CDC
CENTRE FOR DISEASE CONTROL
NORTHERN TERRITORY

THE NORTHERN TERRITORY
DISEASE CONTROL
BULLETIN

Vol. 16, No. 3, September 2009 ISSN 1440-883X

The epidemiology of the pandemic (H1N1) 2009 influenza in the Northern Territory, June-September 2009

Jiunn-Yih Su, Peter Markey, CDC, Darwin

Introduction

The first case of the pandemic (H1N1) 2009 influenza ('pandemic influenza') in the Northern Territory (NT) was detected in Darwin on 29 May 2009. Over the ensuing months there were over 1,500 cases of influenza confirmed in the NT. The initial NT response to the pandemic as set out by the *Australian Health Management Plan for Pandemic Influenza* was summarised in an earlier edition of the Disease Control Bulletin.[1] On 18 June, the PROTECT phase was introduced in which a selective approach to testing was adopted and contact tracing, quarantine and prophylaxis were relaxed in favour of an approach which ensured that those at risk of adverse outcomes of the infection were targeted for early treatment. By the end of September the number of hospital admissions across the NT had declined to 2-3 per week and the number of cases of influenza-like illness presenting to Emergency Departments was approaching baseline in all NT public hospitals. This article is a brief summary of the epidemiology of the pandemic.

Influenza surveillance in the NT

The Centre for Disease Control (CDC) has 3 arms in its influenza surveillance. Firstly, as influenza is a notifiable disease, CDC collects laboratory notifications as part of the NT Notifiable Disease System (NTNDS). During the pandemic phases DELAY and CONTAIN (namely until 18 June) these notifications were also entered into the dedicated module established for pandemic influenza in the national online database– NetEpi. After 18 June only cases who were admitted to hospital or were health-care workers were entered on NetEpi. This system is subject to variations in testing regimens, and so was more likely to accurately reflect the real situation early in the outbreak. Later, in particular after 18 June, it was less likely to give a complete picture.

Contents

Editor: Peter Markey
Email: peter.markey@nt.gov.au

Assistant Editors: Lesley Scott, Mark McMillan, Jamie Broadfoot

Centre for Disease Control
PO Box 40596
Casuarina
Northern Territory 0811

Production Design: Mark McMillan

Website:http://www.nt.gov.au/health/cdc

Secondly, the NT has a long–established general practitioner (GP) sentinel surveillance system – the Territory Influenza Surveillance System (TISS). Under this system, a number of GPs report cases of influenza-like-illness (ILI) on a weekly basis. GPs also report the number of consultations they have done during the week and the ILI cases are reported as "rates" per 1,000 consultations. The system is underpinned by a testing regimen which samples a proportion of ILI cases. Based on threshold studies done elsewhere, a rate of 28-30 per 1,000 consultations is deemed to herald the arrival of the influenza season. The system is also useful to determine the severity and duration of the influenza season.

Thirdly, CDC monitors the number of cases of ILI presenting to Emergency Departments at NT public hospitals as part of the NT Emergency Department Syndromic Surveillance System (EDSSS). Here the definition of ILI is different from that of the GP system and is defined as any one of 4 presenting syndromes, namely fever, cough, respiratory illness and viral illness as recorded in the ED module of the hospital information system. The case numbers are analysed for each hospital on a daily basis with movement from the expected number of cases being detected using CuSum methods.* Naturally, there is a significant background rate reported by this system but this rate is measurable and there has been good correlation demonstrated between the ED ILI numbers and laboratory confirmed cases over several years of data. When supported by testing the EDSSS should be particularly accurate at detecting the beginning of the influenza season. It might also serve as a measure of the duration and severity of the epidemic.

This paper will summarise the findings of all 3 systems during the pandemic and describe the epidemiology.

Methods

The study period was from 29 May (when the first NT case was diagnosed) to 30 September. A case of pandemic influenza was defined as a person testing positive by polymerase chain reaction (PCR) for the pandemic strain in the NT. A hospitalised case was defined as a person hospitalised due in whole or in part to pandemic influenza-related conditions. This definition excludes those cases whose pandemic influenza diagnosis was made while being hospitalised or admitted for other reasons (e.g. for regular renal dialysis).

Relevant surveillance data for the study period were retrieved from the NTNDS, TISS and EDSSS. The enhanced surveillance data for pandemic influenza for the NT were retrieved from the NetEpi system. Included in the notification data were all cases diagnosed in the NT regardless of where the case lived, consistent with the pre-existing data collection rules. NT residents who were tested in other jurisdictions were not included.

The NT population data used for rate calculation were estimated resident population (ERP) data for 2008 prepared by the NT Department of Health and Families.[2] Direct age standardised rates were calculated using the Australian population of 2008 obtained from the Australian Bureau of Statistics. Cases which resided outside the NT were excluded from rate calculations.

All rates calculation and statistical analyses were performed using STATA for Windows, Version 9.2 (STATA Corporation, College Station, Texas, USA). When calculating rates with breakdown by Aboriginal status, cases with unknown Aboriginal status were allocated to relevant categories according to the ratio of those with known Aboriginal status. A p value <0.05 was considered statistically significant.

Results

Notifiable Diseases System

The number of cases notified per week started to increase in the Alice Springs region in the week commencing 11 June (see Figure 1). The increasing trend accelerated in the week commencing 18 June and remained in the ensuing 4 weeks when the weekly number of notifications stayed at a high level (close to or over 200) despite the implementation of selective testing strategy in the PROTECT phase. After that, it dropped rapidly to below 100 per week in the following week (commencing 23 July) and remained below 20 per week from the week commencing 20 August.

* CuSum is the cumulative sum of the difference between the expected number and the actual number of cases.

