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Leprosy - Still present in the NT

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Introduction

Leprosy is now a rare diagnosis in the Northern Territory (NT). The incidence has been falling rapidly since the 1960's. This declining incidence of leprosy however often leads to reduced recognition and subsequent delays in diagnosis and treatment.² The hallmark of good leprosy control is early diagnosis. This reduces the risk of transmission, reduces the risk of nerve function impairment and is associated with less disability after the completion of treatment.

In the past year, 4 people have been diagnosed and commenced on treatment for leprosy, 3 identifying as Indigenous and 1 with past residence in an overseas endemic area. The following, a case presentation, highlights some of the issues in leprosy control.

Case Presentation

The patient is a 27 year old Aboriginal woman from the East Arnhem region, who has lived her entire life in a remote Aboriginal community. Her only past medical history related to obstetric complications with deliveries in 2004 and 2005.

She was referred to Gove Hospital in December 2005 for investigation of her peripheral neuropathy and non-healing ulcers. At that time the ulcers had

been present for approximately 1 year and she reported being seen for the condition previously in Royal Darwin Hospital (RDH).

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On examination in Gove she had several coppery skin lesions that had been present for many months. The lesions were flat, irregular, on several areas of the body (including the face) and of varying size. All were depigmented but only 1 was anaesthetic. Several nerves were symmetrically thickened including the greater auricular nerves, the ulnar nerves and the lateral popliteal nerves with asymmetrical thickening of the right radial cutaneous nerve. Extensive areas of paraesthesia were present on both feet and hands, with obvious clawing of the right hand and small muscle wasting in both hands. There was no ocular involvement. Several ulcers, assumed to be neuropathic, were on her feet and she had a recent burn on her left hand which she had not felt.

In Gove Hospital the patient had biopsies of 2 skin lesions and slit skin smears from both ear lobes and both eyebrows. Only one of the skin biopsies showed chronic inflammatory changes in association with neurovascular bundles and acid fast bacilli (AFB) within the involved nerve bundles in keeping with findings seen in leprosy. Results of both ear lobe and eyebrow slit skin smears showed no AFBs. The patient was transferred to RDH for ongoing management.

In RDH she had further investigations including a nasal swab and a further skin lesion biopsy, both of which were AFB negative.

A diagnosis of multibacillary leprosy was made and she was commenced on Multi Drug Treatment (MDT), which includes rifampicin, clofazimine and dapsone. Her length of stay in

hospital was prolonged due to side-effects of her medications. She developed a flu-like illness and nausea, leading to her medications being ceased and reintroduced over a period of a week. The rifampicin was the likely cause of her symptoms and future reintroduction as a monthly dose was to be administered under supervision.

At diagnosis the patient admitted to having symptoms for over a year but symptoms may have been present for several years. During the 12 months prior to her diagnosis she had 3 admissions to RDH and multiple presentations to her community health centre. Although her presentations were mostly related to her pregnancies her facial lesions and hand deformity were present. By the time of diagnosis this patient had a WHO disability grading of 2 (Figure 1), with evidence of visible deformity or damage.

Ongoing management will require supervision of her medication, monitoring for possible drug side-effects, surgical review of her hand deformity, early intervention for any ongoing skin ulcers and continuous monitoring and care of her hands and feet to avoid further deformity from repeated trauma.

Contact tracing and follow up of those in her household, especially her children, will continue for many years.

Leprosy

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. It affects the skin and

Figure 1. WHO grading of leprosy related disability*

Grading**	Hands and Feet	Eyes
0	No anaesthesia, no visible deformity or damage	No eye problems due to leprosy; no evidence of visual loss
1	Anaesthesia present, but no visible deformity or damage***	Eye problems due to leprosy but vision not severely affected as a result (visual acuity 6/60 or better; can count fingers at 6 metres)
2	Visible deformity or damage**** present	Severe visual impairment (visual acuity worse than 6/60; unable to count fingers at 6 metres) or lagophthalmos or iridocyclitis or corneal opacities

* WHO Expert Committee on Leprosy. Seventh report. Geneva, 1998

** The highest value of the leprosy disability grade for any part is taken as the overall disability grading of the patient

*** Includes muscle weakness

**** Includes ulceration, shortening, disorganisation, stiffness, loss of part or all of the hand or foot

peripheral nerves, and can lead to a wide range of clinical manifestations. Among communicable diseases, leprosy is a leading cause of permanent physical disability. Timely diagnosis and treatment of cases before nerve damage has occurred is the most effective way of preventing disability due to leprosy.³

The mode of transmission of the leprosy bacillus remains uncertain, but most investigators believe that *M leprae* is spread from person to person, primarily as a nasal droplet infection.

The incubation period tends to be between 5-7 years, with the peak onset of disease in young adulthood, usually between 20-30 years of age.³

The difficulty of diagnosing leprosy is highlighted in the above case above. In low endemic areas where the illness is rarely seen, delay between onset of symptoms and diagnosis, on average, is between 2-3 years.⁴ A review done by NT CDC last year showed that the mean number of medical encounters with leprosy symptoms prior to a diagnosis was 7.5 encounters.⁵

Reasons for diagnostic delays for leprosy include lack of patient and clinician awareness and symptoms being attributed to other common causes such as skin lesions to fungal infections or parasthesias to diabetes. Additionally, it is often difficult to visualize the AFB in smear or biopsy samples.

Leprosy can be classified on the basis of clinical manifestations and skin smear results (Figure 2). When classified by skin smears, those patients having negative smears at all sites are grouped as paucibacillary leprosy (PB) and those with positive smears at any site are grouped as multibacillary (MB). However, in places where leprosy is endemic, most leprosy programs use clinical criteria for classifying and deciding

treatment regimens for patients because of difficulties with availability and dependability of skin smear services.

The current WHO leprosy website states that in areas endemic for leprosy an individual is regarded as having leprosy if he or she has ONE of the following cardinal signs:

1. skin lesions consistent with leprosy and with definite sensory loss, with or without thickened nerves
2. positive skin smears

The clinical system of classification uses the number of skin lesions and the nerves involved as the basis for grouping into PB or MB leprosy for the purpose of treatment.

In Australia and the NT the National Notifiable Diseases Surveillance System (NNDSS) definition is used as per Table 3. A confirmed case requires definitive laboratory criteria and 1 or more clinical symptoms.

Discussion

The patient above initially had evidence of AFBs in only one of her original biopsies but this could not be reproduced when she came to RDH. This scenario is not uncommon. Negative smears and /or biopsies can lead to a misclassification and use of a shortened treatment regimen. The concern of an inappropriately shorter treatment is an increased risk of relapse in the future. For this reason it is recommended that skin smears from both ear lobes and 2 smears from any suspicious skin patches be taken at a minimum to adequately assess classification. Biopsies can also be taken to help classify leprosy cases.¹

Treatment for leprosy in the NT is currently either 6 or 24 months, depending on the WHO classification i.e. PB or MB. This involves MDT and combines both monthly and daily

Figure 2. WHO Classification of Leprosy (WHO expert committee on leprosy 1997)

	Single lesion PB	PB	MB
Number of skin lesions	1	2 to 5	6 or more
	AND	AND	OR
Skin smears	Negative at all sites	Negative at all sites	Positive at any site
Ridley-Jopling Correlation*	I, TT, some BT	TT, most BT	Some BT, BB, BL, LL

*I = indeterminate leprosy, TT = tuberculoid leprosy, BT = borderline tuberculoid, BB = borderline leprosy, BL = borderline lepromatous leprosy, LL = lepromatous leprosy.

Table 3. National Notifiable Diseases Surveillance System case definition for leprosy, 2002

<p>Laboratory evidence – at least ONE of:</p> <ol style="list-style-type: none"> 1. Demonstration of characteristic acid fast bacilli (AFB) in split skin smears and/or biopsies prepared from the ear lobe or other relevant sites; OR 2. Histological report from skin or nerve biopsy compatible with leprosy read by a laboratory experienced in leprosy diagnosis. <p style="text-align: center;">AND</p> <p>Clinical evidence – at least ONE of:</p> <ol style="list-style-type: none"> 1. Compatible nerve conduction studies; OR 2. Peripheral nerve enlargement; OR 3. Loss of neurological function not attributable to trauma or other disease process; OR 4. Hypopigmented or reddish skin lesions with definite loss of sensation.

medications. Complications and side effects can arise from these medications, that may involve a worsening of symptoms after the commencement of treatment. These side effects or reactions may cause neuritis or nerve function impairment and need to be treated aggressively with prednisolone. After starting treatment the patients rapidly become non-infectious.

A further issue to consider in this case is the risk of transmission from a parent to any young children. Leprosy can be quite common in children although manifestations are rare under the age of 2. It is often unrecognised and 75% of cases regress spontaneously without treatment⁶ In the NT, contact tracing is performed for all cases of leprosy. Those most at risk are close household contacts. These contacts and any child contacts will be followed up for 6 years. The possibility of using preventive medication in well child contacts is a strategy often considered and is under review.

Leprosy, in Australia, is often thought of as a disease of the past. The diagnosis of 4 cases in the NT in the past 12 months indicates that the infection is still a disease of the present. In the past Aboriginal Health Workers and nurses were well trained in identifying the signs and symptoms of leprosy. Now with a declining incidence, these skills are also declining. People need to be reminded about considering the possibility of leprosy with skin and nerve

pathology. Orientation programs need to include the spectrum of diseases still seen in the NT including information on leprosy.

Currently the NT Centre for Disease Control (CDC) is updating their guidelines for leprosy control and these should be available later in 2006. If you have any queries, you can contact the TB/Leprosy Unit at CDC on 89228804.

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Leprosy fact sheet

Leprosy is a disease caused by infection of a susceptible person with the bacterium, *Mycobacterium leprae*. The bacteria is very similar in appearance to *M tuberculosis*. *M leprae* has a special liking for the nerves of the arms, legs and face, the skin and the lining of the nose.

Distribution

Approximately 410 000 new cases of leprosy were detected worldwide during 2004. Nine countries in Africa, Asia and Latin America still consider leprosy a public health problem. These countries account for about 75% of the global disease burden. In Australia leprosy is rare and found mainly in Northern Australian Aboriginal people and migrants from endemic areas.

Infectivity

Many patients with leprosy are non-infectious and cannot pass on the disease. Infectious cases become non-infectious soon after starting regular treatment. The great majority of people who come in contact with infectious leprosy develop immunity without getting the disease. Leprosy is not highly contagious. It is transmitted by droplets from the nose and mouth when people are in close and frequent contact with an infectious patient.

Types of Leprosy

Manifestations of leprosy are determined by the immune response. If the infected person has little resistance the germs multiply and the person develops infectious leprosy. This spectrum of disease, multibacillary, used to be referred to as lepromatous leprosy. If on the other hand the infected person has a high level of resistance, most of the germs are destroyed and the person may develop non-infectious leprosy. This spectrum of disease, paucibacillary, was referred to as tuberculoid leprosy. Most cases in the Northern Territory are on a spectrum between these 2 types.

Diagnosis

A skin patch, often coppery in colour, a thick nerve and loss of sensation are the early signs of leprosy. Each sign may exist alone or in combination with others. Thus if a skin patch is found to have loss of sensation or feeling the person may have leprosy. Even if there is no

loss of feeling in the patch, a skin smear may reveal the presence of the leprosy germ or bacillus. It is worth remembering that a combination of skin and nerve disorders is strongly indicative of leprosy. Contact history with leprosy cases is also very useful information.

If a person suspects he/she has leprosy, advice can be sought from the Centre for Disease Control (TB/Leprosy Unit), Building 4, Royal Darwin Hospital phone 89228804 or from any Communicable Diseases Unit in Nhulunbuy, Katherine, Tennant Creek or Alice Springs. People who live remotely may consult the District Medical Officers who regularly visit many of the rural community care centres in the Northern Territory. Discussion with GPs or Infectious Disease physicians may also be appropriate.

Treatment

Effective treatment with multi drug therapy (MDT) for 6 months or a 2 year regimen, depending on the type of leprosy, achieves a cure. Many of the infectious patients do not need to go to hospitals at all provided there are no complications. Treatment is free.

Deformity

Much of the damage to nerves is irreversible especially with late or prolonged presentations and the person may be permanently disabled. These are the scars of leprosy. Without care of the unfeeling hands and feet even cured patients are likely to develop increasing deformities. Leprosy patients need not develop deformities if they come early for treatment and take their treatment regularly. In cases where deformities have already occurred, they can very largely be corrected by special methods of reconstructive surgery.

