Too many road crashes involving young drivers.
Time for changes to our licencing systems and driver education strategies.

Steven Skov, CDC, Darwin

Getting one’s driver’s licence is symbolic of the transition to adulthood and is a time of great excitement and new freedom for most of us. Unfortunately it is also a time of great risk to the individual and those around them. Many studies from all over the world demonstrate that young and inexperienced drivers have far higher rates of road crashes, injuries and fatalities than older drivers. In Australia 15% of all drivers are aged 17-25 years but 27% of all road fatalities and 26% of hospitalizations occur in this group.\textsuperscript{1, 2}

Data from the Northern Territory Dept of Infrastructure, Planning and Environment Vehicle Accident and MOVERS* databases for the period 1999-2004 reveals a very similar pattern:

- 28% of driver fatalities and 30% of driver injuries occurred in the 16-24 year age group,
- 16-20 year olds comprised 6.3% of all drivers but were the drivers in 18% of all crashes and 23% of crashes involving a fatality,
- 21-25 year olds comprised 10.8% of all drivers but were the drivers in 14.5% of all crashes and 22% of crashes involving a fatality,
- 6.6% of drivers aged 16-20 years had a crash each year compared to 2.4% for all drivers.

*MOVERS = Database of drivers licenced in the NT

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This increased risk is due to both youth and inexperience. In Western Australia recently, 14% of young drivers were found to have had a crash in first 12 months of driving. Studies from the USA and Australia show that the elevated risk persists whether drivers get their licence at 16, 17 or 18 years.

Why does this happen and what are we doing?

There are many factors thought to contribute to this increased crash risk:

- inexperience,
- cognitive and perceptual skills not sufficient for driving,
- lack of ability to perceive and respond to risk and hazards,
- over confidence,
- relatively more time spent driving under more hazardous conditions (e.g. night time, with passenger distractions, socializing while driving), and
- risky driving behavior (e.g. speeding, close following distances).

The research particularly demonstrates that night time driving and driving with peer aged passengers are strongly associated with crashes and injury among young and inexperienced drivers.

In recent years there has been a strong focus overseas, particularly in the USA, New Zealand and Europe, on Graduated Driver Licencing (GDL) and a change in the nature of driver education and training programs. Many of these developments have been well informed by research while evaluations have demonstrated substantial improvements in rates of crashes and injuries. Australia seems to be lagging in adopting many of these measures and, perhaps as a consequence, has not seen any improvement in road fatalities in under 25 year olds since 1998.

Driver education and Training

Traditionally, driver education has focused on basic vehicle control and road skills. However, evidence has been accumulating for some time that this approach has not worked in reducing crash rates. Indeed, there is evidence that certain types of driver education may increase the risk of road crashes, particularly if it results in the driver obtaining licencure at a younger age and with less supervised driving experience.

More recent research has highlighted that driver training should focus more on higher order skills such as:

- understanding risk and risk reduction,
- hazard perception and hazard modifying behaviour,
- self awareness of strengths and weaknesses,
- understanding one’s driving goals and motivations and the effect of context, and
- self-evaluation and knowledge.

As regards the nature of training, small group and peer discussion sessions are important to facilitate development of these skills along with scenario training to allow the actual experience of risk, its emotions and effect on personal behavior. The role of parents in driver training should be maximized. Training programs should be integrated into a graduated licencing system.

While these new directions have been suggested by the research there is not yet convincing evidence of effectiveness.

Graduated Driver Licencing (GDL) systems

GDL systems first began to appear in the USA in the 1970s and have particularly increased since the mid 1990s. They now also exist in Canada, several European countries and Australia. In 1987, New Zealand was the first to implement a comprehensive system which includes what are probably the most effective elements.

GDL systems have a phased introduction to driving consisting of an initial phase permitting supervised driving only, followed by an intermediate phase allowing unsupervised driving but with some type of restriction(s), before progressing to full licencure. All states of Australia have introduced a GDL system in one form or another albeit with substantial variations between states in the ages at which each phase can be undertaken, the length of each phase, the nature of restrictions and the type of assessment required for progression. Briefly, Victoria and New South Wales have the most structured and restricted systems and the Northern Territory the least with minimal restrictions. The Northern Territory allows full licencure as early as 17 years of age and a few weeks compared to 19-21 years in the other states.
A substantial body of research has identified factors associated with road crash risk in novice drivers and provided direction for the development of GDL systems. In addition, there is good evidence from many places of the overall effectiveness of GDL systems in reducing crashes and injuries.

A Cochrane review of 12 systems in 4 countries found reductions in crash rates in all countries for all crash types.\(^{14}\) Crash rates were reduced for all teenaged drivers while in the first year of driving for 16 year olds there was a reduction of 31% in crash rates and 28% in injury rates. All states in the USA where GDL systems have been introduced have observed reductions in crash rates for novice drivers ranging from 7% -32%.\(^{15}\) In New Zealand, the number and rate of serious injuries and fatalities of 15-24 yr vehicle occupants has nearly halved.\(^{16}\)

GDL systems around the world consist of many different elements and combinations thereof: longer learner phases when only supervised driving is permitted, speed limits, blood alcohol limits, restrictions on towing, limits on the power of vehicle, requirements not to have traffic violations and restrictions on night driving and numbers of passengers. While there is good evidence for overall effectiveness, teasing out the relative effectiveness of individual components is more difficult. However, there appears to be a clear association with crash reduction for:\(^{6}\)

- increasing the learner phase and so the amount of directly supervised driving –this refers to supervision by family or friends and not necessarily in formal lessons (one Swedish study suggests a crash reduction benefit after 120 hours of documented supervised driving),\(^{17}\)
- night time driving restrictions during the intermediate phase,
- restrictions on peer aged passengers during the intermediate phase,
- zero blood alcohol limit for both learners and intermediate phase drivers, and
- mandatory seat belt use at all times.

Other components have a sound theoretical base and some evidence of effectiveness but need further evaluation. In addition, there are many other components in use in systems but for which there is no evidence base. Several studies indicate that systems allowing a reduction in the age of full licencure following formal driver education (as exists in the NT) lead to an increased risk of crashes.\(^{12,13,18}\)

Foss has suggested that overall there are perhaps 2 essential components for GDL systems.

1. Providing beginning drivers with substantial real world driving experience while minimizing risk (i.e. supervised driving).
2. Establishing as a key principle that driving is a privilege, and access to a licence is about demonstrating responsible driving behaviour and not simply doing the time or reaching a certain age.\(^{19}\)

Where to in Australia and the NT?

While GDL systems exist in all Australian states, it is of note that the 2 elements that may be the most important in reducing crash risk, restrictions on night driving and number of peer passengers, do not exist in any Australian GDL system. In addition, there is room for substantial change in the nature of most driver education systems in Australia towards that suggested by the evidence.\(^{9}\) Introduction of some of these changes has been considered in several states but not implemented. Recently, a parliamentary committee in Queensland recommended introducing both night driving and passenger restrictions, but both were rejected by the Government. Within the Northern Territory, there is room for improvement. We have:

- the highest overall rates of road traffic fatality and injury in Australia\(^{20,21}\) with rates among young drivers that are similar to the rest of Australia,
- the “loosest” licencing system which permits full licencure at the youngest age of any jurisdiction in Australia, and
- a component of our licencing system (i.e. reducing the age and amount of supervised driving required for full licencure by doing a driver education course) which the evidence suggests is likely to increase crash rates.

It has been suggested recently that public policy in this country could be better informed by good evidence.\(^{22}\) Governments naturally have concerns about introducing any restrictions on people’s behavior and suffering a political backlash. Specific concerns have been raised that such restrictions may limit work or study
opportunities or enforcement would be too difficult. However, experience from both the USA and New Zealand shows these systems are workable and acceptable. Exemptions can be granted for non-recreational driving and once the legal framework is set, parents often assume a major role in “enforcement”. Studies in both those countries indicated strong support for the systems from both parents and young drivers.23, 24

Road crashes are the main cause of death and disability in young people in this country. The impact on families is horrendous. If we have the political will, there are feasible and acceptable ways to reduce the road toll among young people. We should all have an interest in this. Making improvements to our driver training and licencing systems will not stop young people from getting their licence. The “costs” are that it will take longer and that parents will need to be more involved in supervising their children’s driving. There is good evidence that our young people will be better prepared and the result will be more of them who, in achieving one of society’s symbols of adulthood, live to be adults.

Key documents in the GDL literature include:


Reference List

Introduction

The calamity that hit the Asian region on the 26th of December 2004 was on a scale that the world had not seen for many years. The recent Gujerat and Bam earthquakes, the earthquakes and tsunamis in Japan and Papua New Guinea, the floods that occur all too frequently in Bangladesh - are dwarfed by the Boxing Day tsunami which affected so many nations around the Indian ocean. It reminded everyone of how arbitrary nature can be. To date in Aceh alone of a population of 4 million, 160,000 people are dead (or missing), and another 400,000 people are living as internally displaced persons (IDPs) in barracks, tented camps, or staying with the host population (often in poor conditions).

First impressions

Arriving in Aceh four 4 weeks after the tsunami, it was apparent that the media reportage couldn’t begin to prepare me for the enormity of the human loss and destruction. Driving around on my first day I saw bodies being removed from the mud, houses in ruins, people living in tents, and overcrowded makeshift camps. This made processing the information in front of me and assessing what was needed immediately extremely difficult. It was easy to become lost in the tragedy of individuals all around me.

Too many cooks

Complicating factors were the overwhelming number of different agencies including government and international militaries, the United Nations (UN) bodies and international nongovernmental organisations (INGO). The lack of coordination and duplication became swiftly apparent with many of the individuals and organisations having no experience in disaster response. Some came ‘just wanting to help’, promising the world, but being unable to deliver, thereby creating problems for the other INGO’s. There were at least 500 organisations operating and providing a variety of services. They came from the national and international military, INGO and NGO, religious and UN sectors.

The role of an INGO in the aftermath of a disaster is dependent on a number of factors including the founding mission ideals of the INGO, the nature of the donors and beneficiaries. Responsible INGO’s have signed a humanitarian code of conduct adhering to basic principles of impartiality, neutrality, humanity, independence and need.

In assessing the need of a group of beneficiaries the assistance has to target the people with the greatest need, taking into account the local
capacity to respond and what other supports the local infrastructure requires to carry out the task.