Prior to and during the study period non-pandemic influenza cases were also detected. There were sporadic cases notified throughout April and early May and there was a significant increase in non-pandemic cases in the last 2 weeks of May – with 52 cases recorded in the week commencing 4 June. There continued to be 30 to 60 cases per week notified until the end of July. The majority of these were Influenza A/ H3N2 while a minority were Influenza B, seasonal H1N1 or unknown.

There were 1,565 pandemic cases notified in the NT during the study period, including 829 female (53%) and 736 male (47%) cases (see Table 1). About two-thirds (65%) of all notifications were Aboriginal. The Aboriginal to non-Aboriginal rate ratio was 5.4 (age-standardised).

Sixty percent of cases were under 30 years of age. Three percent of cases (47 cases) were under 1 year old, and in this age group, 96% of the cases were Aboriginal. The highest age-specific rates were in the 15-29 year age groups. Rates were higher in males compared to females in children under 15 years of age while they were higher in females in most other age groups. In the non-Aboriginal population the highest rates were in the 15-19 and 20-24 year age groups while in the Aboriginal population rates

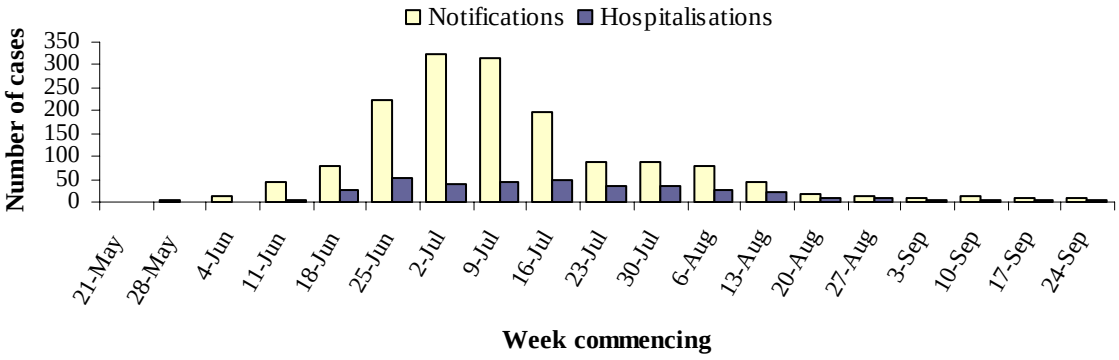


Figure 1: Number of notifications and hospitalised cases of pandemic (H1N1) 2009 influenza in the NT

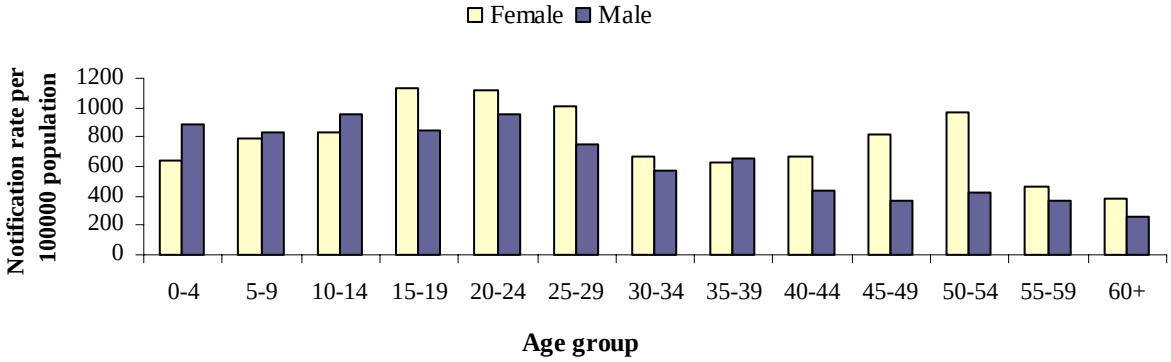


Figure 2. Age-specific notification rate of pandemic (H1N1) influenza 2009 by sex, NT

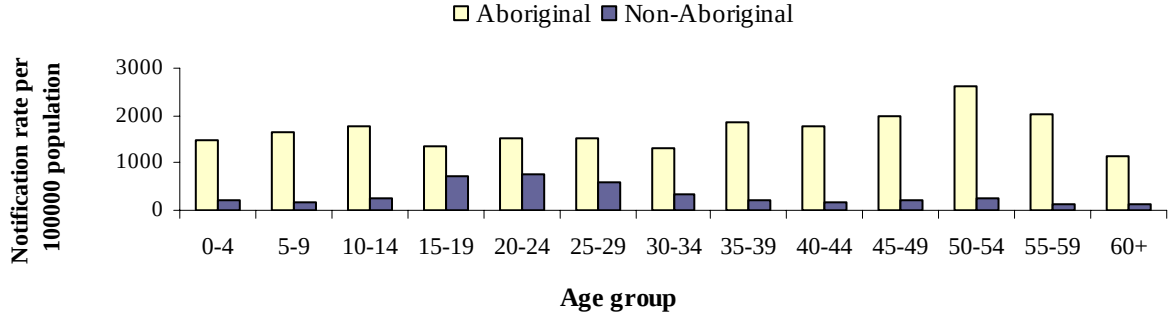


Figure 3. Age-specific notification rate of pandemic (H1N1) influenza 2009 by Aboriginal status, NT

Table 1. Numbers and rates of notifications of pandemic (H1N1) influenza 2009 by sex and Aboriginal

Category	Female	Male	Aboriginal	Non-Aboriginal	Total
Notifications	829	736	1022	458	1565
% of all notifications	53%	47%	65%	29%	
Age, median	27	22	23	26	25
Crude notification rate	783	646	1615	320	712
Direct age-standardised rate^	726	606	1681	309	667

