonged blood and tissue half-lives. However, because of persistence of azithromycin in low levels in tissues for longer than a week after even single dose therapy, selection of antibiotic resistant organisms is a potential problem. Resistance of chlamydia to the macrolide/azalide antibiotics (including erythromycin, roxithromycin and azithromycin) has not been documented. However, emergence of resistance in throat and skin bacteria is well documented.

Erythromycin resistant Streptococcus pyogenes emerged in Western Australia (WA) some years ago and under drug selection became a major problem overseas, with levels of resistance over 50% reported in Japan. At present around only 1% of NT S. pyogenes isolates are erythromycin/roxithromycin/azithromycin resistant. This proportion could increase under antibiotic selection pressure. Similarly, in France the development of erythromycin resistance in Streptococcus pneumoniae has followed increased prescribing of erythromycin. For both S. pyogenes and S. pneumoniae there is usually cross-resistance between erythromycin, roxithromycin and azithromycin.

The prolonged blood and tissue levels with azithromycin may theoretically make emergence of resistance more likely than with erythromycin or roxithromycin. Of concern is that surveillance of the first use of azithromycin for trachoma in Australia showed the rapid emergence and transient predominance of azithromycin resistant S. pneumoniae in the remote Aboriginal community. Several pre-existing (minority) resistant clones of S. pneumoniae were clearly selected under azithromycin pressure.

These resistant clones subsequently diminished as the coordinated trachoma program entailed only a brief period of azithromycin use.

The marketing of azithromycin in Australia (as per the current approved indications as lodged with the Commonwealth Therapeutic Goods Administration (TGA)) has been targeted at the financially lucrative area of use in adults for respiratory and skin infections in addition to use in genital chlamydia. A paediatric formulation available overseas is yet to gain marketing approval in Australia. Fortunately, the Director of the Drug and Safety Evaluation Branch of TGA agreed that azithromycin paediatric suspension could be supplied as a Category A drug on the Special Access Scheme (SAS) for the "prevention of blindness due to trachoma." The manufacturer has been very supportive in supplying the suspension for trachoma in WA and the NT and in attempting to streamline the regulatory requirements of the SAS, such as separate approval for each individual use.

The clear advantage of azithromycin for trachoma and genital chlamydial STD is that single dose azithromycin is at least as efficacious as the previous prolonged and problematic therapies. This clear advantage does not translate to respiratory and skin infections, where 3–5 days of azithromycin is recommended. A recent study showed that three days of azithromycin was not reliable for treating and eradicating S. pyogenes in streptococcal pharyngitis. The conclusion was that three days of azithromycin did not represent an effective alternative to penicillin for the treatment of streptococcal pharyngitis. Single dose IM benzathine penicillin has a 50 year track record for S. pyogenes pyoderma and pharyngitis and S. pyogenes remains universally sensitive to penicillin. Given the enormous burden of S. pyogenes related infections and sequelae (glomerulonephritis and rheumatic fever) in remote Aboriginal communities, widespread use of azithromycin for skin and throat sepsis may have two consequences; firstly treatment failures, increased post-streptococcal sequelae and increased transmission of the organism due to difficulties with adherence to oral therapy (even if three days treatment was adequate); secondly, emergence and spread of azithromycin/erythromycin/roxithromycin resistant S. pyogenes and S. pneumoniae. For various other respiratory infections Antibiotic Guidelines currently recommends as oral agents amoxicillin, doxycycline or roxithromycin, often for five days. Until evidence of a clearer advantage for azithromycin emerges (e.g. 3 days azithromycin versus 5 days roxithromycin) it seems prudent to avoid widespread intermittent use of azithromycin for
respiratory infections in remote communities where the pool of bacteria from which emergence of resistance may occur is so large.