Starting anew

In Aceh, the provincial government was overwhelmed by the disaster, as it hit their capital city, Banda Aceh. Many offices, health centres and hospitals were destroyed with the health staff directly affected. Health centres that were not structurally damaged by the earthquake lost all their equipment and medical materials. The government of Indonesia recognised very quickly that the scale of the disaster was one that they were unable to respond to in a timely way, and eased visa and martial law restrictions to allow the influx of national and international organisations, particularly allowing foreign military troops to assist.

One of the challenges encountered in recent years is the emerging involvement of foreign military units in humanitarian crises. Military units certainly have logistic expertise but problems often arise concerning their mandate, communication with other sectors and lack of experience and flexibility. Military units are often unaware of international standards like Sphere, which provide minimum standards that should be achieved in a humanitarian response. Due to their own security guidelines the various military organisations may not be able to share vital assessment information and may have issues with other organisations/military taking the lead.

My role

In Aceh I worked for Merlin, a UK based INGO, which specialises in providing and supporting government primary health care (where possible) in disasters and complex emergencies. The primary goals of the Merlin program in the initial phase were to:

- support curative care activities in health centres (cleaning, renovating and re-equipping where necessary);
- support disease surveillance activities led by the Ministry of Health (MoH) and the World Health Organisation (WHO); and
- help recommence Maternal/Child health services (immunisation, skilled midwifery, child health and contraceptive services) in four districts.

Merlin also provided water and sanitation services including temporary latrines and water supply in camps and barracks. All of the services were negotiated with the permission of the MoH and local village leaders, ensuring that local labour was hired and medical supplies and equipment were purchased locally where possible.

Merlin supported the introduction of the new provincial malaria treatment regimen (artemether/amodiaquine combination treatment) and the use of rapid diagnostic tests for Plasmodium falciparum infections. Merlin ensured that the new provincial protocol by the MoH and The Mentor Initiative (the INGO with the government mandate for implementation of the new protocol) was disseminated to the Merlin assisted health centres Merlin supported.

Once the program was underway, the chronic long standing difficulties within the health system became apparent. The health system has a large, underpaid and underskilled workforce. In some areas of Aceh, vaccination coverage pre-tsunami has been estimated at 40 - 50%. Skilled birth attendance rates are as low as 35% in Aceh Jaya, and only up to 75% in Banda Aceh, falling well short of internationally agreed Millennium Development goals. Medical waste management and infection control outside of the hospital environment is anecdotally nonexistent. Tuberculosis (TB) curative rates are low and could be improved with better diagnostic and support services for TB management in the community. Malaria control measures (particularly in rural areas) with that included insecticide impregnated bed net distributions, community education and residual spraying should reduce the pre-tsunami morbidity and mortality seen pre-tsunami associated with this mosquito transmitted disease. Many villages
report chronic problems with poor water quality and a lack of sanitation in rural areas, with the associated diarrhoeal illnesses.

**Thoughts on the response**

In the longer term, the foundations for improving immunisation coverage, midwifery skills and access to affordable quality health care for all sectors of the community, including the very poor, has to be included incorporated from the very beginning when responding to this or any crisis. Programming from the beginning has to incorporate the planning Planning for developing these longer term development strategies and be included in the need to be part of the reconstruction phase which is planned in Aceh to will take at least 3 - 5 years.

All organisations have a responsibility to send appropriate relief based on a timely assessment of the level of need. Care must be taken to understand the geopolitical context and the likely longevity of the response required. The responsible INGO has to take into account the wider goals of the humanitarian and donor community such as the ‘Make Poverty History’ campaign and the Millennium Development goals (internationally agreed goals for assisting developing countries and nations in crisis due to natural or manmade disasters). It is vital that INGOs coordinate with key stakeholders and the government to provide a service that reaches the beneficiaries quickly and where there will be with maximal impact.

The response required in the province of Aceh will take at least 3 to 5 years and even more years for the longer term strategies of improving sustainable basic curative care, immunisation, improving access to maternal/child services and some specific disease control programmes like TB and malaria. It is hoped that the international donor community will continue to support the rebuilding and reconstruction of Aceh with the direction of and in consultation with the Indonesian government.

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2. WHO (2005) Communicable disease profile for tsunami affected areas - Indonesia, World Health Organization, Jakarta
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Meredith Hansen-Knarhoi is a TB Clinical Nurse Consultant working in Darwin CDC. She has worked in East Timor, the Democratic Republic of Congo, the Pacific (on infection control matters following SARS) and more recently in Aceh, Indonesia. She is on the management committee of Melaleuca Refugee Centre in Darwin, a service that provides settlement support to newly arrived refugees in the NT. Additionally, Meredith provides assistance on issues concerning refugee health for the Communicable Diseases Network Australia (CDNA). Meredith was selected from the NT Department of Health and Community Services to assist in Aceh if required. When the request came from Merlin she was released for a 3 month period to assist in the emergency response.

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**CDC Conference NT**

Conference dates are 18-20 October 2005. The venue will be the Crown Plaza Darwin. Could those interested in presenting at the conference this year please contact Lesley Scott on 89228089 or lesley.scott@nt.gov.au.
After the earthquake Nias, Indonesia, March 28 - April 18

Rosanne Muller, CDC, Darwin

The Setting

Nias is a beautiful, but poor island in West Sumatra, Indonesia. Lying several hundred kilometres south of Banda Aceh it is home to around 444,000 people. Internationally renowned for its excellent surfing conditions, it has been a popular holiday destination for surfers from all over the world. On 28 March 2005, at 11pm, 2 months after the tsunami, Nias suffered an earthquake measuring 8.7 on the Richter scale at its epicentre (approx. 150 km away). Severe damage occurred in the island’s largest town, Gunung Sitoli. Early reports of an estimated 1000 deaths precipitated a rapid aid response in Nias.

I was a member of an AusAID funded medical team from Interplast Australia* and International SOS Indonesia†, that was rapidly deployed from Banda Aceh where we were working in tsunami relief operations. We arrived by helicopter in Gunung Sitoli at mid-day on 30 March, 36 hours after the earthquake. The team consisted of an English team leader, an Australian surgeon, an Australian wound-care nurse, an Indonesian paramedic, and myself (GP/public health doctor). We knew that we would very likely be the first medical team arriving in Nias, so had spent an anxious night in Banda Aceh organising the medical kits we would carry with us. All shared the same trepidation about the scenes that might confront us on arrival. We anticipated the worst, expecting little sleep over the following days.

Landing in Nias

I will never forget our first 48 hours in Gunung Sitoli. There was a palpable atmosphere of chaos in the town, with injured people struggling to board our helicopter, even before we had disembarked. The destruction of buildings and roads was immediately obvious. We estimated that one in three buildings had collapsed, and some of the roads appeared badly damaged. We were directed to the convent where many injured people had been taken. On this predominantly Catholic island, life centres around the churches and convents. The picturesque Santa Klara convent, perched on the hill above the town, had become a hospital. The nuns, immaculate in starched white uniforms and veils, were working hard to deliver care and food to their people. These beautiful women were inspirational in their commitment, energy and cheerfulness. Greatly relieved to see us, they assisted in triaging and treating those present. Despite having limited means of verbal communication, we were close friends by the end of those 2 days. When our team left, it was an emotional goodbye to the nuns, who had moved us all with their generosity.

The work

Of the 80 or so patients treated at the convent, many had severe fractures, compartment syndromes, lacerations or head injuries. The most serious were evacuated by helicopter to Medan, the Sumatran capital city. We were struck by the stoicism and courage of the Nias people. I treated many children with long bone fractures who sat quietly without tears, while their damaged limbs were splinted.


† International SOS is a private organisation providing global medical evacuation and assistance for travellers and expatriates.
Joining forces with SurfAid International (a New Zealand NGO for which AusAID is a funding partner), we left Gunung Sitoli to assess the damage in more remote areas of Nias. Travelling and living aboard a SurfAid boat as a combined team of doctors, nurses and Indonesian community facilitators, we explored Nias’s south-western districts, arranging evacuation of severely injured people by helicopter. Reaching these villages required travel by dinghy, by motorbike (holding tightly while riding on the back), by foot when hill roads were too difficult for bikes to pass, and by helicopter when available. In this way, we reached villages in 9 districts. The team treated 300 patients over the following week, and in total, evacuated more than 30 patients to Medan or the US Mercy (hospital) ship, anchored in Gunung Sitoli harbour.

In many villages, the main thoroughfare was filled with tents and tarpaulins. Fearing further quakes, people chose to live outside rather than return to their damaged homes. Daily aftershocks served to reinforce these fears. On day 10 post-quake, we continued to find people in remote villages with untreated major fractures or infected wounds, waiting for medical care to reach them. The arrival of a helicopter into these villages met with huge excitement from the local people.

The impact of the earthquake on Nias people extended far beyond personal injury. Many “puskesmas” or village clinics were damaged or destroyed, and the nurses had left to be with their own families. Livelihoods (trading rice or rubber crops) were disrupted due to damaged roads, and money and food supplies were low. Many wells were damaged, and water supply was precarious. The risk of malaria was greatly increased by lack of shelter. It was heartbreaking to witness these hardships in a vulnerable population still recovering from the tsunami.

Within the first week post-quake, the Nias relief effort was supported with medical teams and food supplies provided by many NGO’s (Indonesian and international), the Indonesian military and the Australian military. WHO and the UN attempted to co-ordinate NGO’s from their base in Gunung Sitoli. This proved to be a difficult task. Teams in remote areas had great difficulty with communication due to lack of telephone or email networks. Our team eventually employed a daily motorbike courier, travelling 4 hours by road each way, to convey information to and from Gunung Sitoli. Communication and co-ordination were probably the greatest challenges of the Nias response. Another significant barrier was the difficulty associated with transportation of teams and supplies, and retrieval of casualties. The tragedy of the Sea King helicopter crash was a sobering reminder to us of the risks involved for ourselves and for our patients.

The end of the emergency

After the first fortnight, it appeared that the emergency phase was drawing to an end. Between our team and other NGO’s, most villages on the island had now been reached, and the likelihood of finding further untreated injuries was low. The Interplast team members returned to Banda Aceh, or home to Australia. Other NGOs remaining in Nias began planning longer-term programs to address the issues of nutrition and water supply, malaria control and disease surveillance. It will take years to rebuild Nias. The people have such strength of spirit and determination that I hope they receive the ongoing care and help of the global community for the difficult tasks ahead.