Table 2. Statistics of hospitalised pandemic (H1N1) influenza 2009, NT

Category	Female	Male	Aboriginal	Non-Aboriginal	Total	%	Proportion of notified cases hospitalised
District							
Alice Springs Rural	31	39	69	1	70	19%	24%
Alice Springs Urban	40	59	86	13	99	27%	46%
Barkly	9	8	17	0	17	5%	27%
Darwin Rural	22	14	36	0	36	10%	27%
Darwin Urban	43	50	56	37	93	25%	20%
East Arnhem	8	6	11	3	14	4%	21%
Katherine	23	17	36	4	40	11%	18%
Age group							
<5	27	48	68	7	75	20%	55%
<1	9	29	36	2	38	10%	81%
1-4	18	19	32	5	37	10%	41%
5-9	4	11	13	2	15	4%	12%
10-14	7	10	14	3	17	5%	13%
15-19	7	7	11	3	14	4%	9%
20-24	13	7	15	5	20	5%	12%
25-29	11	8	17	2	19	5%	13%
30-34	14	7	20	1	21	6%	21%
35-39	17	19	32	4	36	10%	32%
40-44	13	15	25	3	28	8%	31%
45-49	21	17	33	5	38	10%	42%
50-54	18	18	28	8	36	10%	38%
55-59	8	9	15	2	17	5%	35%
60+	16	17	20	13	33	9%	55%
Total	**176**	**193**	**311**	**58**	**369**		**25%**
%	**48%**	**52%**	**84%**	**16%**			
Age, median	37	34	34	44	36		
Hospitalisation rate (per 100000)	166	169	468	38	166		
Length of stay							
median	3	3	3.5	3	3		
interquartile range	2-6	2-6	2-6	2-6	2-6		

were highest in the 50-54 and 55-59 year age groups (see Figure 3). The median age for all cases was 25 years.

The region with the highest rate of confirmed cases was the Alice Springs Rural District. The notification rate for urban population was 497 per 100,000 and that for rural population 1,158, giving a rural to urban rate ratio of 2.3.

Hospitalisations

The number of hospitalised cases per week increased sharply in the week commencing 18 June, and was higher or close to 40 between the week commencing 25 June and the week commencing 16 July. It gradually decreased afterwards and remained below 10 after 20 August (see Figure 1).

During the study period, a total of 369 hospitalised cases were identified, including 176 females (48%) and 193 males 52%, (see Table 2). Alice Springs Urban and Darwin Urban District each accounted for about one quarter of the hospitalised cases. Forty-six percent of all notified cases resident in Alice Springs Urban District were hospitalised, the highest among all districts.

Of the hospitalised cases, 24% were under the age of 10 and 43% under 30 years of age. Notably, 81% of notified cases were under one year old and 55% of those aged 60 years and over were hospitalised.

The median length of hospital stay was slightly longer in Aboriginal cases than in non-Aboriginal ones, while it was the same (3 days) for both sexes. About 84% of hospitalised cases were Aboriginal. The hospitalisation rate for Aboriginal population was 12.4 times that for the non-Aboriginal population ($p<0.005$), but there was no significant rate difference between sexes ($p=0.43$).

There were 14 hospitalised cases who were pregnant (7% of female hospitalised cases, including 12 Aboriginal and 2 non-Aboriginal). Forty six hospitalised cases were admitted to intensive care units (34 Aboriginal and 12 non-Aboriginal). Six cases died (4 Aboriginal and 2 non-Aboriginal).

Emergency Department Syndromic Surveillance System

As shown in Figure 4, the ILI presentations to the ED of the 5 public hospitals remained at the baseline level before the onset of the epidemic, apart from Royal Darwin Hospital (RDH) which had an increase in the week beginning 14 May due to the cases of non-pandemic strain. From the week commencing 28 May, it gradually