Concern about the emergence of resistance in respiratory and skin bacteria to macrolides/azalides with widespread azithromycin trachoma programs is justified. However the rapid demise of emerged resistance in the study by Leach et al. suggests that coordinated programs in communities rather than sporadic use of azithromycin is appropriate. Furthermore, coordinated community-based interventions are far more likely to break the cycles of transmission of *Chlamydia trachomatis* and ultimately lead to far less drug requirements. To maximise the enormous potential of azithromycin, with a view to eradication of trachoma without persistence of emerged macrolide/azalide resistant bacteria, coordination and resolve will be required at all levels; community, primary carers, regional, Territory/State and cross-border/national. Without concomitant improvements in housing, water supply and hygiene it remains unlikely that trachoma can be eradicated.

**Conclusions.**

In remote communities in northern and central Australia azithromycin should, for the present, be generally restricted to use for coordinated trachoma programs, chlamydial STD and donovonosis. Sporadic use of azithromycin for skin and respiratory infections may increase the burden of *Streptococcus pyogenes* bacteria and lead to treatment failures and increased sequelae of glomerulonephritis and rheumatic fever. In addition, widespread sporadic azithromycin use may lead to emergence and persistence of macrolide/azalide resistant bacteria.

**References**


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**Change to Azithromycin's Categorisation of Risk in Pregnancy**

Recently the Australian Drug Evaluation Committee released the 3rd edition of "Medicines in Pregnancy: An Australian categorisation of risk of drug use in pregnancy".

*Azithromycin, formerly classified as a B3 drug, has been reclassified as a B1 drug.*

Category B1 refers to drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect effects on the human foetus having been observed. Studies in animals have not shown evidence of an increased occurrence of foetal damage.

Other B1 drugs include ceftriaxone, cefaclor, fluclouxacillin and roxithromycin.

Azithromycin can now be recommended as a first-line agent in the treatment of chlamydia or donovonosis in pregnant or breast-feeding women.

If you have any questions regarding the use of azithromycin please do not hesitate to contact the AIDS/STD unit on 08 89228874.
An innovative community approach to teaching children about tobacco was launched in the Top End Community of Maningrida last month. It was funded by a grant from the Tobacco Action Project of THS plus a donation from the Rotary Club of Darwin.

The two weeks of intensive activities for the “BE SMOKE FREE” project included a visit from Darwin’s Olympic gold medal winner Nova Peris who conducted special classroom activities with students which included numerous requested displays of her medal, a ball skills session with the early childhood classes, discussions about goals in life and how to achieve them and about healthy, smoke free living. She also good naturedly signed endless autographs for staff, students and various bystanders. Other role models for healthy living including NTFL footballer Dwayne Armstrong who also visited the community to talk and play football with the school students.

As part of the project, local teachers, musicians, parents and THS staff got together to produce an interactive CD ROM which was launched during Nova’s visit.

Nearly every school child contributed to the CD by either acting, telling a story or by contributing photos and drawings. The CD explores themes such as having fun without tobacco, peer group pressure and ways to say no to cigarettes. It also addresses the health effects of smoking and includes some stories about tobacco from earlier times. It is aimed at primary school students but is easy and fun for all age groups to use. In one outstation the CD is proving to be as popular with the parents as it is with the students.

The CD has been designed as a pilot model for adaptation to other communities. By substituting video clips, photographs and sound, it is easy to modify to different languages and places.

Some beautiful songs and posters were created by both individual children and classes which have been sung and displayed respectively around the school, health centre and community. The fortnight concluded with an exclusive concert by the Maningrida based bands “Sunrise” and “Letterstick” during which the musicians gave many “BE SMOKE FREE” messages to the crowd.

There is very little information about how many Aboriginal school children smoke, when and why they start, and what sort of things may be effective in reducing the number who take it up. The project is also collecting this sort of information.

Maningrida and two other remote communities are conducting surveys about children’s knowledge, attitudes and behaviour regarding smoking both before and after the fortnight of activities which occurred only in Maningrida. These surveys are to see if the educational messages had any measurable effect on those who participated at Maningrida when compared with the other two control communities who did not get the educational messages.