Control

The number of new cases found each year has shown a steady decline. Screening programs in the past have resulted in early detection of leprosy. Effective treatment programs have reduced transmission of the disease. Periodic examination of contacts together with the supervised treatment of infectious cases have assisted in the decline.

REMEMBER: Leprosy today can be cured and deformities can be prevented or corrected. Think of leprosy when skin and nerve disorders are present.

Assessing the health of unauthorised fisherpersons apprehended off the Northern Territory coast - developing procedures and protocols

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The Centre for Disease Control (CDC) has been involved in communicable disease screening for unauthorised fisherpersons apprehended off the Northern Territory (NT) coast for more than 15 years. However, over the past 12 months there have been some significant changes to the custodial arrangements for fisherpersons that have impacted upon health screening requirements and have necessitated the development by CDC of new procedures and protocols.

Background

The majority of unauthorised fisherpersons apprehended in Australian waters over the past 15 years have been from Indonesia. Most of these fisherpersons are from small villages where living conditions are overcrowded, sanitation and water quality are poor, and health and education services are extremely basic. Few have had access to medical services in the past and their rates of communicable diseases such as tuberculosis (TB), respiratory tract infections, malaria, and sexually transmitted infections (STIs) are high.¹

Prior to 2005, apprehended fisherpersons were detained on their vessels. The resultant open-air ventilation minimised the risk of transmission of airborne infections, such as TB and influenza, to other crew members and to Australian personnel involved in their processing and care. It also ensured physical separation of the fisherpersons from members of the Australian public. For this reason, communicable disease screening was undertaken only for those fisherpersons who either exhibited signs or symptoms of acute illness or were entering land-based detention facilities such as prisons.

Following recommendations made by the Coroner after a death onboard a vessel, reportedly due to a myocardial infarction, vessel-based detention is no longer government policy. Instead, fisherpersons are detained in land-based congregate settings at all 4 points of entry to Australia, those being Darwin and Nhulunbuy in the Northern Territory (NT), Broome in Western Australia, and Thursday Island in Queensland. In addition, the Department of Immigration and

Multicultural Affairs (DIMA) have introduced a requirement that all persons to be transported within, or deported from, Australia undergo a 'fitness to travel' assessment prior to boarding an aircraft.

Current Custodial Arrangements

In November 2005, the initial custodial responsibility for unauthorised fisherpersons passed from the Australian Fisheries Management Authority (AFMA) to the Australian Customs Service (ACS). Currently, the ACS have 4 hours to remove fisherpersons from their apprehended vessels to temporary accommodation, often in local hotels, where they remain until their Health Assessments (detailed below) are carried out by local health authorities. Those fisherpersons found to be 'fit to travel' are then transported, where necessary by commercial airline or charter flight, to either Baxter Detention Facility or the newly opened Berrimah Detention Facility in Darwin. It is envisaged that once Berrimah Detention Facility is fully operational it will have a capacity of 600 and will accommodate the majority of fisherpersons pending their repatriation back to their countries of origin.

Once the fisherpersons have undergone their Health Assessments, responsibility for their custody shifts from the ACS to a different agency, depending on whether or not the fisherperson is to be charged under the fisheries legislation. The current policy is to charge the captains of each vessel and 'recidivists', those being fisherpersons who have been apprehended in Australian waters more than once. Fisherpersons who are charged are accommodated in detention facilities pending their court hearings and incarceration, often at Darwin Correctional Centre but also in prisons in South Australia and Western Australia. Those fisherpersons who are not charged remain in the detention facilities under the jurisdiction of DIMA until they are deported.

Implications for Health Assessments

These complex custodial arrangements have had significant repercussions for the development of

a coherent and comprehensive Health Assessment process. The initial rationale behind DIMA's requirement that all fisherpersons undergo a 'fitness to travel' assessment prior to flying was simple and clear. DIMA wanted to ensure, firstly, that each fisherperson was healthy enough to undertake a plane journey and, secondly, that there could be no transmission of airborne communicable diseases to the pilot, crew or other passengers during the flight. That is, DIMA's interest was that the fisherperson was 'fit to fly'.

However, given that all fisherpersons are now detained in land-based congregate facilities for substantial periods of time prior to deportation, 2 additional justifications for thorough Health Assessments have arisen:

1. All land-based detention facilities currently utilised are closed buildings with the potential for airborne transmission of infectious diseases to others in the building. Others include Australian citizens from a variety of government and non-government agencies working with the fisherpersons, other residents of correctional facilities and other immigration detainees. Given the well-documented vulnerable health status of both prison inmates and immigration detainees,¹ it is imperative that communicable diseases such as TB are excluded before the fisherpersons enter these congregate settings.
2. In order to contribute to efforts to ensure that the NT remains free of locally transmitted malaria, it is imperative that fisherpersons with infectious malaria are not exposed to the malaria mosquito vector while staying in Top End facilities.

The changes to the apprehension and detention of unauthorised fisherpersons over the past 12 months, mainly that of land based detention, have increased the risk of transmission of airborne and, potentially vector-borne, communicable diseases to the public including congregate settings such as prisons. Clearly, a certification that fisherpersons are 'fit to travel' must now go beyond a declaration merely that they are 'fit to fly'.

Procedure

In response to these issues, CDC in Darwin has spent the last 6 months developing more appropriate standards for the Health Assessments of unauthorised fisherpersons. The

"Procedure for Health Assessments of Unauthorised Fisherpersons Apprehended off the North Coast of Australia" (see Figure) is a model process to ensure that the duties of care owed by custodial authorities to both the individual fisherpersons and to the Australian public are adequately discharged.

The process essentially has 2 steps. The first is conducted as part of the initial processing of fisherpersons by ACS and consists of a standard "TB and General Health Questionnaire" undertaken by ACS staff in conjunction with a qualified Indonesian interpreter. Its purpose is to assist ACS to identify fisherpersons who are likely to require immediate medical assessment or are at high risk of having active TB (and should then wear a mask pending their formal "Health Assessment").

The second step is a "Health Assessment" undertaken by a medical practitioner at the local health authority using a standard form designed by NT CDC for this purpose. This "Health Assessment" aims to diagnose communicable diseases of public health significance such as TB and malaria and to identify medical or psychiatric conditions that could be compromised or exacerbated by travel. Notably it may also identify other less serious health problems that can be treated immediately or referred to the medical clinic at the detention facility for follow-up.

To facilitate follow-up the original completed "Health Assessment" forms are given to the ACS officer who has custodial authority over the fisherpersons. When the ACS pass custody of the fisherpersons to DIMA, these original forms are given to the Global Solutions Limited (GSL, the contracted security firm) officer responsible for escorting the fisherpersons to either the immigration detention facility or a correctional facility. This officer, in turn, passes them to the medical clinic at the correctional or detention facility. Initial feedback from these medical clinics suggests that this aspect of the procedure has been particularly useful in initiating appropriate primary health care for the fisherpersons during the remainder of their time in Australia.

Other important features of the procedure represented in the Figure are:

1. It insists upon a chest x-ray being undertaken for every fisherperson. This is to minimise

the possibility that a fisherperson with infectious pulmonary TB is placed in a congregate land-based detention setting.

2. It recognises that the duties owed by custodial authorities to individual fisherpersons and to the Australian public are slightly different. The model takes account of this by posing 3 questions in the "Health Assessment" process:
 - a) Whether infectious pulmonary TB can be excluded,
 - b) Whether the fisherperson in question requires investigations or treatment prior to undertaking a flight, and
 - c) Whether there is evidence of a health risk to the fisherperson, or to others, if the fisherperson is transported by commercial aircraft.
3. It uses standard forms for the "TB and General Health Questionnaire" and the "Health Assessment" to ensure uniformity of approach and as a quality assurance and data management tool.
4. It utilises qualified interpreters to facilitate communication with the fisherpersons.
5. It recommends that all fisherpersons who are hospitalised receive, on discharge, a detailed discharge summary, translated into their local language. This is to facilitate follow-up both while the fisherperson remains in detention in Australia and hopefully on return to their country of origin.
6. It was developed in consultation with medical and public health experts, as well as other government and non-government organisations involved in the apprehension, processing and detention of unauthorised fisherpersons. These include ACS, DIMA, the Australian Defence Force, Baxter Immigration Detention Facility, The National Tuberculosis Advisory Committee of the Communicable Diseases Network Australia, Darwin Correctional Centre, the Western Australian Justice Department, International Health and Medical Services Ltd and GSL Pty Ltd.

This procedure is designed to ensure, to the extent possible, that fisherpersons at high risk of having infectious pulmonary TB, infectious malaria or medical conditions affecting fitness to travel are identified, given treatment, and then cleared prior to entering land based detention

facilities. It also attempts to maximise the chance that adequate follow-up will be provided to fisherpersons both in detention in Australia and upon deportation home.

Clinical Protocols

In order to assist medical officers in undertaking "Health Assessments" of unauthorised fisherpersons, CDC in Darwin have also developed 3 accompanying clinical protocols:

1. Guidelines for Assessing Unauthorised Foreign Fisherpersons for Tuberculosis,
2. Guidelines for Assessing Unauthorised Foreign Fisherpersons for Malaria, and
3. Guidelines for Assessing Unauthorised Foreign Fisherpersons for Sexually Transmitted Infections (STIs).

Each of these clinical protocols includes information on when to test a fisherperson for the communicable disease concerned, what tests should be done, the relevant treatment required, and the implications of a positive test for 'fitness to travel'. These guidelines are available from the TB/Leprosy Unit, CDC Darwin, 0889288804.

Where to from here

The procedure described here, and its accompanying clinical protocols, came into operation in Darwin on 28 September 2005. Since that date, over 630 fisherpersons have undergone "Health Assessments" at CDC in Darwin. Once 6 months of screening using this process has occurred, the data collected will be analysed to provide a greater understanding of the health status of unauthorised fisherpersons and the potential public health risks posed. This analysis will be presented in the next edition of the CDC Bulletin.

For further information concerning health screening for unauthorised fisherpersons, please contact the Fisherperson and Refugee Health Medical Officer on 0889288804 or 0889228898.

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Figure. Procedure for health assessments of unauthorised fisherpersons apprehended off the north coast of Australia