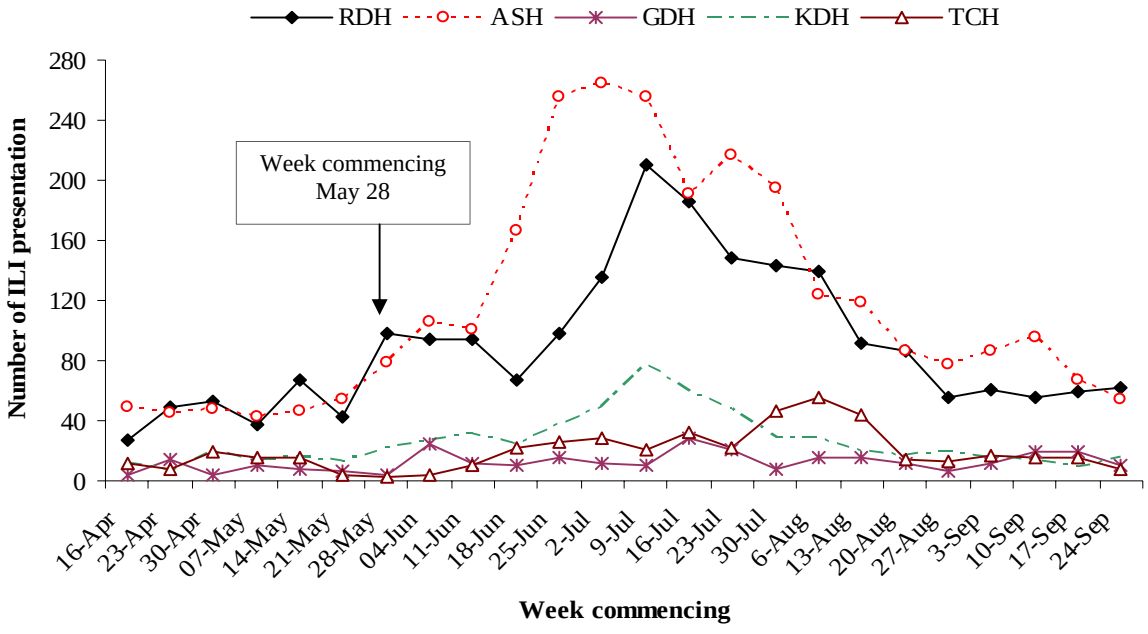


Figure 4. ED ILI presentations by hospital, NT

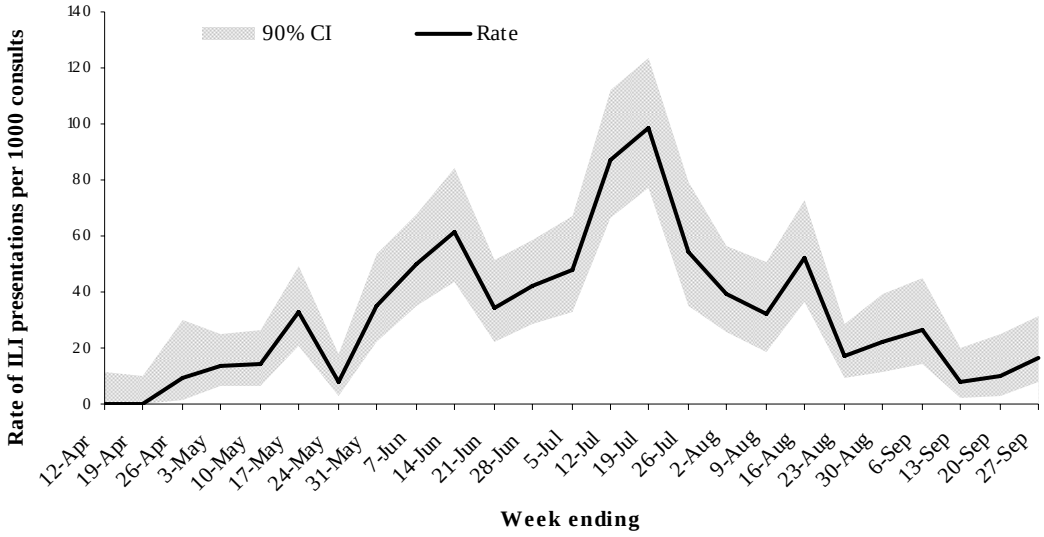


Figure 5: Weekly rates of ILI presentations to sentinel GPs (per 1000 consults), NT

increased until the week commencing on 9 July when it peaked at 573. After that, it gradually decreased and remained below 200 from the end of August through to the end of September. The numbers of ILI presentations were highest in the Alice Springs Hospital (ASH), followed by Royal Darwin Hospital (RDH). The numbers for the hospital in Katherine (KDH), Gove (GDH) and Tennant Creek (TCH) were much lower, but generally followed the trends for ASH and RDH.

Territory Influenza Surveillance System

The GP sentinel surveillance was interesting in that it demonstrated three peaks. There was an increase in the ILI rate in the week ending 17 May which corresponded with the increase in non-pandemic influenza cases. The rate then fell and increased again in the week ending 31 May corresponding with the beginning of the pandemic. The rate fell again towards the end of June, corresponding with the CONTAIN phase, and then rose again to peak at almost 100 cases per 1,000 consultations in the week ending 19 July, coinciding with the peak of ED ILI presentations (Figure 4). By the end of September it was back to baseline.

Discussion

Using data from three surveillance systems, we have shown that the epidemic of the pandemic influenza in the NT had largely subsided at the end of September, and that this epidemic had disproportionately affected the Aboriginal population, people under the age of 30 and the Alice Springs region.

The EDSSS and TISS were particularly useful in monitoring the pandemic once a selective testing strategy has been implemented. This is because the number of cases who visit the sentinel GP practices and EDs is not influenced by changes in testing strategy. Both systems showed that the number of ILI presentations had dropped at the end of September to a level close to the baseline while at the same time, the number of hospitalised cases per week had also declined to a low level (under 10).

Given that testing for cases hospitalised with ILI continued through the PROTECT phase, hospitalisation data is more likely to reflect the true level of influenza transmission in the community, given that the proportion of cases who are hospitalised is not likely to be influenced by testing regimens and, with some qualifications, is likely to have remained constant.

This paper also found that the Aboriginal population had been disproportionately affected by this epidemic, which is consistent with the previous findings.[1] About 66% of the disease burden was recorded in the Aboriginal population with Aboriginal Territorians 5.4 times more likely to contract the pandemic influenza, and 12.2 times more likely to be

hospitalised than their non-Aboriginal counterparts. This was particularly prominent in the Alice Spring area where the highest rates were recorded. The reasons for this have been discussed previously.[1]

Compared with the crude notification rate for Australia (171.8 per 100,000 for the same reporting period),[3] the NT rate was 4.1 times higher and the non-Aboriginal rate was 1.9 times higher. This suggests that the epidemic might have been worse in the NT compared to other jurisdictions, although the testing strategy might differ considerably across jurisdictions and over time, thus rendering a rate comparison inappropriate. This will be explored further when testing data are available.

The high rates in those under 30 years of age and the relatively young median age are consistent with reports elsewhere[3,4] and the NT study on early cases.[1] However, the proportion of notified cases who were hospitalised was higher in the older age groups. For example, over half of those cases aged 60 years and over were hospitalised. This may reflect the fact that older people tend to have more co-morbidities. The proportion was also high in those under 5 years of age.

A relatively high number of cases aged less than one year was noted, and over 80% of them were hospitalised. This reflects the policy adopted by NT hospitals to routinely test infants for influenza who are admitted for respiratory illnesses.

With respect to the hospitalisation rate, it appears that the epidemic was also worse in the NT than other jurisdictions. The crude hospitalisation rate for the NT and the rate for non-Aboriginal population were 7.3 and 1.7 times the rate for Australia for the same period, respectively (22.7 per 100,000).[3] Notably, the rate for the NT Aboriginal population, 468 per 100,000, was also considerably higher than the Australian rate for Indigenous population (153.2 per 100,000). It is important to recognise that the calculated proportion of notified cases who were hospitalised is artificially high later in the epidemic due to the selective testing strategy implemented in the PROTECT phase.