Reference


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Infection control and waste management at the Zainoel Abidin Hospital, Banda Aceh, April 2005
Rosalind Webby, CDC, Darwin

Background

On 26 December 2004, a severe earthquake off the coast of northern Sumatra caused a tidal wave or tsunami that devastated communities in countries surrounding the Indian Ocean. The wave reached 24 metres in height as it crossed the coast and resulted in a probable death rate of over 240,000 people in the Aceh region.

The main public hospital in the capital city of Aceh province, Banda Aceh (Rumah Sakit Umum Zainoel Abidin Hospital, RSUZA) was severely damaged by the tsunami with widespread flooding and structural damage. A large proportion (140 persons or around 30%) of the hospital staff were killed or were reported missing. Initially the Australian Defence Force (ADF) and Australian civilian medical teams worked with German, Singaporean, Belgian and Japanese teams to clean debris and mud from wards and hospital areas and restore water, power and sewerage to the Zainoel Abidin Hospital.

After the ADF departed a team from Interplast, (an Australian humanitarian organisation specialising in plastic and reconstructive surgery) and International SOS (an international emergency assistance and medical services company) were contracted by AusAid, (an Australian government funded overseas aid program) to support the Indonesian staff to restore medical services and re-skill staff in the hospital.

My arrival and needs assessment

I arrived in Banda Aceh on 8 April 2005 to work with the Interplast/International SOS* team at the Zainoel Abidin Hospital. The team at the time consisted of a general surgeon, anaesthetist, 3 Australian nurses, pharmacist, hospital administrator and team leader from Australia and 15 nurses/paramedics/logisticians from different parts of Indonesia. On arrival I made contact with the Centre for Disease Control in Banda Aceh, hospital staff and the Indonesian Provisional Health Office to discuss how Interplast/International SOS could assist Indonesian staff restore medical and public health services in the district. After an initial tour of the hospital and discussions with hospital and regional staff, it was obvious that waste management and infection control issues at the Zainoel Abidin Hospital were an immediate public health issue.

The hospital was a 400 bed teaching hospital prior to the tsunami and had been accredited to Indonesian governmental standards. Before the tsunami, the hospital had an infection control committee consisting of 2 doctors, the head of nursing, 2 other nurses, the head of the laundry and head of sanitation and waste management. This committee had written infection control standards for the hospital. Before the tsunami, the infection control committee had focused on 5 main issues; hand-washing facilities, waste management, cleaning services, transportation of food from the nutrition centre to the wards and personal protective equipment. The committee had not met since the tsunami. Waste prior to the tsunami was divided into medical (potentially infectious) and general waste. Medical waste was incinerated on site with general waste being trucked to the Final Disposal Site (open land-fill) in Banda Aceh. The on site incinerator had been used twice daily to incinerate medical waste before the tsunami but was severely damaged during the tsunami and was irreparable.

My work

I worked with an excellent Indonesian paramedic from International SOS and together we surveyed the wards, laboratories and emergency department assessing infection control issues. The main areas of focus were:

- the availability and function of hand washing facilities,
- the availability of personal protective equipment,
- separation, transportation and disposal of medical and non-medical waste,
- availability of sharps containers,
- isolation facilities and practices,
• cleaning and disinfection,
• sterilisation procedures,
• staff immunisations and
• exposure management and infection control training.

The survey of infection control issues in the hospital raised several issues. Hand basins were not operational in several wards including the only hand basin in the pulmonary (tuberculosis) ward. Isolation facilities were limited as the adult isolation ward had been closed after the tsunami and few other wards had available single rooms to isolation patients with infectious diseases. Infection control training for all staff including cleaners, waste management and medical staff was a priority, as many staff needed up-skilling in these areas. I assisted the International SOS staff to develop the theory and practical aspects of an infection control course for all staff to be run in May/June 2005.

Waste management issues were highlighted during the survey. Medical (potentially infectious) and non-medical waste were not separated at the hospital, trolleys for transportation of waste had been destroyed and all waste including medical waste and sharps were trucked to open land-fill in Banda Aceh. This was a dangerous practice with a high risk of injury or infection, as waste at the final waste disposal site was hand sorted with some materials openly burnt with the rest being deposited in open land fill.

Discussions were made with the hospital, Provincial Health Office, World Health Organisation, AusAid and KfW (a German aid organisation assisting the reconstruction of the hospital) and a draft proposal for the segregation, collection, transportation and disposal of waste at the Zainoel Abidin Hospital. The proposal included the construction of a new incinerator on the hospital grounds for disposal of medical waste from Zainoel Abidin with the option to incinerate waste from other hospitals in Banda Aceh, as part of the Provincial Health Office’s regional hospital waste plan. Along with the International SOS team, I implemented parts of the proposal with the distribution of over 30 medical waste bins lined with yellow infectious waste plastic bags and sharps containers to clinical areas throughout the hospital. Separate waste trolleys for medical and non-medical waste were ordered and on the job training in waste management commenced in April 2005 for all medical and non-medical staff.

The hospital infection control committee and future directions

The hospital infection control committee was reconvened and discussed the infection control survey and training issues. The committee was very enthusiastic to develop ongoing infection control training and a feedback system for staff about infection control issues. Priorities for the hospital were the availability of functional hand washing facilities in all clinical and laboratory areas, facilities for isolation of adults with infectious diseases, segregation and disposal of medical and non-medical waste and ongoing infection control training for all hospital staff. The committee will continue to review and implement the recommendations from the survey with assistance from the Interplast/International SOS team. One of the paramedics from the International SOS team has continued to work with the hospital infection control committee and hospital staff on infection control issues.

Upgrading infection control and waste management was a group effort. I wish to thank all the hard working staff at the Zainoel Abidin Hospital, the International SOS and Interplast teams for their assistance and contribution to the infection control and waste management survey at the hospital. Likewise, I would like to recognise and thank the hospital staff, AusAid, KfW and WHO staff for assistance with the waste management proposal for the hospital.

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Aftermath of the tsunami

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An outbreak of acute post-streptococcal glomerulonephritis in a remote Aboriginal community in 2005

Philippa Binns, CDC Darwin and MAE Program, NCEPH, ANU, Canberra; Peter Markey and Vicki Krause, CDC Darwin

Introduction

Acute post-streptococcal glomerulonephritis (APSGN) is an inflammatory disease of the kidneys following Group A streptococcal (GAS) infections. Clinical characteristics are oedema, hypertension and glomerular haematuria with reduced serum complement levels.1 Some evidence suggests that recurrent or persistent episodes of APSGN are associated with the high prevalence of end stage renal disease in Indigenous Australians.2,3 Sporadic cases of APSGN occur throughout Northern Territory (NT) with outbreaks every 5-7 years across the Top End.4 Targeted public health interventions are recommended to treat skin sores due to Group A Streptococcus (GAS), prevent further cases and halt outbreaks.5,6 In 2000, 7 communities in the Top End experienced outbreaks and implemented such interventions.7 From October 2004 an increase in notifications of APSGN in the NT was detected but cases appeared unrelated and from separate communities. Given this increase in sporadic cases, staff at the Centre for Disease Control (CDC) became concerned that the current outbreak case definition was not sufficiently sensitive to allow timely interventions. Therefore, in early January 2005, a more sensitive outbreak case definition was trialled. The definition was changed from 3 unrelated possible cases in 1 month,5 to 1 confirmed and 1 possible case in 3 weeks. The alternative recommended definition, 2 unrelated clinical cases of APSGN in a week,5 remained unchanged.

From 1 January 2005 the revised case definitions for diseases notifiable in the NT were also introduced. The diagnostic criteria for APSGN have not significantly changed from the previous definitions, however “subclinical cases” are now referred to as “probable cases” and “clinical cases” are now referred to as “possible cases” (see Table 1).

Table 1: Northern Territory Notifiable Disease System (NTNDS)

<table>
<thead>
<tr>
<th>Case Definition for Acute Post-streptococcal glomerulonephritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only confirmed and probable cases should be notified.</td>
</tr>
<tr>
<td>Possible cases should be reported to CDC but not entered into the NTNDS.</td>
</tr>
</tbody>
</table>

**Confirmed case**

A confirmed case requires either:

- Laboratory definitive evidence
- Laboratory suggestive evidence AND clinical evidence

**Probable case**

A probable case requires laboratory suggestive evidence only.

**Possible case**

A possible case requires clinical evidence only.

**Laboratory definitive evidence**

- Positive renal biopsy.

**Laboratory suggestive evidence**

- Glomerular haematuria on microscopy (RBC >10/μl)
- AND Evidence of recent streptococcal infection (positive Gp A Streptococcal culture from skin or throat, elevated ASO titre or Anti-DNAase B)
- AND Reduced C3 level <0.80 g/l.

**Clinical evidence**

At least 2 of: Facial oedema, >=2+ dipstick haematuria, hypertension, peripheral oedema.

**Notes:**

A “possible case” is the same as a “clinical case” in the NT “Guidelines for the Control of APSGN”. The guideline suggests that a community outbreak is defined as 2 unrelated clinical cases in one week (or 3 in a month). Hence it is important to receive notification of, record and respond to, “possible cases” but these should not be entered into the NTNDS (unless confirmed by laboratory evidence).

If all other criteria have been fulfilled but the only evidence of recent streptococcal infection is isolation of Group C or Group G Streptococci from skin or throat, this could be notified as a confirmed case after discussion with CDC or an infectious disease physician.
This paper describes a prolonged outbreak of APSGN in a remote Aboriginal community in 2005 that has experienced outbreaks in 1980, 1987, 1994 and 2000 and the interventions undertaken to limit further cases.

The Outbreak

The revised outbreak definition was fulfilled for one remote Aboriginal community when a possible case of APSGN was notified to CDC 18 days after an unrelated confirmed case. Over 18 weeks a total of 23 cases (18 confirmed and 5 possible) were detected in the community (Figure 1).

There was a biphasic nature to the outbreak. Stage 1 occurred in the first 8 weeks. After a break of 4 ½ weeks further cases were detected heralding Stage 2 of the outbreak. Cyclone Ingrid occurred during week 10.

All cases were children aged 5-14 years, except the last, who was a woman aged 46 years.