In most communities in the Top End about 80% of all adults smoke. This is an unusually high rate. In Aboriginal communities of central Australia the prevalence is nearer 35% and Australia-wide approximately 25% of adults smoke. The high rates in the Top End are causing an enormous burden of ill health which has high personal, social and financial costs. In Aboriginal people of the NT, the two leading causes of hospitalisation and death are heart disease and lung disease and smoking is a well established risk factor for both.

Words of two songs

1. By Garlark Class

The children are crying
Their parents are dying - cut short in their life
Women are smoking
Burning the money - lots of black ashes
Replace the poison
Good food and good sporting
Nature can save us
Taste buds returning

Chorus
This is a serious matter
Let our world live without sickness
without cancer
This is a day when the outcome is certainly known
Beware lung cancer

We children are calling
Please stop and please listen to us
We need our grand parents
Teaching us customs of long long ago
The future is ours
Lets take it with courage
Telling our stories our dance and our music

***************
2. By Eagle Class - sung in rap style

Don't you smoke

Don't you smoke

I'm gonna tell you something and it's no joke
You can't be healthy if you're gonna smoke

Your lungs turn black
and you feel real slack

HEY! you won't go far
with your lungs full of tar

It's hurting your heart
so why did you start?

It's time to QUIT
give smoking the flick

DON'T YOU SMOKE

WHO Reports
(31 October 1996)

Yellow fever in travellers
Reports have been received of two travellers to the
Amazon region in Brazil who died from yellow fever
after their return to their respective home countries,
Switzerland (April 1996) and the USA (August 1996).
Neither had been vaccinated against yellow fever.

These incidents stress how important it is for travellers
to yellow fever endemic zones to be vaccinated. As
stated in the International Travel and Health,
Vaccination Requirements and Health Advice (WHO
1996), Brazil recommends vaccination for travellers to
rural areas in Acre, Amapá, Amazonas, Goiás,
Maranhão, Mato Grosso, Mato Grosso do Sul, Pará,
Rondônia and Roraima States.

Further advice on yellow fever vaccination and endem-
ic areas are available in International Travel and

Health, Vaccination Requirements and Health Advice
which is updated annually and now accessible on the
World Wide Web.

Editorial
A recent article in the JAMA (October 9, 1996) high-
lights the fact that there has been a dramatic reemergence
of yellow fever across Africa and South America since
the 1980s. A total of 18,735 yellow fever cases and
4522 deaths reported to the World Health Organization
(WHO) from 1987 to 1991 represents the greatest
amount of yellow fever activity for any five year period
since 1948. At present, a high proportion of travellers
to at-risk areas are reported to be immunised, reflecting
widespread knowledge about the International Health
Regulations. The two deaths reported above however,
show that there is no room for complacency.

The Public Health Association of Australia Inc.

The 2nd National Tuberculosis Conference
17 to 18 November 1997 - Sydney NSW

Invited National and International Speaker Include:

Dr Mike Iseman - Denver USA
Dr Paul Nunn - WHO Geneva
Dr Michael Toole - Melbourne VIC

Conference Co-Convenors:

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The screw worm fly - a potential threat
Andrew Moss
Veterinary Officer
North Australian Quarantine Strategy

Attention: Medical practitioners, Health workers and Veterinarians

I am writing to you to draw attention to an exotic pest that could have significant economic effects in Australia should it gain access and become established. Screw worm fly, an exotic pest to Australia, has long been regarded as a potential threat and is already established in Indonesia and Papua New Guinea.

Screw worm fly is a blue-green blow-fly very similar in appearance to other species of blow-fly common throughout Australia. The fly's requirement for living tissue, in which its larvae develop, leads to severe traumatic and toxic damage to live animals. The fly can strike even minor wounds, such as tick bites or other wounds associated with normal animal management like barbed wire scratches or castration wounds. The fly is able to affect a wide range of hosts including human, cattle, sheep, goats, horses, dogs, cats, native mammals and birds. There are two species of fly that are not closely related, but which occupy a very similar niche in different parts of the world. These are the old world screw worm fly Chrysomya bezziana and the new world screw worm fly Cochliomyia hominivorax.