Comparison between the pandemic and seasonal influenza has been challenging due to the well-recognised difficulties with case ascertainment in a normal influenza season. Both morbidity and mortality from seasonal influenza can be estimated but, given the dearth of testing in a normal influenza season, estimates are fraught with uncertainty due to the reliance on other indicators such as ILI or a diagnosis of pneumonia. Further analysis of the pandemic influenza data will be discussed in a future article.

Conclusion

It appears on initial figures that the H1N1 2009 influenza pandemic had a greater impact in the NT than it did in other Australian jurisdictions. The population groups that were disproportionately affected are the Aboriginal population, particularly those in the Alice Springs region, and people aged less than 30 years. However, it had largely subsided by the end of September.

Acknowledgements

We would like to thank the CDC staff and many clinicians working in remote health clinics who had contributed to the surveillance work during this pandemic.

References

1. Flint S, Su J-Y, Scott L, Krause V. The early experience of pandemic (H1N1) 2009 influenza in the Northern Territory, Australia. *The NT Disease Control Bulletin* 2009;16(2):1-8.
2. Health Gains & Planning. *Northern Territory Resident Population Estimates by Age, Sex, Indigenous Status and Health Districts (1971-2008).* Darwin: NT Department of Health and Families, 2009.
3. Australian Department of Health and Ageing. Australian influenza surveillance report for the week ending 9 Oct 2009, available at http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/ozflu2009.htm, accessed on 28 Oct 2009. Canberra: Australian Department of Health and Ageing, 2009.
4. Kelly H, Grant K. Interim analysis of pandemic influenza (H1N1) 2009 in Australia: surveillance trends, age of infection and effectiveness of seasonal vaccination. *Euro Surveill* 2009;14 (31):pii=19288. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19288, accessed on 28 Oct 2009.

Firework-Related Injury Community Survey Report 2009

Justine Glover, Injury Prevention Officer & Steven Skov, Community Physician, Centre for Disease Control, Darwin

Introduction

This report is the eleventh in a series of fireworks injury surveillance reports conducted since 1998 by the Darwin Centre for Disease Control (no survey was conducted in 1999).[1] The aim of the survey is to describe the extent and nature of firework-related injury on and around Territory Day.

Methods

Surveillance was targeted at persons seeking medical care for firework-related injuries from midnight 29 June to midnight 4 July at all 5 Northern Territory public hospital Emergency Departments. The survey methods have been described previously.[1]

In previous years, surveys also included General Practice and Community Health Centres. This was not possible this year due to resource management during the H1N1 influenza pandemic.

Results

In 2009 there were 13 people who presented with a firework–related injury: 7 males and 6 females. Ages ranged from 14 months to 43 years. The injury site included: 4 leg injuries, 3 hand injuries (all related to sparkler use), 3 torso injuries and 1 eye injury. In 2 cases the site was not specified.

Eleven of the injuries occurred in Darwin, 1 in Alice Springs and 1 in Katherine. No firework-related injuries were reported in Tennant Creek or Nhulunbuy. Six injuries occurred at a beach, 4 in a backyard, 1 in a park and for 2 the place of occurrence was not recorded.

Eight people required 2 or more reviews by a health practitioner and 2 people had mild injuries requiring only one visit. Three persons required admission to hospital, they included:

- a 14 month old baby for 14 days,
- a 43 year old female for 4 days,
- and an 18 year old male for 8 days.

The baby required 3 surgical procedures under general anaesthetic and the female needed one surgical procedure. All admitted patients required follow-up treatment in the outpatients department ranging from 3 to 8 appointments. The 14 month old baby has attended 6 outpatient consultations and continues to receive outpatient care for scar management. It is anticipated he may need up to 6 months of further treatment.

Six of the injured persons were “bystanders” including all 3 who were admitted to hospital. That is, they were injured by errant fireworks being used by others.

Discussion

The past 2 years has seen a decline in the number of injured persons (see Table 1.) However, total numbers are relatively small and fluctuate substantially year to year. While the recent decline is encouraging, it is too early to determine whether it represents a sustained trend. In addition, this year presentations to GPs and Community Health Centres were not included in the survey. However in previous years theses sources accounted for only 3-5

Table 1. Firework injuries, hospitalisation and injuries to bystanders 2001-2009.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Hospital admissions	1	7	1	2	0	7	10	1	3	32
Bystanders injured	4	8	9	3	5	12	13	8	6	68
Total Injured persons	9	14	31	11	18	35	32	14	13	177

cases per year with a maximum of 7 in 2003. The reduction in 2008 (which did included General Practice and Community Health Centres) did coincide with an increased and specifically focussed education campaign by the Department of Health and Families.

Analysis of firework-related injuries in recent years identified 3 key risk factors for serious injuries: lighting multiple sparklers, reinspecting "dud" fireworks and wearing synthetic clothing. In 2008, extra funding was made available to develop a communication strategy and distribute a firework safety information flyer that highlighted these risks and encouraged responsible use. The flyers were widely distributed to schools and through firework retailers in 2008 and 2009. It is possible this contributed to the reduced number and severity of injuries. In particular there were no sparkler injuries in 2008 although 3 occurred this year.

An important aspect of the firework-related injury profile is the large proportion of injured persons who are bystanders (see Table 1). This year, 6 out of 13 people received their injury as a result of someone else's fireworks. Since 2001, 68 out of a total of 177 injured persons (38%) have been bystanders. Some of these injuries were the result of a firework malfunctioning, but many of them occurred because the fireworks were not properly used. Sometimes the operator was negligent when a firework was not properly secured or directed. Unfortunately, many other times the operator seemed to either deliberately or carelessly direct the firework towards other people.