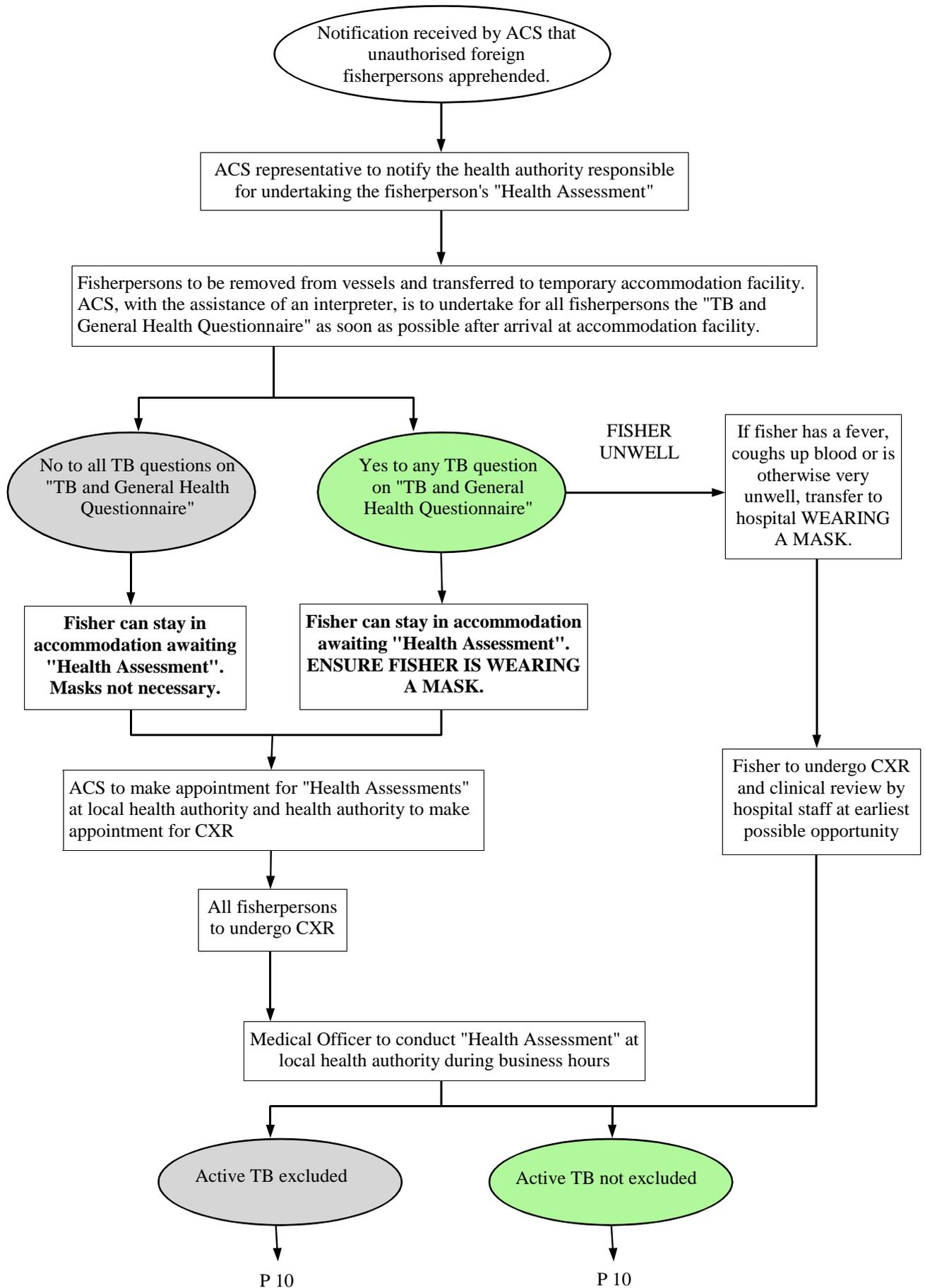
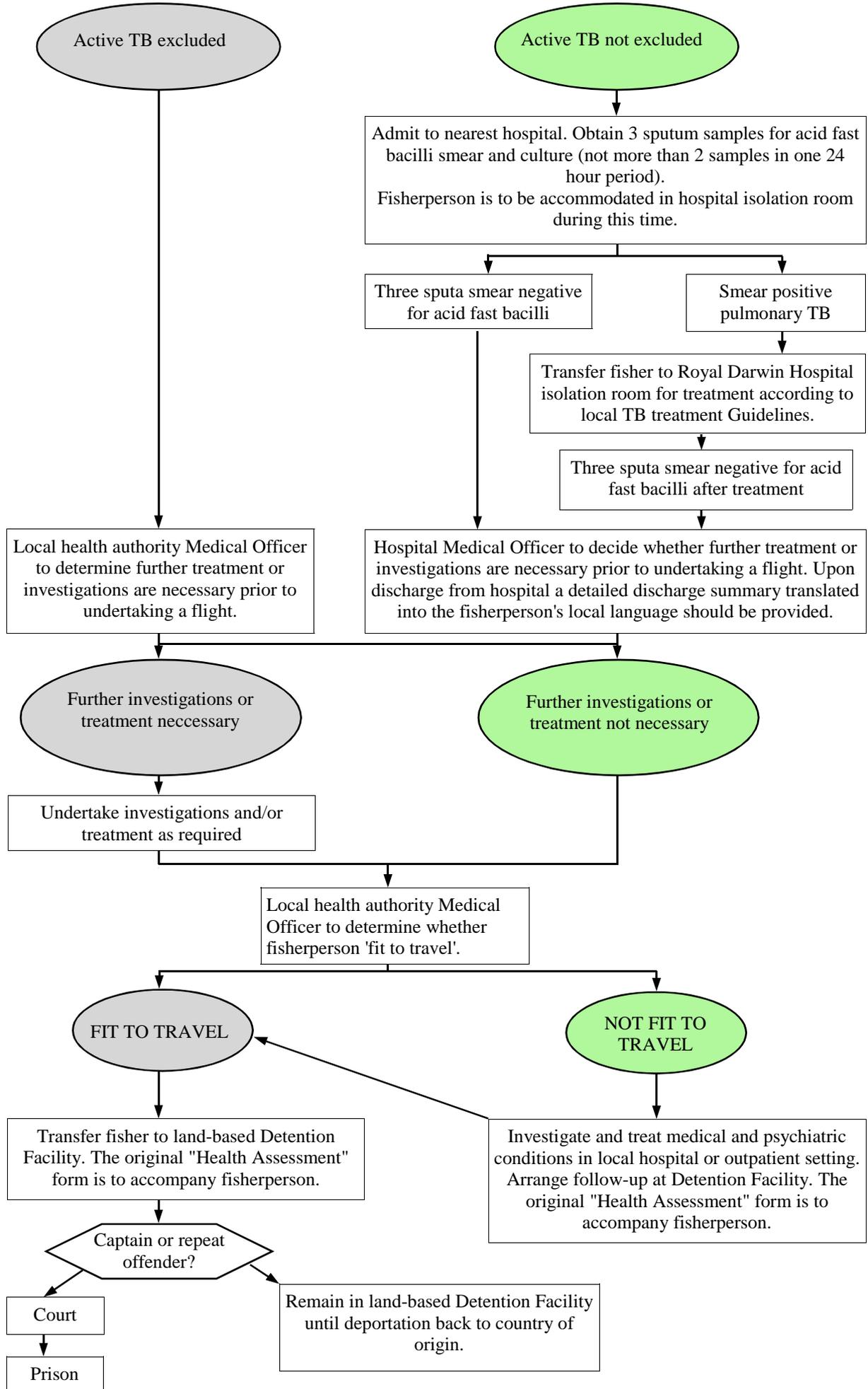


Figure. Procedure for health assessments of unauthorised fisherpersons apprehended off the north coast of Australia (continued).



Refugee health in Australia – responding to the emerging needs

Meredith Hansen-Knarhoi, CDC Darwin

Refugee health as a discipline is slowly evolving around Australia as each jurisdiction faces the unique challenges that newly arrived refugees bring to the health system. There are public health implications as well as the personal health burdens of newly arrived refugees to be considered.

Refugee and humanitarian entrants are being settled in all parts of Australia as part of the national strategy to provide assistance to overseas populations in need. The Integrated Humanitarian Settlement Strategy (IHSS) is designed to support the integration of newly arrived refugee migrants into the Australian health, education and welfare system. Currently Australia has planned 13,000 humanitarian arrivals for 2005/2006, 6000 of these being refugees who have no family or informal support systems in Australia who are fully funded by the Department of Immigration and Multicultural Affairs (DIMA). The remaining 7000 arrivals are in the Special Humanitarian Programme category that come from the same regions of conflict but have a proposer (friends, relative or community organisation) who has agreed to assist the migrant on arrival. The countries of birth of refugees have changed over the last 10 years, due to the changing theatres of conflict around the world. In 1994 there were refugees from Bosnia-Herzegovina conflict who had come from a functioning health system with relatively short disruption in health service. More recently refugees have been arriving from Sierra Leone, Somalia, Sudan, Ethiopia, Democratic Republic of Congo and Liberia who have known years of conflict and hardship and have spent many years in refugee camps in Tanzania, Kenya, Guinea and Egypt with rudimentary access to primary health care and minimal access to specialist health care.

Background

The United States, Canada and Australia have all contracted International Organisation of Migration (IOM) to perform migration medical examinations on refugees in 4 centres in Africa. The arrival of refugees from high disease burden

countries was brought to a crisis last April when Australia chartered a flight from Guinea with 300 Liberian humanitarian entrants settling in all states and territories. The arrival en masse of refugees caused a number of concerns, particularly in regional centres where specialist translators and medical support was not available. In response to the crisis, the Communicable Disease Network of Australia (CDNA) working through DIMA is in the process of developing pre-departure and post arrival guidelines for refugees arriving in Australia from Africa. These guidelines will assist with public health responses and help refugee health clinicians identify key infections to treat appropriately, where possible, prior to departure. The guidelines will serve to decrease morbidity and prevent mortality in refugees during flight or on arrival. Often refugees do not speak English and have little understanding of how to access the Australian health care system.

Prior to the recommendations being made humanitarian entrants and refugees were having tuberculosis and HIV screening as part of their migration medical examination. These examinations occur 6–9 months prior to departure. Once paperwork was processed they were booked on flights to Australia. There was no point of departure ‘fitness to fly’ screening.

Interim pre-departure guidelines

In early May 2005 CDNA developed a draft set of guidelines based on the Guinea charter in consultation with National Arbovirus Malaria Advisory Committee (NAMAC) and key refugee health clinicians in each state. The guidelines were then circulated to DIMA, IOM and other stakeholders before being agreed to as the Interim Guidelines.

The role of Centre for Disease Control (CDC) Atlanta

While consultation was going on around Australia, CDC (Atlanta) recommended mass treatment of malaria (without screening) to avoid morbidity and mortality associated with malaria

on arrival in the United States of America (USA). Fansidar (pyrimethamine/sulfadoxine) was the recommended treatment for malaria. Other treatment options such as artesunate could not be recommended by CDC as it had not been licenced for use in the USA by the Food and Drug Administration. Australia, meanwhile, was experiencing difficulties in managing refugee arrivals, particularly those arriving seriously ill with malaria who were brought to emergency departments. The Australian and Canadian authorities recommended the addition of artesunate as a mass treatment for refugees coming to Australia and Canada while other options were considered. It evolved that all refugees were given artesunate, Fansidar and albendazole (except for those where the medications are not recommended such as pregnant women and babies). Refugees were also given measles mumps rubella and where required, yellow fever vaccination.

For Australia this policy of mass treatment raised issues around consent, compliance and people being treated for infections they may not have. Pregnant women, at higher risk of malaria and its complications, in particular, were not receiving effective management.

The way forward

After lengthy consultation with DIMA, IOM, NAMAC and malariologists around Australia it was decided to opt for a mass screening approach as opposed to mass treatment. This would identify those at risk, especially the pregnant women and very young babies, and ensure only those who are infected get treated. The refugees would know why they were being treated which would hopefully improve compliance and ensure they have effective treatment for malaria.

The refugees would also get a 'Fitness to Fly' examination prior to departure to ensure they were well enough to make the 72 hour plane journey to their new home. The information would then be documented on their hand-held personal health records and the summary electronic spreadsheet that would be forwarded via DIMA to the clinician seeing them on arrival in Australia.

The Rapid Diagnostic test (RDT) for *Plasmodium falciparum* malaria was agreed upon for screening of Australian entrants as opposed to the 'gold standard' thick and thin blood film due to time and technical restraints. Various RDT kits are now commercially available and are used quite widely in developing country settings. IOM have agreed to purchase RDT kits that meet CDC recommendations (currently WHO recommends $\geq 95\%$ sensitivity at ≥ 100 parasites for RDT kits manufactured to International Standards Organisation (ISO) certification).¹ The RDT screens for *P falciparum* infection, the form most prevalent in sub Saharan Africa and responsible for significant morbidity and mortality. The RDT takes only 15 minutes and does not need laboratory equipment for testing. Only minimal training is required to administer and interpret the result.

In August 2005 CDC Atlanta announced a new malaria treatment policy for arriving refugees, using RDTs and recommending first line malaria treatment with lumefantrine and artemether combination (Riamet). This is a very effective treatment and resistance has not yet become an issue in sub Saharan Africa. Such combination therapy has recently been recommended by World Health Organisation (WHO) as the first line treatment regimen for uncomplicated falciparum malaria infection for best treatment outcome and to decrease the emergence of resistance.²

The 'Fitness to Fly' screening also identifies other acute conditions that may pose individual health risks during the long journey to Australia as well as the potential public health implications of people travelling with meningitis, measles or cholera. It does not address the complex long-term health needs such as schistosomiasis, hepatitis B/C infection, torture and trauma issues, nutritional deficits that result in chronic illnesses or identify other chronic disease issues such as hypertension and diabetes. It should be noted that while the TB/HIV screening is mandatory for visa application, 'Fitness to Fly' is voluntary and dependent on the willingness of refugees to attend screening when they are about to depart for Australia.

The Interim Guideline was ratified by CDNA in February 2006 and is being implemented in the 4 departure transit centres in Africa by IOM (see flowchart on following page), the organization contracted by DIMA to provide migration medical examinations. There is a proviso that if the country of origin and asylum status changes then CDNA will have to consult infectious diseases experts for recommendations regarding their pre-departure assessment and treatment.