For the age group 3-15 years, the attack rate was 3.8% during Stage 1 and 3.2% during Stage 2. However, as the whole 18 weeks were considered a single ongoing outbreak, interrupted but not halted by the Stage 1 intervention, the attack rate for this age group was 7.0%.

The Interventions

For Stage 1, household and other close contacts were screened for scabies, sores, facial and peripheral oedema, haematuria and hypertension according to NT CDC Guidelines. All contacts aged 3-15 years were treated with intramuscular benzathine penicillin regardless of skin status. Other contacts aged less than 3 or greater than 15 years were only treated if they had sores.

When the outbreak case definition was fulfilled community health centre staff, in association with staff from CDC, Menzies School of Health Research and the community crèche and schools implemented a community intervention in line with the NT CDC Guidelines. Children aged 0-15 years were screened at the school, crèche, health centre or out in the community for facial or peripheral oedema, sores and scabies. If sores or scabies were identified parents or carers were contacted for consent to treat the child. Sores were treated with intramuscular benzathine penicillin or roxithromycin if allergic to penicillin. If scabies were present the family was supplied with permethrin cream for treatment of all household members.

When Stage 2 occurred, signifying ongoing transmission of nephritogenic GAS and apparent ineffectiveness of the intervention at Stage 1, it was agreed that all contacts, regardless of age or
skin status, would be screened and treated with intramuscular penicillin. In addition, the definition of a “contact” was interpreted more broadly; playmates and people other than household members who spent a lot of time and had some physical contact with the case were also considered as close contacts. The Stage 2 community intervention otherwise had the same target population (0-15 year olds), screening and treatment protocol.

Population lists of children aged 0-15 years were collated from the clinic health information system, school attendance lists and local community knowledge.

Results

Contact tracing detected 4 of the 12 cases during Stage 1 and 3 of the 11 cases during Stage 2. The broader contact definition and intervention at Stage 2 resulted in more people being screened and treated as contacts at this stage (Table 2).

For both interventions 98% of the target population were screened by 2 weeks (Table 3). For the target population (0-15 years) the prevalence of sores fell from 46% at Stage 1 to 36% at Stage 2 (p<0.005). The proportion of children with sores who received treatment were similar at both interventions (Table 4). The timeliness of treatment at the second intervention may have been facilitated by the lesser number of children requiring treatment.

The prevalence of scabies fell from 23% at Stage 1 to 10% at Stage 2 (p<0.005) in the age group 0-15 years. The proportion treated were similar at both interventions (Table 5).

Table 2. Contacts administered penicillin at Stage 1 and Stage 2 by age group

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. treated/No. contacts (%)</td>
<td>No. treated/No. contacts (%)</td>
</tr>
<tr>
<td>0-2</td>
<td>5/8 62%</td>
<td>16/16 100%</td>
</tr>
<tr>
<td>3-15</td>
<td>32/32 100%</td>
<td>61/65 95%</td>
</tr>
<tr>
<td>&gt;15</td>
<td>Not adequately recorded</td>
<td>29/31 94%</td>
</tr>
</tbody>
</table>

Table 3. Eligible children screened at two weeks of Stage 1 and Stage 2 interventions

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. screened (%)</td>
<td>No. males screened (%)</td>
</tr>
<tr>
<td></td>
<td>No. screened (%)</td>
<td>No. males screened (%)</td>
</tr>
<tr>
<td>0-4</td>
<td>148 (95%) 75 (51%)</td>
<td>144 (98%) 74 (51%)</td>
</tr>
<tr>
<td>5-15</td>
<td>249 (100%) 112 (45%)</td>
<td>250 (97%) 118 (47%)</td>
</tr>
<tr>
<td>Target 0-15</td>
<td>397 (98%) 187 (47%)</td>
<td>394 (98%) 192 (49%)</td>
</tr>
</tbody>
</table>

Table 4. Number of children with sores treated out of number of children with sores identified at Stage 1 and Stage 2, by week of intervention

Table 5. Number of children delivered permethrin (scabies treatment) out of number of children with scabies by end of each stage

<table>
<thead>
<tr>
<th>Week of intervention</th>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First week</td>
<td>132/161 (82%)</td>
<td>96/105 (91%)</td>
</tr>
<tr>
<td>Second week</td>
<td>176/182 (97%)</td>
<td>135/139 (97%)</td>
</tr>
<tr>
<td>Third week</td>
<td>178/182 (98%)</td>
<td>136/139 (98%)</td>
</tr>
</tbody>
</table>

Discussion

This outbreak of 23 cases of APSGN in a remote Aboriginal community was marked by its prolonged, biphasic nature and resistance to thorough implementation of guideline based public health interventions. The timeliness of the intervention was assisted by trialling the more sensitive provisional outbreak case definition that detected the outbreak by 23 January 2005 compared with 27 January 2005, at the earliest, using the established and recommended definition.

The period between streptococcal infection and development of APSGN is 1-4 weeks with an average of 10 days. However this may be longer after streptococcal skin infections (3-6 weeks) or shorter after streptococcal throat infections (1-2 weeks). The Stage 1 intervention, targeting skin sores as the source of nephritogenic streptococci,
should have stopped cases presenting between weeks 10 and 13 (3-6 weeks post intervention) if it had been effective.

The Guidelines for the Control of Acute Post-Streptococcal Glomerulonephritis produced in 1997 by CDC were based on conclusions from observational studies in the Top End and APSGN outbreaks reported in the literature. Targeted intervention was recommended in 1997, retained in the revision in 2002 and used for the interventions described here. This recommendation assumes that sores are a more significant source of transmission of GAS than intact skin colonisation, throat carriage or pharyngitis. It also requires fewer resources and removes the ethical dilemma of administering a painful injection with possible complications to healthy people.

Determinants of outbreak duration are multifactorial incorporating environmental, host and bacterial factors. In considering this triad, hypotheses for the ongoing outbreak in this community would include ongoing circulation of nephritogenic strains of GAS from untreated skin or throat infections, asymptomatic skin or throat carriage, reintroduction of nephritogenic strains after the intervention or a change in the nephritogenic strain to which people do not have immunity. Poor housing conditions, hygiene and overcrowding would contribute to facilitating transmission. Residents also believed that the wet and crowded conditions during Cyclone Ingrid that occurred between Stage 1 and Stage 2 contributed to crowding, hygiene problems and circulation of the bacteria. Penicillin resistance or loss of pharmacological bioactivity due to product degradation in adverse conditions are other possible, but less likely, reasons for the continuation of the outbreak. Further analysis of the data from this outbreak will contribute to the revision of the NT CDC Guidelines in the future.

It is essential to effectively convey to the community the many possible reasons why an outbreak may be ongoing. Likewise public health advisers need to continue to investigate such outbreaks, evaluate interventions and regularly consider the evidence to recommend such interventions. Understandably it can be disheartening to see continuing cases in the face of a thorough and timely intervention that required significant time and energy from the health, crèche and school staff, as well as cooperation from parents and children to be screened and treated with a painful injection. Interventions for sustainable long-term improvements in skin health are required. With community consultation and leadership, it is essential that environmental health, housing and hygiene programs be integrated with these interventions.

References
Acute post streptococcal glomerulonephritis in a remote community

Shelly Williams, CDC Darwin and MAE Program, NCEPH, ANU, Canberra & Peter Markey, CDC

Introduction

Outbreaks of acute post streptococcal glomerulonephritis (APSGN) occur in the Northern Territory (NT) about every 5 to 7 years. Since August 2004, several outbreaks have been detected in communities across the Top End. In April 2005, the notification of 3 cases of APSGN in 1 month from a particular community was recognised as meeting the definition of an outbreak. A previous outbreak had occurred in this community in September 2004. The community and its outstations, have a population of 2600 including between 900 and 1000 children under 16 years of age. This report describes the outbreak and subsequent interventions.

The Intervention

The NT guidelines for APSGN recommend anti-streptococcal treatment of all contacts in the 3-15 year age group and any other contacts with skin sores. Any scabies should also be treated. In the setting of an outbreak, a community-wide screening for skin sores, scabies and oedema should occur in those aged 0-15 years. Following recognition of the outbreak in this community local health clinic staff undertook community consultation and permission for screening was granted in 3 of the 4 camps in the community. Four CDC staff members travelled to the community to assist. Screening targeted all children under 16 years but the focus was on direct contacts of cases, their playmates and those living in the vicinity. For the 2 days that CDC staff were in the community, they moved from house to house assisting clinic staff in the screening for skin sores, scabies and oedema. Household and close contacts of cases were also screened for facial and peripheral oedema, haematuria and hypertension. Due to the difficulty in distinguishing contacts from other community members many children with skin sores who were not contacts were also checked for haematuria.

Lycear was given to families of all children found to have scabies and all contacts aged 3-15 years were treated with LA bicillin regardless of the presence of skin sores. Other household or regular contacts were given LA bicillin if they had skin sores. Local clinic staff continued extended contact tracing until no further cases arose.

The majority of families gave their consent to treat the children seen with many parents already aware of the risk to their children.

A population list could not be obtained for the community. It was impossible to distinguish between those residing in the community and its outstations because of frequent movement between the community and its outstations. The health clinic list was the best available and individual identification for the purpose of tracing and screening was accomplished using this and local knowledge of people.

Results

From mid-February to mid-April 2005, 1 probable and 8 confirmed cases of APSGN were notified from the community (see previous article in this Bulletin for case definitions). Two cases were detected through contact tracing. The community-wide intervention began in the first week of April (Figure 1).

Figure 1. Cases of APSGN Feb 14 to 29 Apr 2005

All cases were Aboriginal, with a similar number of males and females affected and the peak age group was 8 years (range 3-12 years) as seen in Figure 2.

The clinical and laboratory findings in the 9 cases are illustrated in Figures 3 and 4 respectively. Macroscopic haematuria was present in 8 of 9 cases with skin sores the next
most frequent finding. No case was associated with a documented sore throat.

There were 2 cases who did not have haematuria on microscopy (Figure 4); this was because the test was not ordered or the result was unavailable. Evidence of recent streptococcal infection was found in all cases with either an elevated anti-DNAase B and/or elevated anti-streptolysin (ASO) titre (Figure 4). Swabs were taken of skin or throat or both in 5 of 9 cases returning only 1 positive for Group A streptococcus.