When fireworks malfunction or people use them carelessly, it can lead to a very dangerous situation if other people are close by, for example at large public gatherings. Lately, there has been increasing concern about the situation at Mindil Beach where large crowds gather, many of whom bring their own fireworks, for the markets and to watch the public fireworks display.

In an effort to improve public safety at Mindil Beach, the Darwin City Council made changes to their by-laws and banned the possession and ignition of fireworks in the Mindil Beach area. The changes allowed on the spot fines of $520 for persons committing an offence. One person was fined for illegally setting off fireworks at Mindil Beach. No injuries were recorded at Mindil Beach this year. Media reports following Territory Day revealed that the Mindil Beach ban was considered highly successful and that the Darwin City Council was looking at expanding the restrictions next year.

While there have been fewer Territorians injured these past 2 years, fireworks as they are currently used in the NT remain a significant cause of serious injury. This year, the Australian Capital Territory decided to ban the personal use of fireworks leaving the NT as the only Australian jurisdiction permitting such use and the only jurisdiction where firework-related injuries are now likely to occur.

While education efforts should continue, and local restricted areas can improve safety in those areas, it is virtually certain that fireworks will continue to be a cause of significant serious injuries in the NT. Australian and international evidence describe the best way to prevent firework-related injuries is to leave fireworks to trained professionals.[2,3] The Centre for Disease Control will continue monitoring firework-related injuries and continue to work towards a safer fireworks environment in the Northern Territory.

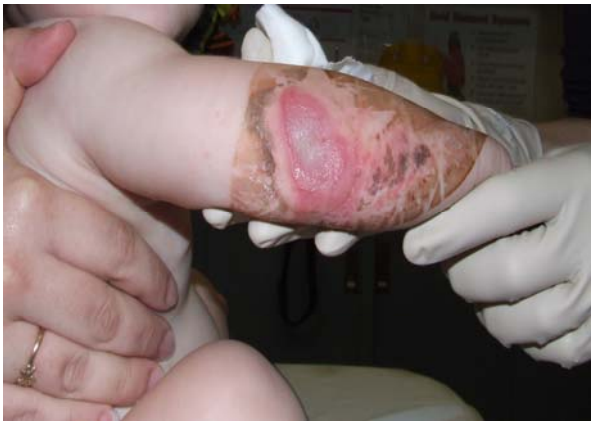
References

1. Mein J. Territory Day celebration 1998 in the Top End of the NT – outbreak of firework related injuries. *NT Dis Control Bull* 1998; 5(8):12.
2. American Academy Of Ophthalmology Warns Parents To Leave Fireworks To The Professionals [Internet]. MediLexicon International Ltd; 2007 Jun 21[cited 2009 September 10]. Available from: http://www.medicalnewstoday.com/articles/74742.php
3. Fireworks related injuries fact sheet [Internet]. Atlanta (USA) Centers for Disease Control & Prevention; 2008 April 1[cited 2009 September 10]. Available from: http://www.cdc.gov/HomeandRecreationalSafety/Fireworks/fireworks-factsheet.html

Beyond the burns: effects of firework-related injuries

Justine Glover, Injury Prevention Officer , Centre for Disease Control, Darwin

Every year the Centre for Disease Control conducts a survey of firework-related injuries in people presenting to emergency departments and general medical practices. This serves as an important indicator of the amount and nature of harm that fireworks cause. However, behind the statistics lie the real life stories of the people affected. Because of the circumstances in which they occur, firework-related injuries are often extremely distressing and frightening experiences. In addition, because they so often involve burns, they can entail many months of pain, suffering, treatment and time away from work or normal activities. Statistical reports do not tell these stories. We are indebted to the 3 people who were injured this year on Territory Day for telling the story of their experience with fireworks gone wrong.



Case 1 "No distance is safe"

On Territory Day 2009 Lisa experienced her worse nightmare when she was told her 14 month old baby boy, Bryce, was being taken to hospital with burns after a stray firework landed in his pram.

Lisa was in Darwin for work and her husband had taken their son to a family friendly fireworks display in Katherine. It was a fun night and her husband made sure Bryce was kept at a safe distance – standing at least 80-100 meters away. "He thought it was a safe distance, but we now know no distance is safe" Lisa said.

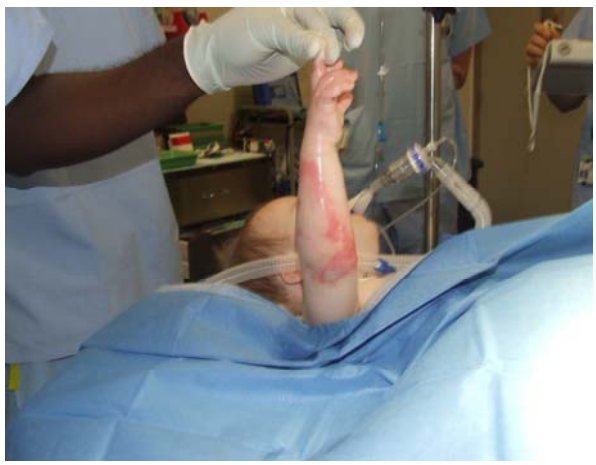
"A multishot firework exploded and then fell over, sending shots in the direction of Bryce's pram. One shot travelled over 80 metres and lodged behind Bryce setting the pram on fire. Bryce was wearing a harness so it was not easy to quickly remove him. There were lots of people to help so he received good first aid and an ambulance was called".

"Bryce sustained full thickness burns to his back and left arm. He was assessed in the Emergency Department at Katherine and then my husband had to drive him up to Royal Darwin Hospital where he stayed for 14 days. During this time Bryce underwent 3 surgical procedures to debride and dress his burns".

"It's hard to describe the stress of dealing with an injured child and it has been made even worse by being away from family and friends.