Post arrival screening

Currently in development by a small working group on behalf of the Australasian Society for Infectious Diseases (ASID) and CDNA are post arrival screening guidelines to be used by general practitioners and other refugee health providers. While there are already several jurisdictions with specific protocols in place ASID and CDNA are working to standardise recommendations for best practice. There are also separate paediatric guidelines in development.

It has become clear that refugees need specialist refugee screening on arrival with appropriate referral to specialist services. The Federal Minister for Health announced in November 2005 that a Medical Benefits Scheme item number would be available in May 2006 for general practitioners to bulkbill on refugee health screening. The screening requires the use of interpreters, specialist knowledge on the part of the general practitioner and may take several lengthy visits to adequately complete. This announcement acknowledged the difficulties that practitioners around Australia are facing when screening new arrivals. The structure of the item number has yet to be circulated.

Reference

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2. World Health Organisation (2006) Guidelines for the Treatment of Malaria, WHO, Geneva



Torture and Trauma Survivors Service of the NT Inc.

Refugee Services in the Northern Territory

Melaleuca Refugee Centre (MRC) is a non-governmental organisation funded by the Department of Immigration and Multicultural Affairs to provide settlement and support services for refugees for the initial 6 months after arrival in the Northern Territory (NT). MRC also provides individual and group counselling for survivors of torture and trauma. The centre aims to ensure that refugees coming to Darwin feel welcome and that they get assistance in accessing essential services such as education, housing, health and Centrelink.

MRC participates and advocates for community education and refugee policy development. It has

recently been successful in obtaining NT government funding to commence a youth worker programme in Darwin, targeting adolescent arrivals who have unique needs in regard to integration and education.

Melaleuca Refugee Centre has a large volunteer network that provides vital informal assistance by way of social activities and orientation to the Darwin way of life. It is a rewarding and educative experience. If you have a few hours spare and want to learn more about volunteering, contact the Volunteer Coordinator on 8985 3311 or volunteers@melaleuca.org.au

**COMMUNICABLE DISEASES NETWORK AUSTRALIA (CDNA)
PRE-DEPARTURE HEALTH SCREENING PROTOCOLS FOR
REFUGEES ARRIVING FROM AFRICA (December 2005)**

**STEP 1
3-12 months prior to departure**

At time of applying for a humanitarian visa, IOM to conduct immigration medical examination including:

- HIV screening, and
- Tuberculosis screening.

NO to all = Humanitarian visa granted

YES to one or more = Manage appropriately as per national TB/HIV guidelines, may be reconsidered for Humanitarian visa at a later date, may be a health undertaking once entry visa is issued.

**STEP 2
Within 1 week of departure**

IOM to conduct pre-departure health screening preferably 72 hours prior to departure. If more than 6 months since last medical examination complete exam to be repeated (including CXR)

Febrile (temperature > 38°)?

Symptoms of lower or severe upper respiratory tract illness?

Gastrointestinal symptoms (>3 episodes of diarrhoea in previous 24 hours) or dehydration?

Returned positive result to CDC approved malaria (Pl. F) Rapid Diagnostic Test?

Has person come from a camp with recent cholera / measles / meningitis transmission and is unwell?

Does the medical officer suspect the development of other diseases such as TB, measles, cholera or meningitis?

**NO to ALL =
FIT
To
FLY**
(+ 1 Dose of Albendazole and YF vaccine if required)

**YES to one or more =
NOT FIT
To
FLY**
Treat appropriately as CDC guidelines recommend and delay departure

If travel is delayed by more than 1 week, IOM to repeat the pre-departure physical examination screening.

DOCUMENTATION

IOM must seek to obtain all immunisation records, antenatal and Road to Health cards where possible from the refugee camp health centre. Should be given to head of household.

DIMA

Notify liaison point (appointed by head of Public Health in each jurisdiction) of upcoming refugee arrivals and whether empirical treatment or vaccinations were provided. Notify liaison point well in advance (to ensure public health preparedness) about individuals with infections of potential public health importance.

Retrospective audit of immunoglobulin and vaccine uptake in infants at risk of perinatal transmission of hepatitis B virus.

Finn Romanes, Medical Officer, CDC Darwin.

Abstract

Background: Antenatal screening for maternal hepatitis B virus (HBV) status should be universal in order to identify at risk infants requiring administration of hepatitis B-specific immunoglobulin (HBIG) and subsequent timely hepatitis B immunisation. This audit aimed to assess antenatal HBV screening adherence, to estimate HBV prevalence in a maternal population, to assess whether infants of HBV positive mothers were correctly identified as at risk and to audit hepatitis B-specific immunoglobulin (HBIG) administration and vaccination coverage of these infants.

Methods: All 1515 births in 2003 at Royal Darwin Hospital (RDH), Northern Territory (NT), Australia, had laboratory data and medical records reviewed for maternal hepatitis B surface antigen (HBsAg) and hepatitis B e-antigen (HBeAg) status. The infants of all women positive for HBsAg had their records reviewed for information on HBIG and hepatitis B vaccine administration. Further hepatitis B vaccine events relevant to these infants were retrieved from the Northern Territory Childhood Immunisation Database.

Results: Uptake of antenatal HBV screening was 94.3%, with an overall HBV prevalence of 2.27% representing 32 hepatitis B surface antigen (HBsAg) positive mothers, 16 of whom were HBeAg positive. Sixteen (50%) of the 32 HBsAg positive mothers had serology performed at private laboratories. Excluding 2 infant deaths, administration of HBIG was within 4 hours of birth in 26 (87%) of 30 cases and within 12 hours of birth in all 30 cases. Completed immunisation was achieved in 93.3% of the 30 cases by 9 months. Documentation of "at risk" status (maternal HBsAg positive) and vaccine events on discharge paperwork was achieved in all but 1 case.

Interpretation: HBIG and vaccine administration was achieved in a high proportion of documented at risk infants however documentation of antenatal HBV status fell short of universality. Documentation is important to ensure clinical standards are met, for follow-up of infants and for ongoing audit purposes.

Introduction

The time of delivery is a period of risk for transmission of hepatitis B virus (HBV) from hepatitis B surface antigen (HBsAg) positive mothers to their infants. This risk relates mostly to maternal hepatitis B e-antigen (HBeAg) status. Babies born to HBsAg positive, HBeAg negative mothers have only a 10% chance of becoming infected whereas risk of infection is 90% when HBeAg is present in maternal blood.¹

Chronic carriers of HBsAg are the main reservoir of infection in a population.² As infection in infancy has the highest risk of all age groups of chronic infection, timely administration of hepatitis B-specific immunoglobulin (HBIG) and achieving adequate immunity at an early age is a high priority. Ensuring such timely immunoprophylaxis is a recognized responsibility of health authorities according to WHO guidelines.³

In the Northern Territory (NT), identification of at-risk infants is achieved through universal antenatal screening for HBsAg. According to National Health and Medical Research Council (NHMRC) guidelines,⁴ HBIG administration is required for newborns in all cases where maternal serum is HBsAg positive.

Universal neonatal hepatitis B vaccination was introduced in Australia for Aboriginal and/or Torres Strait Islander (Indigenous) babies in 1989 and in the NT for all neonates in 1990. It was introduced nationally for all neonates in May 2000. The Australian Standard Vaccination Schedule (ASVS) recommends vaccination at birth, 2, 4 and 6 or 12 months.⁴ At present no specific procedure is in place to ensure at risk infants receive a completed course of hepatitis B vaccination in the NT.

Specific objectives

- To assess antenatal HBV screening uptake and documentation in a cohort of all women who gave birth from January to December 2003 at Royal Darwin Hospital (RDH), to evaluate how well "at risk" infants (i.e. those born to HBsAg positive mothers) are identified.

- To evaluate timeliness and uptake of both HBIG and hepatitis B vaccination in “at risk” infants.
- To review discharge documentation of the “at risk” status of these infants and recording of in-hospital vaccine events.

Methods

The cohort is defined as women who gave birth at RDH in the calendar year of 2003, as recorded in the CareSys patient management system of the NT Department of Health and Community Services. Birth registration data is entered at the time of the admission of the neonate by midwives at the birthing suite, or on arrival at RDH of a mother who has given birth prior to arrival at the birthing suite. Maternal age, Indigenous status, date and time of delivery and newborn hospital record number were recorded.

HBsAg status, HBeAg status, date of test and name of laboratory performing test were collected via interrogation of one or more of:

- a. RDH pathology database,
- b. hospital discharge case-mix coding data codes ICD10 O98.4 (viral hepatitis complicating pregnancy), ICD10 Z22.51 (hepatitis carrier) combined with ICD10 Z37.0 (delivery),
- c. Centre for Disease Control (CDC) notified cases of HBV for 2002 and 2003,
- d. RDH medical records of mothers of all infants recorded on the Northern Territory Childhood Immunisation Database (NTCID) as having received HBIG in 2003, and finally,
- e. the RDH medical records of all mothers in the cohort.

Private laboratory data collected during or prior to the antenatal period were accessed only to the extent that copies of positive or negative results were viewed in the RDH medical record or CDC files.

Hepatitis B virus status was recorded as “detected” if HBsAg was positive, “negative” if HBsAg was documented as negative, “negative early” if the test was negative but date of test was prior to pregnancy, “unknown” if no record of HBsAg testing was found via all interrogation methods and “unavailable” if the hospital record

was missing. The date of the laboratory test was recorded as either “no date” (not recorded), “early” (prior to pregnancy), “antenatal” (during the antenatal period or where HBsAg was known to be positive prior to delivery despite missing documentation of date and confirmed positive post delivery), “unknown” if a negative result was recorded but with no date and “unavailable” if the record was unable to be located.

Documentation of the following details were reviewed:

- time and date of HBIG administration and birth dose of hepatitis B vaccine in the medical records of all newborns born to HBsAg positive mothers in the cohort;
- maternal HBV status and vaccine events (HBIG and hepatitis B vaccine) on discharge paperwork;
- maternal hepatitis HBsAg status on the neonatal Birth Summary (a summary printout of data entered onto CareSys at the time of admission of the neonate);
- date of all subsequent hepatitis B vaccine administrations to these infants on the NTCID.

For the purposes of this audit a child is considered immunised after the third valid dose of vaccine, with a minimum gap between first and second dose of 1 month and minimum gap between second and third (or second and last) dose of 2 months as per *The Australian Immunisation Handbook*, 8th Edition.⁴ Data on the fourth dose was recorded and was reported if given in any time frame after a valid Dose 3 was achieved.

Results

In 2003, there were 1515 births at RDH representing 1492 women (due to 22 twin births and 1 woman giving birth twice during 2003 with an 11 month gap between births). Maternal age was normally distributed with a mean of 27.9 years and range of 15 to 47 years. The medical record was unavailable for 19 women, 5 women had only hepatitis B surface antibody (HBsAb) assayed, 2 women were documented as declining to be tested and in 59 women HBsAg status was unknown (Table 1). Therefore, maternal HBV status was documented in 1407 women, an overall antenatal HBV screening uptake of 94.3%.

Table 1. Maternal HBsAg status

Status	No.	% total
Detected	32	2.14%
Negative	1367	91.62%
Negative early*	8	0.54%
Unknown#	59	3.95%
Unknown declined**	2	0.13%
Unknown (HBsAb-ve)##	5	0.34%
Record unavailable	19	1.27%
Total	1492	100%

*Negative early means test was negative but date of test was prior to pregnancy.

#Unknown means no record of HBsAg testing after all interrogation methods.

**Women documented as declining to be tested.

##Unknown (HBsAb-ve) means HBsAb only marker assayed and found to be <10IU.

HBsAg was detected in 32 women, giving an overall prevalence in the 1407 women where status was documented of 2.27% (Table 2). The prevalence in Indigenous women was 4.07% and 1.16% in non-Indigenous women. Of those HBsAg positive, 16 (50%) were HBeAg positive, 13 (40.6%) were HBeAg negative and HBeAg status was unknown in 3 (9.4%).

Of 1407 HBsAg tests performed overall, 90.1% were performed during pregnancy and 0.6% sometime prior to pregnancy (Table 3). In 9.3% (131 tests) no date or laboratory of origin was documented.

Figure 1 shows maternal age of the women who were HbsAg positive. Maternal age was asymmetrically distributed; the minimum age was 17, maximum age was 47 and median age 28 years.