The community wide screen and contact tracing included a total of 217 people. Of these, 11 were adults and 204 were between the ages of 0 and 15. This was approximately 20% of the total 0-15 year old age group in the community. Contact screening and treatment was conducted for 89 of the 217 (41%). The community screen occurred in the context of school holidays and a funeral; thus many families were away or families from other communities were visiting.

Of those screened, aged between 0-15 years, 68 had scabies (35%) and 81 had recently healed or new sores (41%). The following graph (Figure 5) represents the data available from the outbreak that took place in September 2004 in the same community.2 The prevalence of scabies in the screened group went from 11% to 35% in 7 months (difference in proportions = 0.24; p<0.05, 95% CI 0.17-0.31). The prevalence of skin sores in the screened group went from 34% to 41% in the same 7 months (difference in proportions= 0.07; p=0.08, 95% CI –0.01 to 0.16).

Interestingly, in the 34 children who were not contacts but were screened for haematuria, 11 (32%) had haematuria of 2+ or more on dipstick. Menstruation was the likely reason for 2 of these and the remainder had their blood pressure taken on site and/or were asked to attend the clinic for follow-up. None were cases.

No further cases were notified after 11 April, 2005.
Discussion

Implementation of a community wide screen with the aim of 100% coverage in a community such as this was logistically difficult despite the enthusiasm of clinic staff and willingness of many community members to participate. Difficulties included:

- resource and time allocation of both clinic and CDC staff in the presence of competing priorities;
- gaining access to certain groups within the community, possibly due to a lack of experience with APSGN;
- a highly mobile population moving between the community, its outstations and other communities, particularly during school holidays; and
- the identification of individuals relying heavily on local knowledge of the community as the people have many names that may differ from that recorded on a list.

The experience in this community also highlighted the issue of where to draw the line between contacts of cases and screening. In a setting where very large groups socialise regularly and housing arrangements may vary considerably from day to day this is extremely difficult.

In hindsight, the outbreak could have been detected early in March or Week 4 rather than Week 8 in the above epidemiology curve (Figure 1). A new outbreak definition, designed to detect outbreaks earlier, defines an outbreak as 2 unrelated clinical cases in 1 week or 3 in a month. This must include 1 confirmed case but the rest may be possible cases, providing a faster prompt to action.

The intervention in September of 2004 at the time halted APSGN in the community. Unfortunately, despite a community intervention including 333 people, the proportion of those found with scabies has increased 3-fold while those with skin sores has increased by 1.2. The measured increase in prevalence of scabies and sores may reflect a true increase due to:

- seasonal variations between September (the end of the dry) and April (the end of the wet);
- persistent spread from an external reservoir of infection; for instance in those coming into the community from outstations or visiting (or in the case of scabies, in bedding);

Or it may be due to study bias such as:

- observer bias, for example due to the 2 groups conducting the screening being different; and/or
- selection bias, for example healthy volunteer effect or variation in gaining access to part of the community.

The April 2005 repeat intervention has been successful in halting APSGN to date. It remains to be seen whether the extended contact tracing, in this case 41% of all those screened compared with 10% in September 2004, will affect the duration of this respite from APSGN for the community.

References:

***************
Leprosy in the Northern Territory (NT): A descriptive epidemiological study of all notified cases from 1991 to 2004
Clif van der Oest, Merv Fairley, Lesley Scott, Vicki Krause, Nathan Zweck. CDC, Darwin

Background

Leprosy in Australia is now rarely diagnosed with the very infrequent cases notified mainly from Indigenous and foreign-born populations. In the NT, leprosy incidence has been declining rapidly since the 1960s. During the period 1970-1974 to 1995-1999, there has been a 95% reduction in the rate per 100,000 population (i.e. 19.0 reduced to 0.97).1 The declining incidence of leprosy however often leads to its reduced recognition and subsequent delays in diagnosis and treatment.2 For leprosy the length of time from the onset of symptoms to diagnosis is now, on average, between 2 and 3 years.3, 4

Objective

To determine the changing epidemiology, time to diagnosis, and disability at diagnosis of leprosy in the NT over the time period from 1991 to 2004.

Methods

A descriptive study of notified cases of leprosy in the NT from 1991 to 2004 was undertaken. Data collected included age, sex, ethnicity, residence, health care provider encounters, classification of leprosy, and length of time from the onset of symptoms to diagnosis. Three time periods were studied to determine if the time to diagnosis, and the degree of disease-related disability at diagnosis had changed over the period from 1991 to 2004.

Results

- 17 cases were identified with 94 % living in the Top End of the NT. (See Figure 1). The male: female ratio of cases was 1.8:1.0, the Indigenous: non-Indigenous ratio was 5.7:1.0, and the mean age was 37.6 years (range 16.0 to 72.6 years). The most common classification of leprosy seen was TT leprosy (35% of cases), followed by LL leprosy (23% of cases). The percentage of cases with multi-bacillary leprosy was 60% for the 1991-1994 period, 55% for the 1995-1999 period, and 66% for the 2000-2004 period. (See details Table 1). 24 % of all cases presented with non-healing ulcers at diagnosis.
- The mean number of medical encounters with leprosy symptoms prior to the diagnosis being considered was 5.8 for the 1995-1999 period.

Figure 1. Leprosy cases in the NT: 1991-2004

Figure 2. Borderline lepromatous leprosy (BL)
Table 1: Classification of leprosy cases by clinical examination and biopsy

<table>
<thead>
<tr>
<th>Leprosy Classification</th>
<th>Number</th>
<th>Laboratory Criteria</th>
<th>Clinical Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Compatible Histology n (%)</td>
<td>Skin Smear AFB Pos n (%)</td>
</tr>
<tr>
<td>TT</td>
<td>6</td>
<td>5 (83)</td>
<td>1 (16)</td>
</tr>
<tr>
<td>BT</td>
<td>2</td>
<td>2 (100)</td>
<td>.</td>
</tr>
<tr>
<td>BB</td>
<td>2</td>
<td>2 (100)</td>
<td>1 (50)</td>
</tr>
<tr>
<td>BL</td>
<td>3</td>
<td>3 (100)</td>
<td>2 (67)</td>
</tr>
<tr>
<td>LL</td>
<td>4</td>
<td>4 (100)</td>
<td>3 (75)</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Time to diagnosis, number of medical encounters and disability grading: 1991 - 2004

<table>
<thead>
<tr>
<th>Time Period</th>
<th>No (n)</th>
<th>Median Time from First Presentation to Formal Diagnosis (months)</th>
<th>MB %*</th>
<th>Mean Number of Leprosy related Medical Encounters prior to Diagnosis (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991 - 1994</td>
<td>5</td>
<td>12 (Range = 5 – 36)</td>
<td>60%</td>
<td>NA*</td>
</tr>
<tr>
<td>1995 - 1999</td>
<td>9</td>
<td>24 (Range = 4 – 121)</td>
<td>55%</td>
<td>5.8</td>
</tr>
<tr>
<td>2000 - 2004</td>
<td>3</td>
<td>25 (Range = 12 – 36)</td>
<td>66%</td>
<td>7.5</td>
</tr>
</tbody>
</table>

* Data Not Available
** By WHO classification (WHO Expert Committee Leprosy 1997)

Table 3: WHO grading of leprosy related disability

<table>
<thead>
<tr>
<th>Grading*</th>
<th>Hands and Feet</th>
<th>Eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No anaesthesia, no visible deformity or damage</td>
<td>No eye problems due to leprosy; no evidence of visual loss</td>
</tr>
<tr>
<td>1</td>
<td>Anaesthesia present, but no visible deformity or damage**</td>
<td>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)</td>
</tr>
<tr>
<td>2</td>
<td>Visible deformity or damage***</td>
<td>Severe visual impairment (visual acuity worse than 6/60; unable to count fingers at 6 metres) or iridocyclitis or corneal opacities</td>
</tr>
</tbody>
</table>

* 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

Conclusions

- In the NT, leprosy though declining in incidence still occurs mainly in the Indigenous population.
- A delay in the diagnosis and subsequent treatment of leprosy in the NT may be due to a reduced suspicion of the disease by primary or other health care practitioners.
- Although the time delay to diagnosis has increased over the period of observation, this is not explained by a significant increase in the proportion with multi-bacillary disease.
The increased delay to diagnosis has not resulted in an increased degree of disability at diagnosis.

The disease related disability at diagnosis as measured by the WHO Grade 2 disability proportions should continue to be monitored as a surrogate for timeliness of diagnosis.

- Leprosy recognition needs to be included in orientation training for remote community health personnel.

Photographs of clinical cases of leprosy are shown in figures 2 and 3.

References

4. Lockwood DN, Reid AJ. ‘The Diagnosis of Leprosy is Delayed in the United Kingdom.’ QJM 2001 Apr; 94 (4): 207-12.

***************

New Commonwealth funding for hepatitis A vaccine for Indigenous children

On 28th June it was announced that the Commonwealth Government would provide funding for hepatitis A vaccine for Indigenous children in the NT, WA, Queensland and SA from 1st November this year under the National Immunisation Program.

This program will commence at the same time as the Government’s new free national varicella vaccination program and the replacement of oral polio vaccine (OPV) with injectable inactivated polio vaccine (IPV).

***************
The Public and Environmental Health Bill 2005

The Public and Environmental Health Bill 2005 was proposed to be tabled in the May sittings of Parliament 2005. The completed Bill is with the Minister’s office at present.

Due to the extent and scope of the regulations under this Act, old regulations under the current Public Health Act will be retained in the new Act until such time as they can be repealed and replaced by Standards for public health risk activities declared by the Minister, which are “prescribed activities”. This will result in a net decrease in the current number of various public health regulations. Instead, under the new Act, there will be more outcome based technical documents adopted to control prescribed activities, which will invariably become Standards.

The formal adoption of Standards will be preceded by Guidelines, which are currently being written for many of the areas identified in the scope of the Bill. When these Guidelines are completed, they will be subject to public consultation and comment for a trial period, before being submitted to the Minister for formal adoption as Standards.

The areas currently under development are:

- Guidelines for Commercial Visitor Accommodation
- Infection Control Guidelines; and
- Swimming Pool Guidelines

Further Guidelines are being proposed to cover areas such as the keeping of animals, wastewater management and the sale of second hand clothes.

For further information please contact Alexandra Mullins, Senior Policy Officer Environmental Health on 8922 7469.