"But it was not just the stress of having Bryce in hospital. It was having to take extended time off work after I had got back from maternity leave, and then having to rearrange all my shifts so that when Bryce came home he did not have to attend child care, and it was all the travel to and from Darwin"

"Bryce is home now and he is a happy baby, but there is still another 6 months of therapy ahead involving a pressure garment on his arm and more visits to the occupational therapy department. He is lucky, they hope there will be no scars on his skin because he was so young, but we just don't know what sort of effect long term that experience will have on him: it shouldn't have happened".



Case 2 "There are accidents and then there are idiots"

Kym had taken her daughter to Darwin East Point Reserve to watch the Territory Day firework display for the first time in 2009 and says it will be the last. She was sitting with her family and friends on the rocks at East Point when a group in their 20s set up close behind them. This group had their own fireworks and 2 cartons of beer. Kym says "these guys just started letting off their fireworks only 3 metres from us, there are accidents and there are idiots – these guys were idiots"

We were having a great time watching the big display when I looked behind and saw a firework shooting straight at my daughters head – I jumped in front of her and it hit me in the ribs – it was like being shot by a 12 gauge shot gun – I was too scared to look down cause I thought there would be a big hole there – my daughter was hysterical – she was so scared. All I could smell was burning skin – it was horrible. What happened was I ended up with burns down my arm and a bruise to my ribs that I still have 2 months on. I had to go for regular dressings for about 5 weeks. It was all very scary and the burns were very painful. I am now left with a scar on my arm that looks like a gravel rash. I had to take 3 weeks off work which was not good as I had just got back into work after being off for 6 months. But all I keep thinking is thank goodness it was not my daughter's head. Fireworks are supposed to be fun but we will be staying home next Territory Day".

Case 3 "I thought I was going to lose my eye"

Tony was at a family BBQ cooking when some of the little kids went running by throwing 'flyers'– the fireworks that spin and fly in the air. One landed on the BBQ in front of him and ignited throwing sparks into his right eye. The next day he woke and could not see out of his right eye and it was very painful. Tony said "I thought I was going to lose my eye".

He went to the Royal Darwin Hospital, Emergency Department and was admitted to hospital were he stayed for 8 days. He then attended the eye clinic for another 3 weeks and needed to use regular eye drops. Tony was lucky, his sight has returned. He has a small scar on his eye but he thinks he looks pretty normal now.

* Names have been changed to maintain confidentiality

******

Evidence for a sharp decrease in gonococcal cultures and its implications for the surveillance of antimicrobial sensitivity

Jiunn-Yih Su and Catherine Pell, Sexual Health and Blood Borne Virus Unit, CDC Darwin

Introduction

The introduction of nucleic acid amplification tests (NAATs) for the detection of common bacterial sexually transmitted infections (STIs) such as *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in the 1990s has had a dramatic impact on both the reported trends and diagnostic methods for these STIs.[1-4] For *N. gonorrhoeae*, NAATs offer several advantages over traditional diagnostic methods. They have higher sensitivity, do not require viable organisms for diagnosis, can be used effectively on non-invasive specimens (such as urine and self-administered swabs), take less time to produce results, and the same specimen can be used to simultaneously test for *C trachomatis*.[5,6] These advantages make them suitable not only for symptomatic patients but also for screening purposes in asymptomatic clients, particularly in remote settings.

However, the limitations of the NAAT for *N. gonorrhoeae* have also been well documented.[5,6] The most important among them concerning the control of genital gonorrhoea is that the NAAT cannot provide antimicrobial sensitivity data. Without this, clinicians cannot confidently treat their patients as *N. gonorrhoeae* has a tendency to develop antimicrobial resistance through various genetic modifications.[7] Furthermore, at the population level, the surveillance of the antimicrobial sensitivity pattern and the formulation and revision of recommended treatment for locally acquired gonococcal infections depends on the collection of adequate representative samples for culture and antimicrobial sensitivity test. If clinicians switch to the convenient NAATs exclusively for gonorrhoea diagnosis, there will not be adequate or representative culture samples to conduct the surveillance of gonococcal sensitivity. This will have a negative

impact on the treatment and control of gonococcal infection.

In this paper, we examine the amount of gonococcal cultures performed at the population level in the Northern Territory (NT) in recent years and discuss the implications of the findings, particularly in relation to the control of genital gonorrhoea.

Methods

This is a retrospective descriptive study. De-identified testing data for gonorrhoea culture were provided by a private pathology laboratory which, for the vast majority of NT remote health centres, is the only pathology service provider. It also provides pathology services to a high proportion of urban-based general practices and Aboriginal-controlled medical services. It is therefore believed that the data from this laboratory should be representative of the situation for the whole of NT.

The dataset included all persons tested in the NT regardless of their resident status. For comparison purposes, we also retrieved relevant data from the Annual Reports of Australian Gonococcal Surveillance Programme (AGSP) for 2004-2007[8-11] to calculate the number of isolates from urethral sites (which included urine specimens) by Australian jurisdictions.

Results

The total number of cultures was considerably higher in females than in males. In females, it showed a decreasing trend from 2005 to 2007, but the number increased slightly in 2008 (see Table 1). In males, the number decreased by 24% from 2005 to 2006; from 2006 to 2007 there was a nearly 90% decrease, and it further decreased in 2008.

Figures 1 and 2 display the number of cultures from the most commonly used specimen types in both sexes. In females, the number of cultures from high vaginal swabs, vaginal swabs and cervical swabs all increased between 2006 and 2008. In contrast, the number of cultures from urine showed a dramatic decrease from 2005 to 2007 and remained at about the same low level in 2008.