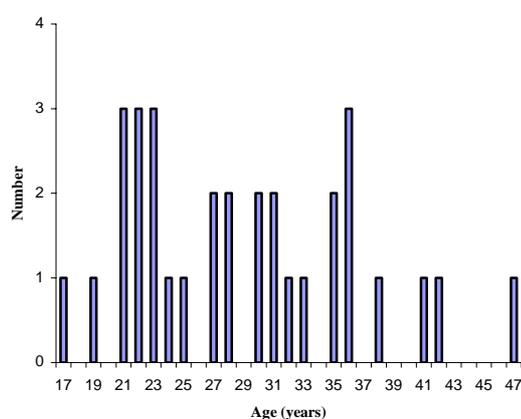
Using the medical record listing as the gold standard for HBsAg capture, Table 4 shows the documentation of this information via other sources.

Table 2. Prevalence of HBsAg positivity by Indigenous status

Indigenous status	No.	Total in category	Prevalence	95%CI
Indigenous	22	540	4.07%	[2.63%, 6.20%]
Non-Indigenous	10	862	1.16%	[0.59%, 2.20%]
Unknown	0	5	0.00%	-
Total	32	1407	2.27%	[1.58%, 3.23%]

Table 3. Timing of HBsAg tests performed

Category	No.	%
Antenatal	1268	90.1%
Prior to pregnancy	8	0.6%
No date documented	131	9.3%
Total	1407	100.0%

Figure 1. Age of HbsAg positive women**Table 4. Proportion of final 32 HBsAg detected cases by source**

Source	No.	%
Medical Record	32	100.0%
RDH Laboratory	10	31.3%
Coding*	19	59.4%
CDC Notifications	12	37.5%
Birth summary	20	62.5%
HBIG notified to NTCID	10	31.3%

*Discharge coding search for ICD10 codes O98.4 (viral hepatitis complicating pregnancy) and a combination of Z22.51 (hepatitis carrier) and Z37.0 (delivery).

Table 5. Hepatitis B immunoglobulin and vaccine uptake; by maternal HBeAg status[#]. Presented as numbers (percentages) of infants^{##}

Maternal HBeAg status	Received Immunoglobulin			Received Dose 1 (Birth Dose)			Received valid Dose 2	Received valid Dose 3	Received Dose 4
	Total	Under 4 hrs	Between 4-12 hrs	Total	Under 24 hrs	Under 7 days	Total	Total	Total
Positive (n=14)	14 (100)	11 (79)	3 (21)	14 (100)	13 (93)	1 (7)	14 (100)	13 ^a (93)	5 (36)
Negative (n=13)	13 (100)	13 (100)	0 (0)	13 (100)	12 (92)	1 (8)	13 (100)	12 ^b (92)	6 (46)
Unknown (n=3)	3 (100)	2 (67)	1 (33)	3 (100)	3 (100)	0 (0)	3 (100)	3 ^c (100)	0
Total (n=30)	30 (100)	26 (87)	4 (13)	30 (100)	28 (93)	2 (7)	30 (100)	28 ^d (93)	11(37)

[#]This table excludes two deceased infants (both mothers HBeAg positive); Infant 1: HBIG and birth dose given at 5hrs 45mins of age but infant died of other causes before Dose 2 fell due; Infant 2: birth dose recorded on day of delivery in NTCID but no other information (unavailable medical record), with death occurring shortly before Dose 2 due.

^{##}Layout of table modelled on results layout of Wallis and Boxall⁹

^a 6 cases had an invalid third vaccine due to timing and a fourth dose counted as valid Dose 3

^b 1 case had an invalid third dose due to timing and a fourth dose counted as valid Dose 3

^c 2 cases had an invalid third dose due to timing and a fourth dose counted as valid Dose 3

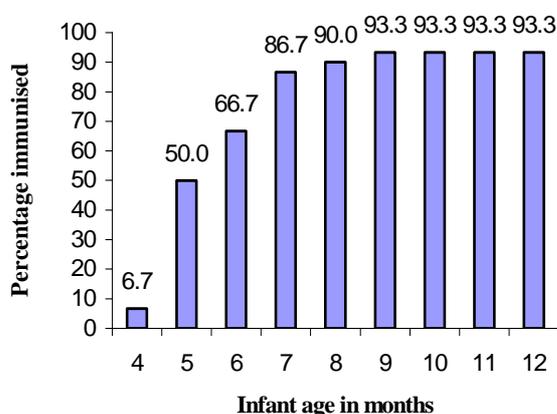
^d 9 cases in total had an invalid third dose due to timing and a fourth dose counted as valid Dose 3

Table 5 displays immunoglobulin and vaccine uptake in the 'at risk' infants i.e. infants of HbsAg positive mothers, excluding 2 deceased infants, stratified by maternal HBeAg status. All infants received HBIG and hepatitis B vaccine Dose 1 (the 'Birth Dose'). All but 3 infants in the highest risk HBeAg positive group received immunoglobulin within 4 hours of birth. Overall, 93% of infants received vaccine within 24 hours of birth. Of the 30 infants listed in the table, fully-immunised status was not achieved in 2 cases; in the first case, the mother was HBeAg positive and the infant received HBIG, hepatitis

B vaccine Dose 1 and Dose 2, but received only 1 further hepatitis vaccine, 7 days after Dose 2 which did not fulfill the criteria for a third dose as a minimum gap of 2 months is required and no further dose was documented. The mother of the second infant was HBeAg negative, and the child received HBIG and 2 doses of vaccine in total.

Figure 2 shows the age at which the third valid dose was received, expressed as the proportion of the 30 surviving infants immunised (3 valid doses as described in the Methods section) under 4 months, 5 months and so forth until the maximum proportion reached at under 9 months of 28 infants (93.3%).

Figure 2. Age of completion of immunisation: cumulative proportion



Discharge documentation for 31 available medical records was reviewed. In 30 cases (96.8%), both maternal HBsAg status and both immunoglobulin and vaccine administration were clearly recorded.

Discussion

Administration of HBIG and birth dose of vaccine was achieved in a timely manner in all children at risk of perinatal hepatitis B transmission, where maternal HBsAg status was known and documented. The case of 1 infant with an HBeAg positive mother, who received 3

doses of vaccine in total, but the time gap between Doses 2 and 3 was less than the recommended 2 month minimum,⁴ raised the issue of the need for adequate spacing between dosing to maximize induced immunity. In 10 cases, the gap between Dose 2 and 3 was less than the ideal of 2 months. This is compensated for by having a 4 dose schedule; in all but one of the 10 cases where there the gap between Dose 2 and Dose 3 was too short, a fourth dose had been given achieving a valid Dose 3 (see Table 5^d).

Recently, concern has been raised that concurrent administration of HBIG with Birth Dose of hepatitis B vaccine may lead to reduced persistence of immunity in the long term.⁵ This underscores the importance of timely hepatitis B vaccination with adequate dose spacing in at risk infants. Ideally, at risk infants should be immunised by 5 months, and at the outside by 7 months. In this cohort, only 50% of infants were immunised by 5 months, and only 86.7% by 7 months. Coverage was 93.3% by 9 to 12 months.

All but one of the standardized "Examination of Newborn" discharge forms was completed, indicating good quality discharge documentation. This maximizes the opportunity for health care providers to be aware of the need for timely vaccination, provided the discharge document is appropriately distributed.

This audit found an apparent inadequate uptake of antenatal HBV screening in this cohort of women. HBsAg status was undocumented in 66 cases (4.7% of women and unavailable in another 19 (1.27%). In the 131 negative tests where no date or laboratory source was documented, there is the possibility the test was performed well prior to pregnancy. Lack of documentation of date and laboratory source leads to reasonable doubt concerning the validity of a negative status determination. Additionally, the use of a negative HBsAb result (5 cases) as the only antenatal screening for HBV status is incorrect, since the absence of HBsAb is compatible with the presence of HBsAg.

In order to assess immunoglobulin and vaccine uptake in a neonatal birth cohort, it is first necessary to accurately determine maternal HBsAg status. For clinical and audit purposes maternal HBsAg status should thus, ideally, be easily retrievable, preferably in an electronic

form. This audit demonstrated that compared to an exhaustive review of medical records, no other source of maternal status was sufficient for identifying "at risk" newborns. HBIG administration was achieved in 100% of cases in this audit where maternal status was known. Since the dose of hepatitis B vaccine given at birth (Dose 1) was reliably reported to the NTCID and was almost always given at the same time as HBIG (all but 2 infants), it seems reasonable to suggest that if HBIG was notifiable to NTCID on a mandatory basis, most at risk newborns could be easily identified for the purposes of assessing their immunisation progress through a search of NTCID for HBIG administration. However, such a technique will still fail to capture mothers who are not tested, whose status is wrongly documented, or when newborns fail to receive HBIG.

In 1998 in the NT there was a hepatitis B vaccination catch-up campaign that targeted those aged 6-16 years of age. The oldest members of this targeted group would be 21 years of age in 2003. Two of the 32 HbsAg positive women were younger than 21 years (6%), which is not significantly different to the proportion of antenates younger than 21 years (12%). However, as adolescent vaccination does not give protection to those who are already infected, the impact of vaccination is expected to be greatest in those vaccinated as infants. The oldest cohort to receive neonatal hepatitis B vaccination turned 14 years of age in 2003.

The prevalence of HBV in Indigenous women in this sample was 4.07% (95% CI 2.63%-6.20%), with a prevalence of 1.16% in non-Indigenous women and an overall prevalence of 2.27%. The Indigenous population is recognised as having a high prevalence of hepatitis B. A previous study by Gardner ID et al,⁶ published in 1992, did not measure prevalence of HBsAg in pregnant women but found that, overall, there was a prevalence of HBsAg of 8.2% in Indigenous children. Although it is unclear how representative this audit cohort is of all women that deliver in the NT, no data exists to confirm or deny a difference in HBsAg prevalence in the populations of women who give birth at other hospitals in the Territory, when compared to Darwin.⁷ Women giving birth are generally representative of the overall population in their age group with respect to HBV status and testing

is meant to be universal and theoretically not dependent on anything other than pregnancy status. Those in whom the antenatal HBsAg is unknown are likely to represent a group with little or no antenatal care and are potentially more at risk of being hepatitis B positive from an overall health status perspective.

Recommendations

1. Set up an 'Alert System' as an enhanced function of the vaccination recall system of the NTCID to flag infants that have had HBIG administered to define these infants as "at risk".
2. Whenever HBIG is given it should be compulsory to send documentation of this event to the NTCID so the 'Alert System' is triggered and enhanced follow up is set in motion to promote completion of the hepatitis B vaccination schedule.
3. Consideration should be given to making the giving of HBIG a legislated notifiable condition to the NT Notifiable Disease Surveillance System.
4. Record HBsAg status of mother on the standard "NT Midwives Data Collection" form in a mandatory field to assure appropriate giving of HBIG and to facilitate periodic audits of completeness of data, the effectiveness of the 'Alert System' and ultimately the success of completing the hepatitis B vaccine schedule.
5. Educate hospital antenatal staff regarding the need to document maternal HBV status including documentation of date and laboratory source. If status unknown, emphasise the need to test for HbsAg as soon as possible when admitted to the birthing suite.
6. Educate the service providers to use the recall systems and provide the capacity for "at risk"

babies to be individually followed up to ensure timeliness of vaccination by 7 months of age.

Acknowledgements

My thanks to Dr Vicki Krause, Dr Christine Selvey and Dr Steven Skov for supervision and review, Nan Miller for guidance, Dr Tania Wallace for the original idea for undertaking the audit, Ms Sam Bullen for NTCID data input, Dr Gary Lum for RDH laboratory data and to the staff of medical records for invaluable assistance. Many aspects of the layout of this audit report were based on 2 papers from the United Kingdom by Bracebridge et al¹ and Wallis and Boxall.⁸

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Editorial

Vicki Krause, CDC Darwin

The preceding audit provides very useful information on the status of antenatal screening for hepatitis B virus and the consequences, successful or otherwise, of that screening. For starters, the overall prevalence of HbsAg in pregnant women of 2.27% (4.07% in Indigenous and 1.16% in non-Indigenous women) was found to be higher than a recent “snapshot estimate” reported from a national sero-survey showing prevalence of HbsAg to be 0.8%.¹

The audit basically shows that screening uptake was good, 94.3%, recognising that the goal however is 100%. The giving of HBIG to all 30 “at risk” infants by 12 hours was achieved and 87.7% received a 3 dose schedule of vaccine by 7 months and 93.3% by 9 months.

The audit was most instructive for highlighting the need for improved systems to collect and act on information that should lead to identification of “at risk” infants and the capacity to achieve best vaccine coverage for those infants. The recommended new systems should also allow for more efficient future audits.