C. bezziana is distributed through tropical and sub-tropical Africa, Arabia, the Indian subcontinent, South East Asia and Papua New Guinea.

Co. hominivorax is distributed from Central America to temperate South America. It has been detected in Australia in recent years as maggots in a wound in a traveller returning to Australia from South America. The fly did not become established due to treatment of the wounds, although initially the significance of the condition was not recognised.

This letter is aimed at raising awareness of a potential pest that may be introduced and which you may come in contact with in your daily activities. Maggots infecting live animals or humans are detected from time to time - please consider screw worm fly in your differential diagnosis. Special attention should be considered where people have travelled from countries in which screw worm fly is found.

The character of screw worm fly maggots is described as maggots deeply embedded in a wound which retract further into the wound when irritated. Maggots may be submitted to Northern Territory Quarantine and Inspection Branch for identification Ph: (08) 8981 8723. Maggots should be placed in hot water just off the boil for 60 seconds prior to preservation in 70% alcohol. We will pick up maggots in Darwin otherwise consign by post. Prompt identification and treatment will result in the eradication of this exotic pest before it becomes established.

**********

Hib carriage in Aboriginal infants
Amanda Leach
Menzies School of Health Research

The randomised controlled trial (RCT) of antibiotic vs placebo for treatment of otitis media with effusion began in April 1996 in a Top End community. Since that time over 28 Aboriginal infants have been recruited to the study. The RCT has been to monitor the nasopharyngeal carriage of respiratory bacteria that cause otitis media, namely Streptococcus pneumoniae, non-capsular Haemophilus influenzae and Moraxella (Branhamella) catarrhalis.

Previous observations in this same age group in this community showed that the Hib immunisation program had coincided with a dramatic reduction in Hib isolation rate. The current RCT has provided the opportunity to continue to monitor Hib carriage in this population.

To date, seven (>25%) infants have had Hib-positive nasopharyngeal or ear discharge swabs. Five siblings and one mother have also had Hib-positive cultures.

One infant was colonised before one month of age, i.e. prior to eligibility for Hib vaccination.

Five infants were colonised prior to their second Hib immunisation and two of these immunisations were late (more than one month overdue). One infant with Hib-positive ear discharge had received two doses of Hib vaccine.

The Hib conjugate vaccine has drastically reduced the incidence rate of invasive Hib disease in the Northern Territory. However, recent data from this study provides a warning that the Hib bacterium continues to colonise Aboriginal infants at an early age.

Editorial
The above brief letter emphasises that there is no room for complacency in the Hib vaccination program. The aim for Hib coverage should be 100% and the timeliness of the vaccination may be lifesaving.
### NT NOTIFICATIONS OF DISEASES BY DISTRICTS
1 JULY TO 30 SEPTEMBER 1996 AND 1995