Medicines and Poisons Legislation

It is proposed that new Medicines and Poisons legislation be developed to replace the current outdated Poisons and Dangerous Drugs Act. The first stage is the development of a discussion paper which will be circulated to key stakeholders and interested parties. The discussion paper is nearing completion, with circulation expected later in June 2005.

The need to make changes to the current Act to implement recommendations of the National Competition Policy (NCP) Review into Drugs, Poisons and Controlled Substances Legislation (Galbally Review) has given the NT an ideal opportunity to look at medicines and poisons legislation as a whole and address specific local issues.

NCP Review recommendations include:

1. List the objectives of the legislation at the beginning of the Act (Recommendation 1). These are – To promote and protect public health and safety by minimising:
   - Accidental poisoning
   - Deliberate poisoning
   - Medicinal misadventures; and
   - Diversion for abuse or manufacture of substances of abuse.

2. That a requirement be included in medicines and poisons legislation that those supplying medicines (including clinical samples), provide the consumer with adequate instructions including labelling with directions for use, so that the consumer can use the medicines safely and effectively (Recommendation 12). There is currently no legal requirement in the NT for any medicines (even S4 & S8 prescription medicines) to be labelled with instructions for the consumer, so this will greatly improve information available to patients and carers in many cases.

3. That sale of unscheduled medicines be allowed via vending machines (provided packs contain no more than 2 adult doses and machines are presented and located in such a way that makes unsupervised access by children unlikely), but that sale of scheduled medicines via vending machines continue to be prohibited. (Recommendation 8). Examples of products which may be available...
from vending machines in the future are Nurofen (ibuprofen), Mylanta and Aspirin tablets.

4. That licensed poisons sellers (i.e. remote area stores licensed to sell Schedule 2 medicines) be permitted to sell all medicines containing Schedule 2 substances, unless that substance is specifically listed in the national standard as only being suitable for sale from a pharmacy due to risk of diversion, poisoning or medicinal misadventure (Recommendation 15). Examples of products which may be restricted are cough and cold products containing pseudoephedrine, a precursor in the manufacture of illicit amphetamine.

Local issues include the need to give a larger group of non-medical health practitioners standing under medicines and poisons legislation, so that they may in the future supply scheduled medicines to patients (as appropriate to their field of practice and competency which is determined by the Boards). Health practitioners seeking extended practice rights currently include optometrists and nurse practitioners.

Another local issue is the adequacy of controls on the domestic and commercial pest control operators, and whether control under other legislation would be more helpful to this industry and the public.

At the end of the day, the upgraded legislation will seek to provide an appropriate balance between legislative control, regulatory powers of Health Professional Boards and the Codes of Practice and Guidelines that influence manufacturers, wholesalers, retailers, health practitioners and other key industry players.

For further information please contact Glenn Hoffmann, Senior Project Officer-Poisons Control Section on 8922 7231 or Helgi Stone-Chief Poisons Inspector on 89227341.

The Radiation Protection Act 2004

The goal of radiation protection is to protect people from the harmful effects of radiation. Particular groups of people selected for protection are healthcare personnel, members of the public and patients. Natural, background radiation is excluded from radiation dose determination.

The Radiation Protection Act 2004 was passed in the Ninth Assembly on 31 March 2004. Before the Act commences, regulations must be written. The Act seeks to protect everyone and the environment and will include all radiation sources if and when deemed appropriate, including background radiation levels. The Act embraces the most recent developments in the system of radiation protection and is based on national and international research and best practice. The Act also contains a number of radiation protection controls including licensing of people using radioactive sources and their compliance with standards, codes of practice and guidelines. It was written to align the Northern Territory with current recommendations and standards in a national framework. This framework is described in a book called the National Directory of Radiation Protection, edition 1.0.

Drafting Instructions for proposed Radiation Protection Regulations under the Act are currently being prepared and will involve targeted consultation with key stakeholders over the next few months.

For further information please contact Russell Robinson, Acting/Manager – Radiation Protection on 89227489.

***************
This interim document provides a detailed guide for the Australian response to a pandemic influenza threat. The plan targets the wide range of people who will be involved in planning and responding to an influenza pandemic: health planners, public and clinical health care providers, border workers, state and territory health departments, essential service providers, and those involved in the media and communications.

The following documents can be downloaded from this site:

- **Australian Management Plan for Pandemic Influenza - June 2005 (HTML version)**
- **Australian Management Plan for Pandemic Influenza - June 2005 (PDF 1111 KB)**
- **Australian Management Plan for Pandemic Influenza - Frequently Asked Questions (HTML version)**
- **Australian Management Plan for Pandemic Influenza - Frequently Asked Questions (PDF 274 KB)**

**About Avian Influenza**

The World Health Organization has reported an outbreak of Avian influenza in birds in several countries in Asia. Avian influenza is a contagious viral infection that can affect all species of birds, and can cause disease in humans on rare occasions.

Avian influenza viruses (of which there are 15 types) infect wild bird populations, particularly water birds, typically without causing symptoms. The virus spreads through bird faeces and contaminated water or dust. When avian influenza spreads to poultry or other birds, it can cause more severe disease. Outbreaks of avian influenza have been recognised in poultry flocks in most countries of the world for many years.

There are several types of avian influenza. The strain that causes the greatest number of deaths is called highly pathogenic avian influenza (HPAI). The HPAI strain involved in the current outbreak is called H5N1. It was first recognised in 1997 in Hong Kong. At that time millions of chickens were slaughtered after the virus was found to cause disease in people exposed to infected birds. 18 people were known to have been affected, with 6 deaths. Fortunately, the virus was not able to spread from person to person, and the outbreak was halted in Hong Kong by slaughter of the chickens.

The strain of H5N1 that has recently re-emerged in many Asian countries is a slightly altered form of the 1997 virus. Millions of poultry have been slaughtered. A small number of human cases and deaths have been confirmed in people who had close contact with chickens. The Department of Health and Ageing is closely monitoring the avian influenza situation.

**A sample of frequently asked questions about Avian Influenza or Bird flu from website:**

Q. What is avian influenza?

**Answer:**
Avian influenza is an infectious disease of birds caused by type A strains of the influenza virus. All birds appear to be susceptible, though some species are more resistant to infection than others. It is also called bird flu.

Q. Is avian influenza (bird flu) in Australia?

**Answer:**
No. There are no current reports of avian influenza (bird flu), either in birds or humans, in Australia.

Avian influenza has been in Australia in the past and was successfully eradicated from poultry. The last reported case was in 1997 in Tamworth, NSW. Prior outbreaks occurred in commercial poultry farms in Victoria (1976, 1985 and 1992) and Queensland (1994).

Q. Can avian influenza affect people?

**Answer:**
Yes there are a few cases of this disease affecting people overseas. These people had very close contact with sick birds.

Q. What are the symptoms of avian influenza in people?
Tennant Creek influenza vaccination program 2005

Molly Cobden, CDC Tennant Creek

As a result of the departure of the GP in the town of Tennant Creek (TCK) and with no Infection Control Nurse in the TCK hospital, the hospital staff and the town people had difficulty in obtaining their yearly flu vaccination. The TCK hospital and Anyinginyi (Aboriginal Congress) were hard pressed to provide such a service.

Due to the recruitment of a 2nd Public Health Nurse to the area, CDC was able to instigate a program that would allow as many people as possible to take advantage of an influenza vaccination.

Local Government Departments (Police, St Johns, Fire Station, Centrelink, Department of Community Services, Department of Infrastructure, Planning and Environment), hospital staff and other major organizations in TCK (banks, council persons, supermarket staff etc) where large numbers of people gather with the potential to pass germs, were offered the services of the Public Health Nurse to give education and vaccination sessions.

The program was welcomed enthusiastically by the majority of targeted departments and organisations. Times were set aside to give the Public Health Nurses the opportunity to provide maximum service in the minimum time frame. For many departments and organisations this meant allowing employees to leave the work place as a group, to attend for vaccination at the public health building at the hospital, during work hours.

To accommodate the volunteer services, to get the largest number of people vaccinated in the shortest and most convenient time frame, several out of hours education and vaccination sessions were offered and accepted.

Education and vaccination sessions were also provided for all hospital staff, on site, at varied designated times to accommodate the shift workers and all other personnel.

Encouragement was given at all sessions, to alert the ‘at risk’ people in the area (those entitled to free vaccination due to their age or health risks) who were having difficulty accessing a clinic or doctor for vaccination, to contact the Public Health Nurse at the hospital or Anyinginyi Congress, to arrange a suitable time to present for their vaccination.

A unified approach from clinical services in TCK area, including Anyinginyi Congress ensured that the non-indigenous people of the town, Pulka Pulkka Karri Nursing Home and other local indigenous groups, were being fully covered.

At the completion of the program, after a 3-week period, the Public Health Nurses had vaccinated 151 persons, with several organizations still arranging for their staff to use the service.
Recommended water receptacle treatment for exotic mosquitoes on foreign fishing vessels arriving in Australia

Matt Shortus & Peter Whelan, Medical Entomology Branch, CDC, Darwin

Introduction

Exotic *Aedes* mosquito larvae are commonly found on overseas vessels arriving in the Northern Territory (NT) in equipment or cargo that can hold water. This applies especially to foreign fishing vessels (FFV) from Indonesia, which are commonly intercepted in Australian waters by the Royal Australian Navy (RAN) and detained in Darwin or Gove harbours. The drinking water storage receptacles aboard these vessels are often found to contain *Aedes aegypti* and *Aedes albopictus* larvae.

Drinking water storage receptacles such as 200 litre drums and jerry cans are the most commonly detected type of container to carry exotic mosquito pupae, larvae and eggs into the NT. *Aedes* species eggs are desiccation resistant and can often be present in either water holding or dry receptacles. The eggs are laid just above the water level on the inner surfaces of receptacles. Approved procedures to treat drinking water receptacles aboard these vessels are often found to contain *Aedes aegypti* and *Aedes albopictus* larvae.

As part of the recommended chlorination procedures, it is preferable that any water holding receptacles are emptied and treated with a chlorine spray to kill possible exotic *Aedes* eggs on inner surfaces. However, some drinking water receptacles aboard FFV’s are welded or attached to the vessel, and RAN boarding parties have reported difficulty in tipping the water out of certain types of receptacles.