The audit did not differentiate those babies who were preterm (under 32 weeks gestation at birth). *The Australian Immunisation Handbook*, 8th Edition² has specific recommendations for these infants that includes, in addition to assuring a 4 dose schedule, measuring post vaccination antibody levels and the possibility of a delayed schedule in infants born to hepatitis B seronegative mothers. Adding these preterm infants to the ‘Alert System’ recommendation may be appropriate.

....And a response from NT Immunisation Database Coordinator of the Immunisation Section

Sam Bullen, CDC Darwin

The CDC - Immunisation Section worked closely with Dr Romanes on this project. As a result of the study identifying the need for better reporting of HBIG given to babies at birth in NT hospitals, the section worked with the Community Care Information System (CCIS) in developing an alert to identify these children as a risk group that would activate the Red Alert Icon on the CCIS screen and appear on the due and overdue lists sent to the communities. The purpose of this was to ensure these children were followed up in a timely manner with subsequent doses of hepatitis B vaccine. With this process in place we then approached each hospital's

A recent *Weekly Morbidity and Mortality Weekly Report* offered a “Comprehensive Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States” with the Part 1 Recommendations of the Advisory Committee on Immunization Practices being directed towards Immunisation of Infants, Children and Adolescents.³ Most aspects of the “Components of case-management programs to prevent perinatal hepatitis infection” set out in the recommendations are already carried out in the NT – or are recommended in the preceding article. Possibly more direction in carrying out annual tracking and evaluation of, for example, the number of HbsAg positive mothers, the number of mothers with HbsAg unknown status and the outcomes of management for the infants of these women would be useful for the NT. Additionally the US recommendations include infants born to HbsAg positive mothers be tested after completion of the hepatitis B vaccine series (at 9 to 18 months) for HbsAg and antibody to HbsAg. This recommendation should be considered.

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maternity staff and highlighted the need to report HBIG with the birth doses of hepatitis B vaccine. Anecdotally, we have seen a slight increase in the reporting of this information but it is uncertain at this time whether this is a result of an increased frequency of administration of HBIG or better reporting. Perhaps checking these figures with the pharmacies’ supply of HBIG to the hospitals would indicate whether the processes we have put in place have made a difference to the reporting and subsequent follow-up of “at risk” babies or whether further audits and measures need to be put in place to assist this process.

Trends in notification of sexually transmitted infections from Alice Springs Hospital laboratory

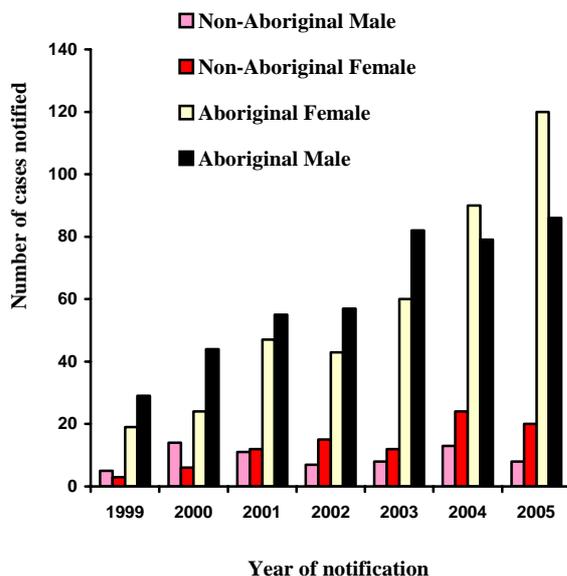
Ahmed Latif, Rosalie Schultz, Kirsty Smith, Michael Howard, Kath Fethers
Tristate STI/HIV Project and CDC Alice Springs

An analysis of notifications of sexually transmitted infections (STIs) from Alice Springs Hospital Laboratory for a period of 7 years was undertaken. This reflects results of tests carried out on specimens submitted by Alice Springs Hospital, Alice Springs Correctional Services and Clinic 34 in Alice Springs. Over the 7 years, 1999 to 2005, a steady increase in notifications of STIs has occurred among Aboriginal and non-Aboriginal persons. Genital chlamydial notifications increased from 56 in 1999 to 234 in 2005 while notifications of gonorrhoea increased from 123 in 1999 to 490 in 2005. A steady increase in trichomonas notifications has also occurred (47 in 1999 to 102 in 2005).

Chlamydial infection

Figure 1 summarises the notification of cases of chlamydial infection over the 7-year period. It is observed that notifications of chlamydial infection increased by 6-fold in Aboriginal women and by 7-fold in non-Aboriginal women.

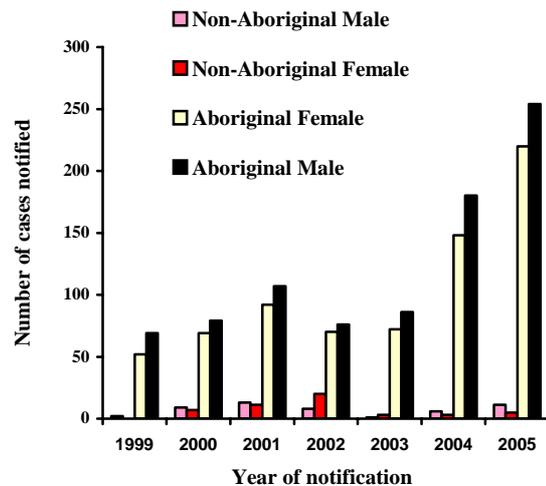
Figure 1. Chlamydia notifications from Alice Springs Hospital Laboratory - 1999-2005



Gonorrhoea

Increases in gonorrhoea notification rates have also occurred throughout this period. Increases in notification rates of 4.5 times were noted among Aboriginal women and 3.5 times in Aboriginal men. In non-Aboriginal men a 5 fold increase was noted though the numbers of cases reported remain small. In non-Aboriginal women, while there were no infections reported in 1999, the number of cases reported increased to a peak of 20 in 2002 and then decreased to 5 reports in 2005. These data are summarised in Figure 2.

Figure 2. Gonorrhoea notifications from Alice Springs Hospital Laboratory 1999-2005



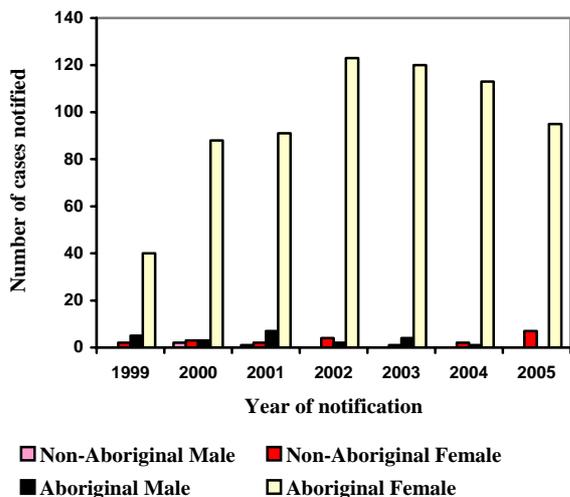
Trichomoniasis

Figure 3 summarises the notification rates for trichomoniasis. Trichomoniasis remains uncommon in both Aboriginal men and non-Aboriginal men and women. However this infection is commonly encountered in Aboriginal women.

Discussion

High rates of notifications of STIs probably reflect the higher incidence of infections in the area served by the Alice Springs Hospital Laboratory. The data does not include the cases

Figure 3. Trichomonas notifications from Alice Springs Hospital Laboratory 1999-2005



identified during the annual community-based STI screen that occurs in remote Aboriginal communities and these data do not include the results of tests conducted at other laboratories in the area.

The increase in numbers of cases diagnosed is possibly due to the increased awareness of hospital doctors to screen for STIs as a result of the ongoing in-service education of staff. The striking increase in chlamydial infections seen here may reflect increases in testing, or an increase in the number of infections. As chlamydial infection is usually asymptomatic, a high index of suspicion and routine screening is necessary to diagnose this condition. It should also be noted that the observed increase in chlamydial notification may be consistent with the increased incidence in chlamydial infection observed throughout the country.

Over the 7 years more cases of gonorrhoea have been reported in men than in women. However in the community-based annual STI screen conducted in 2004, 95 women and 74 men were found to have gonorrhoea¹ and in 2005, 109 women and 95 men were found with infection.² The reason for the larger number of men being

notified over the 7 year period may be that more men present with symptoms associated with the infection or that many more men than women are tested on a routine basis as happens at the correctional services.

Trichomonas infection is uncommonly diagnosed in men because it tends to be self-limiting. In women, however, if left untreated, the organism may persist for many years. Trichomonas is under recognised as a source of morbidity. Greater awareness of trichomonas and the increased use of PCR tests have contributed to the rise in notifications.

These data support the fact that there is an ongoing epidemic of STIs and that the epidemic is enlarging. Serious complications of STIs are encountered more commonly and in a recent observation it has been noted that an increasing number of persons have been presenting to the hospital with disseminated gonococcal infection. There is a need for concerted and coordinated efforts in order to control the epidemic.

Acknowledgements

We are most grateful to Dr Chris Wake, Alice Springs Correctional Services and Dr Liz Mowatt, Emergency Department Alice Springs Hospital. We gratefully acknowledge the contribution made by Ms Helen McLean, Data Entry Officer, CDC, Alice Springs.

References

1. Latif AS, Smith KS. STI screening conducted in NT Department of Health and Community Services and Community Controlled Health Services in Central Australia in 2004. *NT Disease Control Bulletin*. 2004;11:18-20.
2. Tristate STI/HIV Project. Report on STI screening in NT Department of Health and Community Services and Community Controlled Health Services: 2005. A collaborative program of Remote Health Services, Sexual Health and Blood Borne Viruses Unit and the Tristate STI/ HIV Project. September 2005.

Interim NT Guidelines for the Management of Sexually Transmitted Infections in the Primary Health Care setting

These guidelines are recently published with the following topic headings

Sexual History

Male Examination

Female Examination

Investigations – Males

Investigations – Females

Syndromic Presentations and Management

Vaginal Discharge

Flow chart – management of vaginal discharge (Vaginal and speculum examination not possible)

Flow chart – management of vaginal discharge (Vaginal and speculum examination possible)

Management of Pelvic Inflammatory Disease

Flow chart – management of pelvic inflammatory disease

Management of male urethral discharge or dysuria

Flow chart – management of male urethral discharge

Management of Epididymo-orchitis

Flow chart – management of Epididymo-orchitis

Management of genital ulcers

Flow chart – management of genital ulcers

Flow chart – management of genital herpes

Standard treatment protocols for sexually transmitted diseases

Disease Specific Treatment

Gonorrhoea

Chlamydia

Trichomonosis

Donovanosis

Syphilis

Genital Herpes

Bacterial Vaginosis

Candidiasis

For any enquiries regarding management of patients, please contact the staff at:

- Sexual Health and BBV Program Ph 08 8922 8874
- Darwin Sexual Health Clinic Ph 08 8999 2678
- Alice Springs Sexual Health Clinic Ph 08 8951 7549
- Nhulunbuy Centre for Disease Control Ph 08 8987 0354
- Katherine Centre for Disease Control Ph 08 8973 9049

The guidelines are available on-line at <http://www.nt.gov.au/health/cdc/protocols.shtml>

Printed copies can be obtained from Centre for Disease Control

Jacqui McCourt 08 8922 8874

Lesley Scott 08 8922 8089

Missed media message on measles

On the Wednesday before Easter, 12 April 2006, 3 media statements from CDC were released. Two followed the Katherine floods and gave warnings about mosquitos and melioidosis. The third was promoting measles awareness and encouraging the public to make sure they were measles immune – especially as there had been several cases of measles notified around the country, particularly in Sydney, in the previous weeks including a case in a health care provider and a young woman

from England had reportedly recently died from measles.

The media statements on mosquitos and melioidosis got radio and print coverage but the measles alert got none. Chris Nagy, Senior Project Officer for Immunisation and champion of vaccine preventable diseases, was perplexed. On walking to work the next week she lamented the missed message for measles and came up with the following missive.

The MMM! poem

Mmm! Melioidosis, measles, and mozzies,
important media messages making mention.

Mind you, I'm most mindful media
mentioned mozzies and melioidosis—mislaying
my measles masterpiece.

Mongrels!

Mmf—my magnificent measles media memo's missing.

Meaning?