<table>
<thead>
<tr>
<th>DISEASES</th>
<th>ALICE SPRINGS</th>
<th>BARKLY</th>
<th>DARWIN</th>
<th>EAST ARNHEM</th>
<th>KATHERINE</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>'96</td>
<td>'95</td>
<td>'96</td>
<td>'95</td>
<td>'96</td>
<td>'95</td>
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<tr>
<td>Acute Rheumatic Fever</td>
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<td>1</td>
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<td>0</td>
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<td>5</td>
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<tr>
<td>Adverse Vaccine React.</td>
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<td>Arbovirus infections</td>
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<td>2</td>
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<td>Gonococcal Disease</td>
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<td>44</td>
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<td>Gonococcal Conjunct.</td>
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<td>Haemophilus Inf type b</td>
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<td>0</td>
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<td>0</td>
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<td>Hepatitis A</td>
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<td>2</td>
<td>4</td>
<td>14</td>
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<td>Hepatitis B</td>
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<td>0</td>
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<td>Hepatitis C (incidence)</td>
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<td>Hepatitis C (prevalence)</td>
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<td>39</td>
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<td>HTLV-I</td>
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<td>9</td>
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<td>Legionnaires Disease</td>
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<td>Malaria</td>
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<td>0</td>
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<td>Measles</td>
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<td>0</td>
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<tr>
<td>Meningococcal Infect.</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mumps</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Pertussis</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Pneumococcal Disease</td>
<td>7</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>9</td>
<td>68</td>
<td>0</td>
<td>4</td>
<td>39</td>
<td>86</td>
</tr>
<tr>
<td>Rubella</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Salmonella</td>
<td>22</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td>Shigella</td>
<td>22</td>
<td>19</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Syphilis</td>
<td>42</td>
<td>40</td>
<td>1</td>
<td>4</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Typhus</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Yersiniosis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>266</td>
<td>305</td>
<td>29</td>
<td>35</td>
<td>467</td>
<td>352</td>
</tr>
</tbody>
</table>

**Points to note regarding notifications:**

- Australian Encephalitis (MVE, Kunjin), Amoebiasis, Botulism, Brucellosis, Chancroid, Cholera, Congenital Rubella Syndrome, Diphtheria, Hepatitis D and E, HIV infections, Hydatid Disease, Leprosy, Leptospirosis, Listeriosis, Lymphogranuloma venereum, Poliomyelitis, Typhoid and Viral Haemorrhagic Fever are all notifiable but had "0" notifications in this period.
- Dengue cases were imported.
- Gastroenteritis (unspecified agent) in an institution or in two or more epidemiologically linked cases.
- Gonococcal Disease and Chlamydia figures reflect the improved methods of:
  (i) specimen collection (first void urine and self administered tampon specimens)
  (ii) laboratory diagnosis (Polymerase Chain Reaction vs gonococcal culture or chlamydial Gen Probe)
- which have resulted in increased screening and improved sensitivities of tests.
Notified cases of Vaccine Preventable Diseases in NT by Report Date 1 July to 30 September 1996 and 1995

<table>
<thead>
<tr>
<th>DISEASES</th>
<th>TOTAL</th>
<th>No. cases among children aged 0-5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'96</td>
<td>'95</td>
</tr>
<tr>
<td>Congenital rubella syndrome</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><em>Haemophilus influenza</em> type b</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Measles</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mumps</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pertussis</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Poliomyelitis, paralytic</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rubella</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Tetanus</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- Mumps is largely under-reported.

NT wide Notifiable Diseases
1 July to 30 September 1996 and 1995

[Graph showing rates per 100,000 population]
MALARIA NOTIFICATIONS, NORTHERN TERRITORY
July to September 1996
Compiled by Peter Knibbs, CDC, Darwin.

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

<table>
<thead>
<tr>
<th>ORIGIN OF INFECTION</th>
<th>REASON EXPOSED</th>
<th>AGENT</th>
<th>CHEMOPROPHYAXIS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACIFIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNG</td>
<td>Working</td>
<td><em>P. vivax</em></td>
<td>Yes</td>
<td>Relapsed 4 weeks later - had not taken primaquine</td>
</tr>
<tr>
<td>PNG</td>
<td>Working</td>
<td><em>P. falciparum</em></td>
<td>No</td>
<td>Treated in PNG with chloroquine/primaquine</td>
</tr>
<tr>
<td>ASIA/SE ASIA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>Sailing holiday</td>
<td><em>P. vivax</em></td>
<td>Yes</td>
<td>Treated in Thailand &amp; Malaysia prior to returning to Australia</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Indonesian resident</td>
<td><em>P. falciparum</em></td>
<td>No</td>
<td>Indonesian fisherman detained in Australian waters.</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Holiday</td>
<td><em>P. falcivivax</em></td>
<td>Yes</td>
<td>Did not take doxycycline for last 4 weeks in Indonesia.</td>
</tr>
</tbody>
</table>