The following recommendations have been developed are in response to requests by the RAN and AQIS for suitable container treatment protocols for drinking water receptacles aboard FFV’s that are attached and unable to be tipped out. These recommendations will also apply to refugee vessels and general vessels from overseas that carry cargo or receptacles that hold water. The recommendations are for chlorination procedures to treat drinking water receptacles containing, or likely to contain exotic mosquito pupae, larvae and/or eggs.

Recommendations

There are 2 possible control procedures that can be considered in this situation:

**Recommendation 1: Pump out receptacle contents, and surface treat for mosquito eggs.**

The preferred procedure for the treatment of receptacles attached to vessels is to pump or siphon out the stored water into the sea and to spray the inner receptacle surfaces with a chlorine solution to kill any eggs that may be present. Any viable mosquito larvae or pupae would be killed by disposal into the sea. The treatment of mosquito eggs with a 1% active ingredient (AI) chlorine spray solution for 5 seconds has been shown to effectively kill *Aedes aegypti* eggs. The solution should be sprayed onto the surface to the point of run off so that the surface remains wet for at least 5 seconds. It is recommended that the receptacles should not be rinsed for 5 minutes after spraying to maximise the chlorination treatment. This spray method has been shown to be successful in prevention of subsequent hatchings of mosquito eggs from animal drinking water receptacles during the Dengue Mosquito Eradication Program being conducted in Tennant Creek.

There are 4 different formulations of swimming pool chlorine or household bleach that could be used to achieve the recommended 1% (AI) solution (Table 1). The solution could be applied on board using a hand held manual pressure spray unit. A hand held spray unit, sufficient quantities of a suitable chlorine formulation, and a siphon or pump, should be part of routine sea going equipment on all AQIS or RAN vessels.

If the drinking water receptacle is already empty when the vessel is intercepted, a chlorine spray should still be applied to the inner surfaces. *Aedes* eggs can remain viable for up to 12
Table 1: Chlorination solution for surface treatment of dry receptacles (≥ 5 seconds)

<table>
<thead>
<tr>
<th>Chlorine Formulation</th>
<th>Water Volume to make Solution</th>
<th>Amount of Pool Chlorine/Bleach</th>
<th>Active Ingredient</th>
<th>Concentration of Chlorine in Spray</th>
</tr>
</thead>
<tbody>
<tr>
<td>granular pool chlorine</td>
<td>65 L</td>
<td>1 kg</td>
<td>650 g</td>
<td>1%</td>
</tr>
<tr>
<td>(650g/kg calcium hypochlorite)</td>
<td>1 L</td>
<td>15.4 g</td>
<td>10 g</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>5 L</td>
<td>77 g</td>
<td>50 g</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>154 g</td>
<td>100 g</td>
<td>1%</td>
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<tr>
<td>granular pool chlorine</td>
<td>70 L</td>
<td>1 kg</td>
<td>700 g</td>
<td>1%</td>
</tr>
<tr>
<td>(700g/kg calcium hypochlorite)</td>
<td>1 L</td>
<td>14.3 g</td>
<td>10 g</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>5 L</td>
<td>71.5 g</td>
<td>50 g</td>
<td>1%</td>
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<tr>
<td></td>
<td>10 L</td>
<td>143 g</td>
<td>100 g</td>
<td>1%</td>
</tr>
<tr>
<td>liquid pool chlorine</td>
<td>15 L</td>
<td>1 kg ≈ 1L</td>
<td>150 g</td>
<td>1%</td>
</tr>
<tr>
<td>(150 g/kg benzalkonium chloride)</td>
<td>1 L</td>
<td>66.7 g ≈ 66.7 mL</td>
<td>10 g</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>5 L</td>
<td>335 g ≈ 334 mL</td>
<td>50 g</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>667 g ≈ 667 mL</td>
<td>100 g</td>
<td>1%</td>
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<tr>
<td>liquid bleach</td>
<td>4 L</td>
<td>1 L</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>(4 % sodium hypochlorite)</td>
<td>1 L</td>
<td>0.25 L = 250 mL</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>5 L</td>
<td>1.25 L</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>2.5 L</td>
<td>4%</td>
<td>1%</td>
</tr>
</tbody>
</table>

months, and will hatch if the untreated eggs are flooded. It is important to make sure that all drinking water receptacles that hold, or previously held water, have all inner surfaces treated with chlorine spray. Particular attention should be given to the inner receptacle surfaces around the normal full water line level, and below to the bottom of the receptacle to treat eggs that may have been laid at low water levels.

**Recommendation 2: Treatment of drinking water in receptacles.**

If any drinking water receptacles are to be treated without emptying, the water will have to be treated with sufficient chlorine, and any inner surfaces within the receptacle will also need treatment. The water should have a chlorine formulation added so that at least a 0.33% (AI) chlorine concentration is achieved for the whole volume of water. This involves an accurate estimation of the water volume in the receptacle, and the subsequent addition of the required amount of chlorine to the water in the receptacle. The chlorine solution should be left in place for a period of no less than 30 minutes (refer to Table 2). (It is possible that larvae pupae or eggs could be killed in much less than 30 minutes and reduced AI solution of chlorine and reduced holding times could be used. However these are interim recommendations until further investigations are carried out).

In addition to treating the water, any exposed surfaces above the water line of the receptacles will need to be treated for eggs. The procedure to treat these surfaces would need to be the same as discussed in recommendation 1.

Amounts of the 4 formulations of swimming pool chlorine or household bleach needed to achieve the recommended 0.33% (AI) solution in water in receptacles are shown in Table 2. The disadvantage of this recommendation is that relatively large amounts of chlorine need to be carried at sea and used to undertake the treatment of any large drinking water receptacles. This can pose additional safety issues with the storage and use of chlorine.

The maximum value for chlorine for safe levels of chlorine in drinking water in Australia is 5mg/L (or 5ppm). Effective mosquito larval, pupae and egg control measures, using the recommended chlorine levels in Table 2, would far exceed this value. This means that the treated water in the receptacles would need to be emptied completely and the receptacles rinsed before being used again as a drinking water receptacle. Using the 1% spray to treat an
Table 2: Chlorination solution for treatment of receptacles holding water (≥ 30 minutes)

<table>
<thead>
<tr>
<th>Chlorine Formulation</th>
<th>Water Volume in Receptacle</th>
<th>Amount of Pool Chlorine/Bleach</th>
<th>Active Ingredient</th>
<th>Concentration of Chlorine in Water Receptacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>granular pool chlorine (650g/kg calcium hypochlorite)</td>
<td>20 L</td>
<td>100 g</td>
<td>65 g</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>50 g</td>
<td>32.5 g</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>100 L</td>
<td>500 g</td>
<td>325 g</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>20 L</td>
<td>100 g</td>
<td>70 g</td>
<td>0.35%</td>
</tr>
<tr>
<td>granular pool chlorine (700g/kg calcium hypochlorite)</td>
<td>10 L</td>
<td>50 g</td>
<td>35 g</td>
<td>0.35%</td>
</tr>
<tr>
<td></td>
<td>100 L</td>
<td>500 g</td>
<td>350 g</td>
<td>0.35%</td>
</tr>
<tr>
<td>liquid pool chlorine (150 g/kg benzalkonium chloride)</td>
<td>5 L</td>
<td>100 g ≈ 100 mL</td>
<td>15 g</td>
<td>0.30%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>200 g ≈ 200 mL</td>
<td>30 g</td>
<td>0.30%</td>
</tr>
<tr>
<td></td>
<td>100 L</td>
<td>2 kg ≈ 2 L</td>
<td>300 g</td>
<td>0.30%</td>
</tr>
<tr>
<td>liquid bleach (4 % sodium hypochlorite)</td>
<td>1.2 L</td>
<td>100 mL</td>
<td>4%</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>10 L</td>
<td>833 mL</td>
<td>4%</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>100 L</td>
<td>8.33 L</td>
<td>4%</td>
<td>0.33%</td>
</tr>
</tbody>
</table>

emptied receptacle as in recommendation 1 above appears to be the most practical and preferred method.

References

1. National Arbovirus and Malaria Advisory Committee (in prep.): Recommended protocol for action when a ‘risk importation’ or introduced exotic mosquito is detected.
7. National Arbovirus and Malaria Advisory Committee (in prep.): Recommended protocol for action when a ‘risk importation’ or introduced exotic mosquito is detected.

**************
Northern Territory is dengue virus and dengue fever free—and has been since the 1950s!

Vicki Krause, CDC Darwin

Recent activity around the finding of *Aedes aegypti* or “dengue mosquitoes” with the potential to carry the dengue virus has led to some confusion. The dengue virus has not been transmitted in the Northern Territory (NT) for over 50 years—as the NT has not had endemic dengue mosquitoes to serve as a vector for the virus. Recently we have had the dengue mosquitoes with the potential to transmit the dengue virus appear in Tennant Creek—however there have been no cases of dengue fever in people in Tennant Creek to “infect” the mosquitoes and transmit to others in Tennant Creek. It now appears that the dengue mosquitoes in Tennant Creek are on their way to extinction—and both the NT Department of Health and Community Services and the Australian Government are committed to ensuring that it happens.

*Aedes aegypti* mosquitoes have not been established in the NT since 1955—and cases of dengue fever have not been recorded as acquired in the NT since well before that time. The finding of dengue mosquitoes in Tennant Creek in early 2004 with the ‘potential’ to transmit the dengue virus was a concern because there are travellers regularly coming into the NT with dengue fever acquired overseas or from Far North Queensland—in fact between 19 and 93 cases per year in the 5 years from 2000 to 2004. The need to ensure that these potential virus transmitters are not “in our midst” and spreading further throughout the NT is a high priority.

In the NT every case of dengue fever is followed up to assess where the case acquired the dengue virus. To date all cases in the past 50 years have been acquired outside of the NT—and the NT is committed to keeping it that way!

Dengue fever is a notifiable condition and one to be notified urgently (as denoted with this emblem- ) if felt to be acquired in the NT. In the *Guidelines for reporting of notifiable conditions* in the NT there is a section on page 3 “Which conditions must I notify urgently?” that states that:

There are a number of diseases that require urgent public health action. The diseases with a next to them should be notified by telephone or fax as soon as the disease is seriously considered while waiting for confirmatory laboratory diagnosis. As Centre for Disease Control (CDC) staff are aware of what diseases are currently circulating in the community they may be able to provide information that will help confirm the diagnosis. Early notification of cases suspected on clinical grounds also allows for a rapid public health response, if required.