Maybe Markey my media mentor made my
measles message more mundane and morbid
than maurauding mozzies and malodourous melioidosis.

Might be.

Maybe Meredith, Maureen, Merv, Maggie, Mick, Mary, Marianne, or Michael Moriarty
mysteriously masked and muddled my
marvelous measles media message.

Improbable.

My muse -

Making multiple media messages
makes mind-boggling mayhem and madness.

My motto -

Make media messages in mono.

Measles awareness or Not....?

The media release of 12 April that, with the exception of being available on the NT Department of Health & Community Services website, with a 1 line introduction of “Territorians are being urged to review their measles vaccination status following a number of recent cases interstate, including a case in a healthcare provider”, missed a broader mention.

NT Media release 12 April

Territorians are being urged to review their measles vaccination status following a number of recent cases interstate, including a case in a healthcare provider.

The Department of Health and Community Services Centre For Disease Control says there have been seven cases of measles in Sydney recently. A teenager in England has also recently died from the disease and there have been ongoing reports of measles in people returning from holidays or visits overseas.

“I urge all Territorians between the ages of 20 and 45 to check their immunisation status, especially before heading overseas as in some countries immunisation rates are low and measles circulates widely,” Head of Immunisation Unit Christine Selvey said.

“Measles is a highly contagious viral illness with more than 90% of non-immune people becoming infected if exposed. Measles causes fever, cough, watery eyes, runny nose and a red blotchy rash all over the body, and can cause serious illness and complications such as pneumonia and encephalitis.”

Dr Selvey said adults in Australia between 20 and 45 years of age are most at risk of getting measles.

“This is because they either have not had the disease or did not receive two doses of measles vaccine. It is now clear that one dose of the vaccine is not enough for full protection,” she said.

“People aged 45 years and over are most likely to be immune to measles, due to exposure to measles infection when they were children.

“Most young adults under the age of 20 years will have already received two doses of MMR vaccine and have protection against measles, but they should be vaccinated if they have missed out.

“Any adults, especially those travelling overseas and those working in any healthcare profession, should make sure they are immune to measles – that is, they have either had the disease or have had two MMR vaccinations.”

Free measles vaccine is available from Community and Health Care Centres, participating General Practitioners and Aboriginal Medical Services.

For more information please contact Department of Health & Community Services Media Officer, Matt Henger, (08) 8999 2820 or 0401 116 144.

In the intervening weekend 7 measles cases occurred in Perth, Western Australia prompting a national media alert to be issued about measles on 21 April 2006.

National Alert issued about measles

The Communicable Diseases Network Australia (CDNA) today issued a warning about measles following the discovery of 7 cases of the disease in Western Australia over Easter that are linked to a national spiritual tour.

Six of the cases of measles are in unimmunised children, aged between 2 and 10 years, who attended or interacted with those attending workshops held by the Amma (Sri Mata Amritanandamayi Devi) group in Fremantle at the end of March. The seventh case is in an unimmunised adult.

The Amma Australian tour also included meetings and retreats in Melbourne, Sydney, Brisbane and the Gold Coast. Some of these gatherings attracted crowds of up to 1000 people. The tour group departed Australia for Singapore on 17 April.

CDNA Deputy Chair, Dr Vicki Krause, said anyone aged under 45 years who attended the Amma meetings and events and who has not previously received 2 doses of measles vaccine should contact their medical practitioner to arrange urgent MMR or measles vaccination.

“It appears the measles virus in the Western Australian cases was introduced by overseas visitors with measles attending the Amma tour gatherings. The disease has spread to local families with unimmunised children and adults involved with the tour group,” Dr Krause said.

“Because of high local immunisation rates in recent years, measles is now a rare disease in Australia. Measles is however a severe and highly infectious disease so it is vitally important that anyone not immune to measles who has been potentially exposed be vaccinated as soon as possible.

“The vaccine is available free from general practitioners and immunisation providers. It is important to note that homeopathic remedies do not provide protection against measles.

“Anybody who has had contact with the Amma group and develops measles-like symptoms should seek urgent medical care.

“It is important that if symptoms do occur to phone the doctor or hospital in advance so arrangements can be made to prevent spreading measles to other patients.

Dr Krause said State Public Health Units in Western Australia, Victoria, New South Wales and Queensland were working closely with the Amma organisation to identify people who attended the national tour.

“Australian doctors also need to be aware of this situation and any measles cases that may develop should be urgently notified to the relevant State or Territory Health Department or Public Health Unit so that further spread of the disease is minimised,” she said.

The incubation period for measles is around 10 days.

Early symptoms of measles include a cough, runny nose, high fever, conjunctivitis or a red blotchy rash that may appear 3 days later starting on the face and spreading to the rest of the body. Measles can be a severe disease, particularly in adults and very young children.

The CDNA has prepared a fact sheet about this measles outbreak. The fact sheet is available at: www.health.gov.au/cdna

Changes to the schedules of the Notifiable Diseases Act

Introduction

Since November 2005 there have been a few changes to the schedules relating to the Notifiable Diseases Act. Firstly, there has been changes to the schedule relating to the information which is collected about a notifiable disease. This will now facilitate the collection of important enhanced surveillance information on some specified diseases. Secondly, in accordance with other jurisdictions, both varicella infection and avian influenza have been recently gazetted as notifiable diseases in the NT.

Enhanced surveillance of notifiable diseases

In November 2005, the schedule which lists the information to be collected on notifiable diseases was updated to reflect the need for enhanced surveillance on specific diseases. This means that there is now a specified list of "information to be given" for all diseases, together with "information to be given on request" for enhanced diseases. This extra information usually relates to a disease-specific list of data items being collected for enhanced surveillance. The diseases are listed in the table.

For the detailed list of information to be given see the NT Government gazette 30/11/2005 or at: <http://www.nt.gov.au/ntg/gazette.shtml>.

Avian influenza

Since the emergence of avian influenza in birds in South-East Asia at the end of 2003 and the subsequent human cases, public health authorities world-wide have realised the importance of national public health surveillance for this disease. Even though it is not regarded to be transmissible between humans, the disease has a high fatality rate (~50%) in humans and is a threat to bird-life and in particular the poultry industry. In addition, there remains the risk that the causative virus will mutate to a form more easily communicable between humans. Until now,

avian influenza has in fact been notifiable under the influenza category; however, scheduling of the disease in the urgent list (notifiable by both doctors and laboratories) emphasises the importance of timely notification.

Varicella infection

In November 2005, varicella immunisation became part of the national childhood vaccination schedule; it is now recommended and nationally funded for administration at 18 months. In keeping with the principle of making all vaccine-preventable diseases notifiable, and following the work towards a national case definition, all jurisdictions have been asked by Communicable Disease Network Australia (CDNA) to ensure varicella is a notifiable disease.

Three categories have been established for varicella. These are chickenpox, zoster (shingles) and varicella infection unspecified. The diseases are notifiable by both doctors and laboratories and are on the non-urgent list. Of course, we are expecting that most notified cases will be clinical cases through doctors and that it will take some time for doctors to become accustomed to notifying the disease.

Health staff are also encouraged to test for the disease, particularly if the diagnosis is in doubt or if the patient has been vaccinated. Testing is by PCR, antigen or varicella viral culture from a skin lesion swab.

The national case definitions are yet to be finalised but there is an interim clinical case definition which is as follows;

An acute skin eruption that progresses from maculopapular through vesicular to crusting within 24-48 hours. Crops of lesions may occur for 5-7 days. Fever and constitutional symptoms are usually mild in children but may be more severe in older persons.

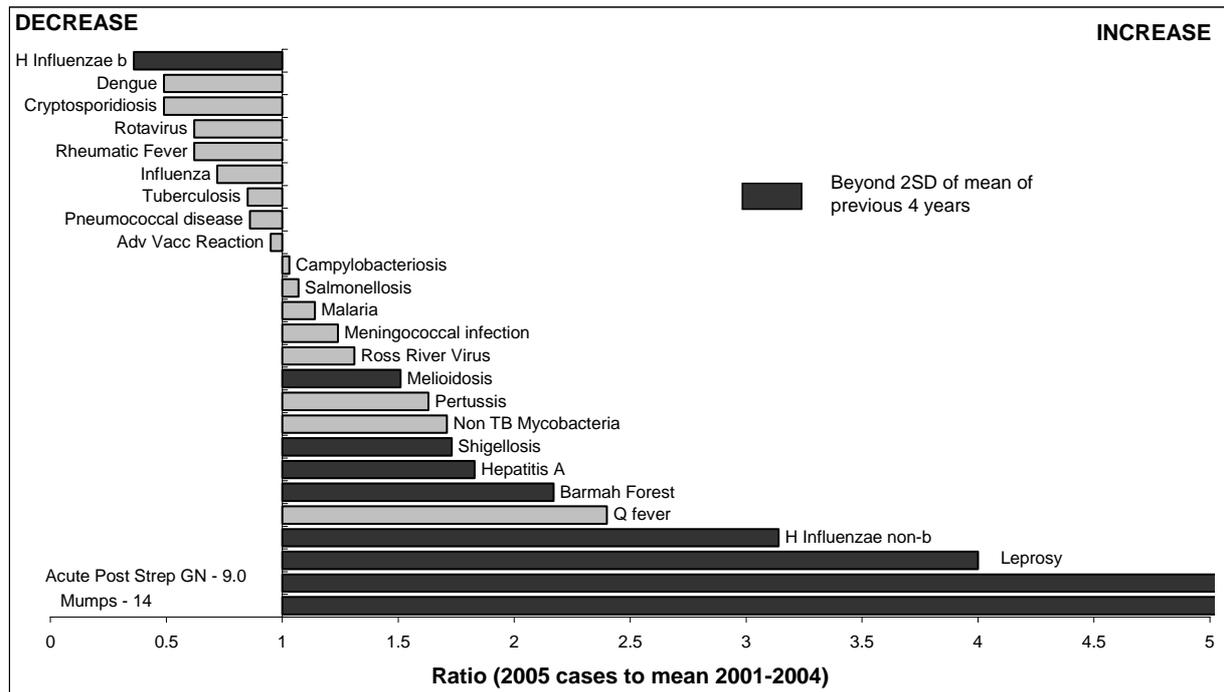
Table. List of diseases for enhanced data surveillance collection

Gonococcal infection	Hepatitis C	Ornithosis
Chlamydia	Malaria	Legionellosis
Trichomoniasis	Meningococcal infection	Q Fever
Donovanosis	Syphilis	Hydatid
Pneumococcal disease	Tuberculosis	Hepatitis A
Hepatitis B	Leptospirosis	Typhus

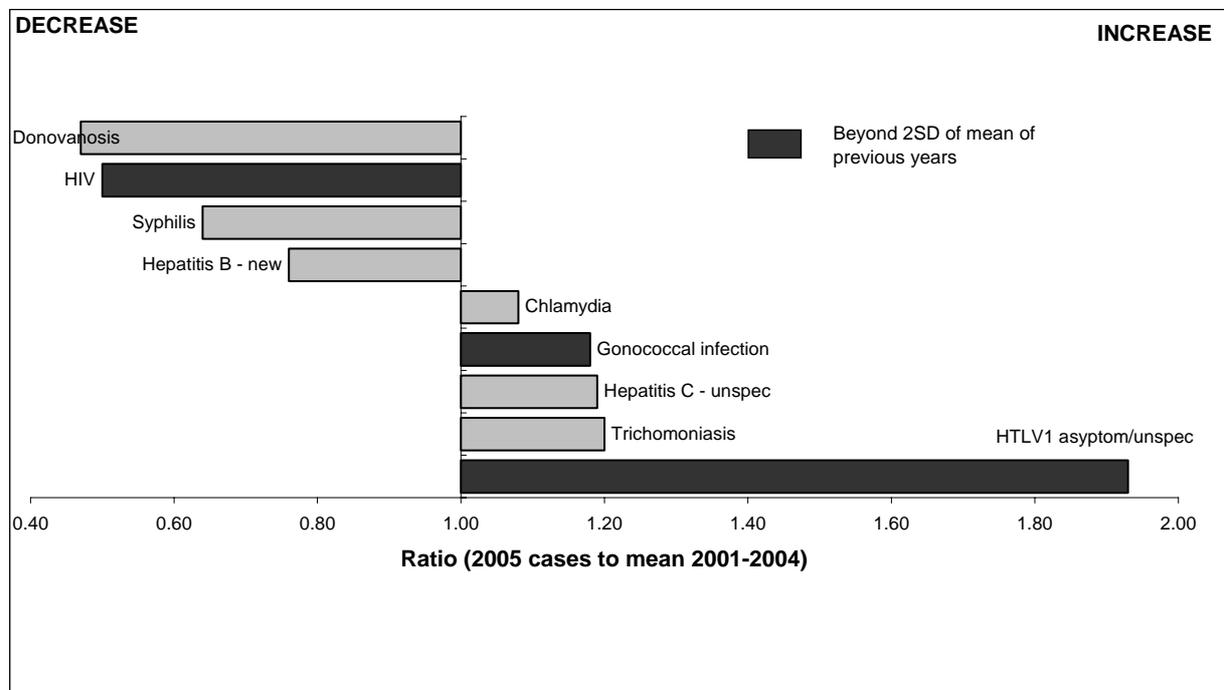
NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS 2005 and 2004