Therefore health care providers suspecting dengue fever in a patient should assess whether the virus would have been acquired in the NT (the incubation period for dengue fever is 3-14 days). They need to inform their local CDC urgently if the disease is felt to be acquired in the NT, as this would be a sentinel event requiring public health action.

CDC clinical protocols for the management of sexually transmitted infections

Steven Skov, Public Health Physician, CDC, Darwin

The Sexual Health and Blood Borne Viruses Unit is currently revising its recommended protocols for clinical management of STIs in the primary health care setting. The accompanying protocol and flow chart deals with male urethral discharge. It is consistent with the protocol in the current edition of the CARPA Standard Treatment Manual with one exception. It recommends a PCR test for trichomonas be performed in addition to the other tests. This test was not available when the CARPA manual was published.

Management of male urethral discharge (pus from the penis) or dysuria (pain when passing urine) in the primary health care setting

Cause

Usually caused by gonorrhoea or chlamydia. Sometimes may be caused by trichomonas or other organisms.

It is not possible to tell by looking which organism is the cause.

History, examination and tests

Ask the man about other possible STI symptoms (eg sores, warts or lumps, rash, sore throat).

Ask about his sex partners and ask if any of them are from outside the NT.

Examine the man.

Do a full STI check

- If pus is present, take two swabs of the pus: one for MC&S for gonorrhoea (roll onto glass slide and let dry in air and put swab in transport media), one for PCR for gonorrhoea, chlamydia and trichomonas (dry tube).
  - No need to swab inside the penis.
  - If pus is not present, send urine for gonorrhoea culture and PCR for gonorrhoea, chlamydia and trichomonas.
  - If history of receptive oral or anal sex also do two swabs of throat or anus: one for MC&S for gonorrhoea, one for PCR for chlamydia.

For men over 40 years of age with only pain (no pus) also ask for urine MC&S to check for a urine infection (UTI).

Blood test for syphilis serology, HIV +/-, Hepatitis B (HBsAg, HBsAb, and HBcAb)

(NB only test for Hepatitis B if there is no evidence in his case notes of him being a carrier of Hepatitis B or immune to it and if your health service has the capacity to do full follow up for the patient and his contacts).
Treatment

Treat him straight away for both gonorrhoea and chlamydia (even if no pus is present).

- Give amoxycillin 3g and probenecid 1g and azithromycin 1g by mouth once only.
- If allergic to penicillin contact the local Sexual Health Unit.
- If he has had a recent sexual partner who is from outside the NT: then give ceftriaxone 250mg IMI and azithromycin 1g by mouth instead.
- Make sure that sexual partner(s) from the last 3 months are checked for STIs and given the same medicine.
- Explain that his partner(s) need to be treated as well so he doesn’t get infected again and they don’t get sick or have problems getting pregnant.
- Talk about condoms and safe sex. He should not have sex until a week after his treatment. He should not have sex with his previous partner(s) until a week after their treatment.

Follow up

If resources permit, ask him to come back in a week to be sure he is better, check the test results for other infections and talk about safe sex again.

If the man still has symptoms 1 week after treatment

It may be re-infection, resistant infection, trichomonas or another organism.

- Check the results of the tests taken at the start:
  ⇒ if trichomonas is present then treat him and his partner(s) with one dose of metronidazole 2g or tinidazole 2g by mouth (don’t give tinidazole to pregnant women).
  ⇒ if culture for gonorrhoea was positive, check the antibiotic sensitivity.
- Check the original treatment was taken properly. Repeat if it was not.
- Make sure all sexual partners were tested and treated.
- If re-infection is likely, repeat the STI check-up and treatment.
- Ask if he had sex with someone from outside the NT.
- Talk with the local Sexual Health Unit about what further tests or treatment to do.

Doing a urethral swab (ie from inside the penis)

- If there might be antibiotic resistant gonorrhoea another specimen for MC&S is needed.
- If discharge is present take a swab of it for MC&S for gonorrhoea.
- If there is no discharge then:
  - moisten the tip of a thin urethral swab with sterile saline (i.e. the wire stem swab not the wooden stem one),
  - gently insert the tip of the swab 1-2cm into the urethra, leave it in place for a few seconds and then withdraw it.
  - Gently roll the swab on a glass slide and let dry in the air.
  - Put the swab in transport medium (charcoal is best but Stuarts is OK).
  - Keep the swab at room temperature: do not refrigerate or let it get too hot.
  - Write “MC&S for gonorrhoea” on the form and get it to the lab as soon as possible.
Management of male urethral discharge in the primary care setting

Patient complains of urethral discharge or dysuria.

Take history **. Examine patient.

Visible urethral discharge present?

YES

Take 2 swabs of discharge request:
MC&S, PCR Gono/Chlamydia/Trichomonas.

**If history of receptive oral or anal sex take two swabs of throat or anus:
1. PCR Chlamydia, 2. MC&S.

Azithromycin 1g and Amoxycillin* 3g, and Probenecid* 1g orally
(*use ceftriaxone 250mg IMI instead if partner from outside NT)

Take blood for HIV, syphilis serology, Hep B (if not already immune to Hep B).

Immediate treatment for Gonorrhoea and Chlamydia.

Education and counselling. Promote / provide condoms. Arrange full check-up and same treatment for sex partner(s).

Follow up test results. Review in one week to give results of tests and ensure symptoms have resolved and contact tracing done.

If symptoms not better re-examine, re-test. Consult with Medical Officer at Darwin or Alice Springs Sexual Health Unit.

NO

Take first void urine request:
MC&S, PCR Gono/Chlamydia/Trichomonas.
Ratio of the number of notifications in the 1st quarter 2005 compared to the mean of the 1st quarter for the previous 4 years: selected diseases

Ratio of the number of notifications in the 1st quarter 2005 compared to the mean of the 1st quarter in the previous 4 years: sexually transmitted infections and blood borne diseases
## NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS
### 1 JANUARY TO 31 MARCH 2005 AND 2004

<table>
<thead>
<tr>
<th>Disease</th>
<th>Alice Springs</th>
<th>Barkly</th>
<th>Darwin</th>
<th>East Arnhem</th>
<th>Katherine</th>
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<tbody>
<tr>
<td>Acute Post Strep Glomerulonephritis</td>
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<td>0</td>
<td>0</td>
<td>21</td>
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<td>Adverse Vaccine Reaction</td>
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<td>Hepatitis A</td>
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<td>Hepatitis B - chronic</td>
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Acute post-streptococcal glomerulonephritis
The number of cases of acute post-streptococcal glomerulonephritis (APSGN) in the first quarter was over 12 times higher than the 4 year mean. This was due to ongoing outbreaks of APSGN in Top End communities. See articles in this edition.

Chlamydial conjunctivitis
The number of cases of chlamydial conjunctivitis was significantly lower in the first quarter of 2005 compared with historical means. This may reflect fewer tests being done which may in turn be due to fewer cases of acute conjunctivitis. Trachoma control programs have been implemented in several Top End communities and this may also have had an effect.

Melioidosis
The wet season of 2004-05 saw a significant increase in the number of cases of melioidosis, going against the recent downward trend. Most cases occurred before Cyclone Ingrid and the amount of rainfall was below average, so local weather patterns are not likely to be the cause.

Shigellosis
The number of cases of shigellosis in the first quarter of this year was 1.75 times the 4 year mean. This was due to clusters of the disease in Central Australian communities. These were investigated and no common cause found. National data also shows higher than average rates of shigellosis.

Pertussis
The first quarter of 2005 also saw 38 cases of pertussis which was 3.5 times the 4 year mean. This represented a continuation of the epidemic of 2004 and was consistent with national trends.
Staff updates

Darwin

Chris Nagy replaced Nan Miller as Senior Project Officer Immunisation from February. Tania Wallace is leaving Immunisation this week and moving to Perth, Christine Selvey is returning as Head of Immunisation 1/8/05.

Mimi Liddell will be returning to her position in the Radiology Department at RDH in July and Janine Weston will resume her position as administration officer for the non-communicable diseases section.

Linda McDonell has left us to go to a permanent position as personal assistant to the Director of People and Organisational Learning and her position here is currently being advertised. The new recruit should be known by the next Bulletin!

Maryanne Sharp has been employed part time doing immunisation data entry and HELP desk.

Glenys Arnott has commenced as receptionist for Clinic 34.

Nhulunbuy

Akiyo Miller is the new P/T admin officer in Nhulunbuy CDC. Ex RDH pharmacy.

Alice Springs

There is a new Public Health Nurse (Surveillance / Vaccination) as Nicole McIntosh has left the position, and Nicole Ferguson has taken it on for 3 months; hopefully longer!

Anne Correy from Medical Specialist Outreach Program has been helping out with follow-up at Tristate Central while Janelle Wilkey has moved from Tristate Central to Clinic 34 Co-ordinator, Alice Springs.

Louise Dennis is currently our Aboriginal Liaison - Sexual Health officer.

Outbreak surveillance team meeting* 13/07/05

Chris Nagy, CDC Darwin

Surveillance team be on the ready
We’re on the brink of a new disease
Its presenting mostly as injured ankles
But there’s been at least one knee.

The cases definitely seem to be in a cluster
In fact I’ve seen them all at morning muster.

The index case is now quite old
It happened a good few months ago – or so I’m told
Imported too from interstate
A beaching accident that appeared quite sedate.

Nevertheless it seems contagious
With an incubation period quite outrageous!
The affected knee was isolated in a brace
But unfortunately the infecting agent still seems to have escaped
And lodged itself over here in block 4
Where now we’re seeing an outbreak like never seen before

I hear the crutches in the hallway
They come from left and right
Its affected both men and women
This ankle wrecking blight.

So - do the cases have a common epi link?
The two most recent cases both deny they’d had a drink
They both ride bikes and keep quite fit
Don’t smoke, eat well and each one works in health.

Aah – lets hold the media release just yet
And contact tracing and building screen –that I think we can forget
So lets flag it in the on call book – Lets keep it on the burner
But I think if we get another case this month – we’ll have to take it further.

Meeting over.

* Relates to the litany of injuries to CDC staff including; V Krause — knee, K McGough — ankle, J Broadfoot — knee, S Skov — ankle, C Nagy — ankle.