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		NT	
	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004
Acute Post Streptococcal GN	25	2	0	0	49	4	20	8	9	3	103	17
Adverse Vaccine Reaction	0	9	0	0	22	19	3	4	3	3	28	35
Arbovirus not otherwise specified	0	0	0	0	0	2	0	0	0	0	0	2
Barmah Forest	9	5	0	1	36	12	4	3	3	1	52	22
Campylobacteriosis	105	123	4	2	102	78	5	6	36	5	252	214
Chlamydia	671	699	32	42	595	577	168	120	129	178	1,595	1,616
Chlamydial conj	9	4	1	2	11	31	8	3	13	34	42	74
Cryptosporidiosis	30	69	1	1	37	22	4	6	11	13	83	111
Dengue	0	0	0	0	14	19	0	0	0	0	14	19
Donovanosis	2	4	1	0	1	0	0	0	0	2	4	6
Gastro - related cases	0	1	0	0	1	0	11	5	0	0	12	6
Gonococcal conjunctivitis	1	0	1	0	3	5	1	0	0	0	6	5
Gonococcal infection	955	848	45	58	434	320	124	115	188	233	1,746	1,574
Gonococcal neonatal ophthalmia	0	1	0	0	1	2	0	0	0	0	1	3
Hepatitis A	42	4	1	1	14	7	2	0	5	2	64	14
Hepatitis B - chronic	74	2	0	0	81	3	16	4	13	2	184	11
Hepatitis B - new	2	1	0	3	3	3	0	0	2	1	7	8
Hepatitis B - unspecified	72	0	1	0	73	1	50	1	9	0	205	2
Hepatitis C - chronic	9	0	0	0	4	14	3	0	0	1	16	15
Hepatitis C - new	0	0	1	0	1	0	1	0	0	0	3	0
Hepatitis C - unspecified	34	41	2	7	201	186	9	2	13	14	259	250
<i>H Influenzae</i> b	1	0	0	0	0	3	0	0	0	0	1	3
<i>H Influenzae</i> non-b	6	3	0	0	4	1	0	0	1	1	11	5
HIV	0	3	0	0	4	5	0	2	0	0	4	10
HTLV1 asymptomatic/unspecified	66	36	1	1	4	4	0	0	0	3	71	44
HUS	0	0	0	0	0	1	0	0	0	0	0	1
Influenza	21	19	0	2	31	13	4	2	5	3	61	39
Legionellosis	2	2	0	0	1	0	0	0	0	0	3	2
Leprosy	1	0	0	0	1	1	1	0	0	0	3	1
Leptospirosis	0	0	0	0	4	2	0	0	1	0	5	2
Listeriosis	0	0	0	0	0	1	0	0	0	0	0	1
Malaria	0	0	1	0	41	38	4	2	2	1	48	41
Measles	0	0	0	1	0	2	0	0	0	0	0	3
Melioidosis	0	0	0	0	35	16	0	0	2	4	37	20
Meningococcal infection	7	3	1	1	4	4	2	2	0	2	14	12
Mumps	2	0	0	0	5	0	0	0	0	0	7	0
MVE	0	1	0	0	1	0	0	0	0	0	1	1
Non TB Mycobacteria	4	0	0	0	5	10	0	0	0	0	9	10
Pertussis	24	2	1	0	45	10	4	1	15	14	89	27
Pneumococcal disease	39	48	4	2	22	31	4	5	2	7	71	93
Q Fever	3	2	0	0	0	1	0	0	0	0	3	3
Rheumatic Fever	20	33	0	1	15	13	4	9	6	8	45	64
Ross River Virus	6	8	0	2	165	194	16	10	23	19	210	233
Rotavirus	79	178	2	8	112	147	30	34	36	40	259	407
Salmonellosis	60	92	11	9	219	206	34	15	69	64	393	386
Shigellosis	141	78	5	0	18	19	11	10	22	9	197	116
Syphilis	101	139	7	3	49	53	23	14	49	72	229	281
Syphilis congenital	4	5	0	0	1	0	0	0	0	1	5	6
Trichomoniasis	382	320	14	22	197	116	158	81	68	21	819	560
Tuberculosis	4	7	0	2	14	13	6	0	2	7	26	29
Typhus	1	0	0	0	0	0	0	0	0	0	1	0
Yersiniosis	0	0	0	0	1	0	0	0	0	0	1	0
	3,014	2,792	137	171	2,681	2,209	730	464	737	768	7,299	6,404

Ratio of the number of notifications in 2005 to the mean of the previous 4 years: selected diseases



Ratio of the number of notifications in 2005 to the mean of the previous 4 years: sexually transmitted infections and blood borne diseases



Comments on NT disease notification graphs p 30

Mumps

There were 7 mumps cases notified in 2005 whereas there is usually about 1 notification every 2 years. All but 1 were adults which may reflect waning population immunity together with an increased awareness in the community. The trend has also been recognised nationally and internationally.

Post-streptococcal glomerulonephritis

There were 103 cases of post-streptococcal glomerulonephritis in the NT in 2005 which was almost 9 times the 4 year mean. There were high numbers of sporadic cases and several community outbreaks.

Leprosy

The increase in leprosy cases does not represent an "outbreak" in this disease that often has an incubation period of decades. The cases represent both risk groups for leprosy, that is, Aboriginal ethnicity and past residence in an endemic overseas country. The cases vary in age from late 20s to 80 years. Each case is from a different community or town. The increase does not reflect more intense case finding as unfortunately this disease relies on passive case finding and can take 1 or 2 years or longer to be diagnosed. Lack of clinician familiarity with the disease makes it a difficult disease to get diagnosed. While leprosy was endemic in some NT Aboriginal communities in the early to mid 1900s, in recent years there have been no cases some years and in others 1 or 2, with 6 being reported in 1996. The general trend has been for cases to be diagnosed in older age groups and this shift to the older age group is reportedly what is seen as the disease comes under control and towards elimination phase (see article p1).

Haemophilus influenzae non type b

There were 11 cases of non type b Haemophilus influenzae in 2005 which was greater than 3 times the 4 year mean. These were mainly in adults although the 5 paediatric cases were all between 1 and 2 years of age. This illness is only notifiable in the NT and until 2005 not all laboratories were notifying cases; this may explain the increase in 2005.

Barmah Forest virus

There were 52 cases of Barmah Forest virus in 2005 compared with a 4 year mean of 24. There were more cases in the dry season than usual (April to July)

which may have been due to late rains. There were also more cases in Central Australia.

Hepatitis A

There were 64 cases of hepatitis A in 2005 compared with the 4 year mean of 35. This reversed a consistent trend downward over the previous 3 years. This increase was due to several clusters in the Alice Springs region which totalled 42 cases – more than 5 times the 4 year mean for the region (see Bulletin article Vol. 12, No. 4, Dec 2005). Other regions had about the expected number of cases.

Shigellosis

Shigella notifications have been increasing in recent years particularly in Central Australia. In 2005 there were 197 cases, 1.7 times the 4 year mean. The cause of this is unknown but in 2005 there was a high incidence of shigellosis due to the subtype flexneri 4a mannitol negative variant which comprised 31% of isolates.

Melioidosis

There were 37 cases of melioidosis in 2005 compared with the 4 year mean of 25 cases per year and this was the highest number of cases since 1998. The 2004-05 wet season was slightly below average so the cause for this increase is unclear.

Hib

There was only 1 case of Hib notified in 2005, the lowest since it became a notifiable disease in 1994. This may be a reflection of sustained high immunisations rates which has resulted in an immune cohort of older children.

Gonorrhoea

2005 has seen a sharp increase in gonorrhoea notifications, on top of an existing increasing trend in the last few years. Most of the increase is believed to be due to a true increase in incidence in Alice Springs district, particularly among the Aboriginal population.

HIV

There were 4 HIV notifications in 2005, which represents a decrease from the average for the previous 4 years. The reason for such decrease is not known. However, as the number of HIV notifications has been small for the NT, it is unclear whether such fluctuation is significant.

NT Malaria notifications October - December 2005

Merv Fairley, CDC, Darwin

Five notifications of malaria were received for the third quarter of 2005. The following table provides details about where the infection was thought to be acquired, the infecting agent and whether chemoprophylaxis was used.

Number of cases	Origin of infection	Reason exposed	Agent	Chemoprophylaxis
1	Sierra Leone	Migrant	<i>P ovale</i>	no
2	Liberia	Migrant	<i>P falciparum</i>	no
1	PNG	Holiday	<i>P falciparum</i>	no
1	Brazil	Holiday	<i>P vivax</i>	yes

Disease Control staff updates

Environmental Health

Chris Luthy and **Josh Cufley** have commenced as Environmental Health Officers for the Katherine region. In the Darwin Urban team **Kelly Nunn** (EHO) has finished her short term contract and **Katie Thomson** has commenced a 12 month contract.

Sexual Health & Blood Borne Viruses

Ros Webby has moved from the Sexual Health team to commence a public health training position (1 year of DMO, year 2 TB, year 3 Drugs and Alcohol combined with attachment with the Chief Health Officer). **Maggi Richardson** returned as Sexual Health Nurse for the remote team. Maggi's recent experience was a 12 month contract as an International Federation of Red Cross health delegate on a Watsan Program in China aimed at reducing diarrhoeal diseases in rural communities in 3 flood-prone provinces. We congratulate **Autumn Goodall** and **Jed** on the arrival of baby Fin, and **Anne Davis** and **Barry** on the arrival of baby Jack.

Janelle Wilkey has left as Clinic 34 co-ordinator for the Alice Springs team after working in various positions in Sexual Health for over 4 years. **Nicole McIntosh** has moved from her position as Syphilis Information System co-ordinator to fill **Janelle's** position. "**Nicki Mac**" has worked in both ends of CDC (Immunisation/Surveillance as well as Sexual Health) in Alice Springs and is looking forward to the challenge of Clinic 34 co-ordinator. **Nicole Ferguson "Fergie"** is now working as Syphilis Information System co-ordinator. **Hayley Crisp**, Liaison Officer has left us and moved to Victoria. Her baby is due in May.

CDC Darwin

Katrina Roper is the new first year Master of Applied Epidemiology (MAE) scholar, who will be

working at the CDC under the supervision of Vicki Krause. Katrina has recently moved to Darwin from Canberra, where she worked in Risk Assessment Microbiology at Food Standards Australia New Zealand.

Congratulations to Philippa Binns on successful completion of her MAE. She will commence as OzFoodNet Enteric Epidemiologist in CDC in April.

Rheumatic Health Disease (RHD)

Maureen Egan has moved to CDC from Casuarina Community Care and is enjoying the challenge as RHD Clinical Nurse Consultant.

TB/Leprosy

Kerryn Gijbers has joined the TB team to provide screening for unauthorised fishermen on a shortterm contract. Kerryn is a GP who moved from Victoria.

Immunisation

Nan Miller's retirement on return from a year working in PNG brought to a close a long and very much appreciated career in CDC, mainly in immunisation policy. Her contribution to the success of the NT Programs especially with cold chain management and the *About Giving Vaccines Course* can not be underestimated. We wish her well in her new projects. **Lyn Barclay** has rejoined the team to see the transition of the implementation of the *About Giving Vaccines Course* to CDC management.

Cate Coffey rejoined CDC in Alice Springs as the Immunisation/ Surveillance nurse. Cate worked for the Sexual Health Unit in CDC Darwin in 1996-1997. She has worked throughout the regions of NT, including Barkly, Katherine, and East Arnhem. Alice Springs is delighted to welcome Cate.

THE NORTHERN TERRITORY DISEASE CONTROL BULLETIN

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