Table 1. Number of cultures performed per year and culture yield by sex, NT , 2004-2008

Category	2004	2005	2006	2007	2008
Female					
Number of cultures	15,111	15,178	14,327	11,882	12,879
Culture yield (%)	0.7	0.7	0.4	0.2	0.3
Male					
Number of cultures	5,889	6,347	4,838	525	448
Culture yield (%)	3.1	2.8	2.6	6.3	6.9

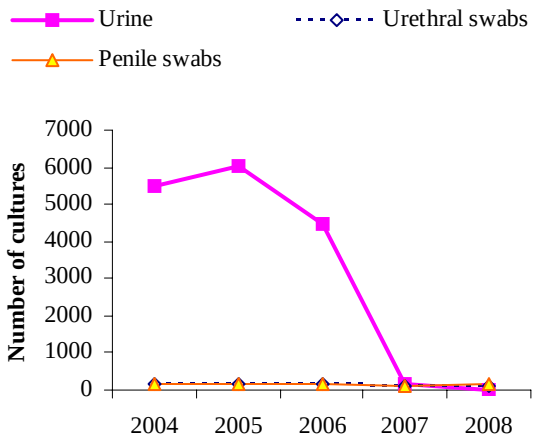


Figure 1. Number of cultures by specimen type, NT, 2004-2008 (male)

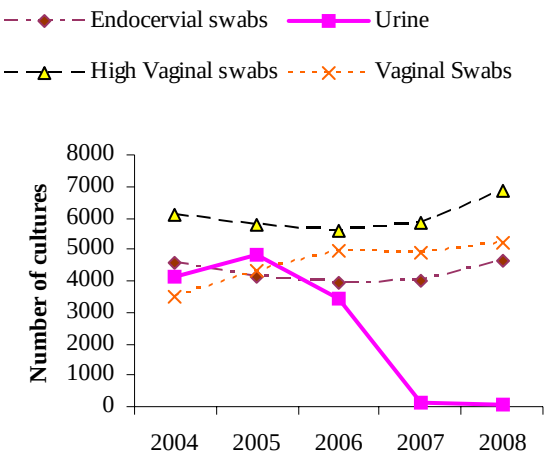


Figure 2. Number of cultures by specimen type, NT, 2004-2008 (female)

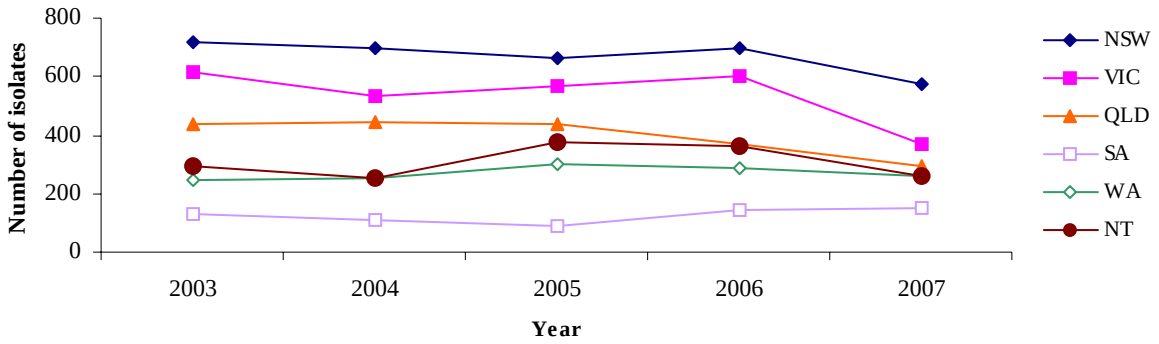


Figure 3. Number of urethral isolates by State/Territory and year, AGSP, 2004-2007

The national data from the AGSP demonstrates a similar decrease in the number of urethral gonococcal isolates from men between 2005 and 2007 in all jurisdictions except South Australia (see Figure 3).

Discussion

Using the available laboratory testing data, we have shown in this paper that there was a significant decrease in the number of urine cultures in both sexes in the NT between 2005 and 2008. In contrast, during the same period, the number of cultures by other specimen types showed a mild increasing trend.

We believe the decrease in urine cultures was a direct consequence of a change in the combined pathology item in the Medicare Benefit Schedule (MBS, # 69315) which allowed culture and nucleic acid testing to be done in one single request. A ruling by the Federal Government in 2005 removed this combination item.[12] Consequently, pathology companies gradually stopped performing gonococcal culture on urine specimens submitted for nucleic acid testing unless specifically requested, as Medicare no longer covers the cost. This change affected only gonococcal culture which is paid for through Medicare, but not those paid through other funding sources, for example those performed in public hospital laboratories. This also explains the decrease in urethral isolates from almost all jurisdictions as examined by the AGSP during the same.

When cultures are not done, drug sensitivity testing is not possible and the implications of this for the NT are more significant than in other jurisdictions. The NT, where the highest rates of gonorrhoea in Australia are consistently recorded, is the only jurisdiction where, for locally acquired disease, the gonococcal organism remains penicillin sensitive and penicillin-based regimens can be effectively used.[13] Without a sensitive surveillance system current treatment guideline revision is difficult. Should penicillin-resistant gonococcal infection go undetected, the ramifications for public health would be serious.

With the recent resurgence of HIV and STIs among men who have sex with men[14] and the reported emergence of gonococcal strains resistant to multiple antibiotics including the third generation cephalosporin ceftriaxone,[11] this decrease in gonococcal culture and hence antimicrobial sensitivity testing may also have similar implications for other States/Territories.

We wish to bring this issue to the attention of clinicians, as a simple change may help to boost the number of isolates and thereby greatly improve the situation. We therefore recommend:

1. In remote settings, clinicians specifically request gonococcal culture on all urine specimens collected for NAAT;
2. In other settings, gonococcal culture be specifically requested for each specimen taken from all persons who have symptoms of an STI or who are tested as part of contact tracing;
3. In non-remote settings, culture is not indicated when doing routine or opportunistic screening in asymptomatic men, but should be performed if the initial urine nucleic acid test is positive for gonorrhoea.

When requesting gonococcal culture for urine specimens, it is important that clinicians write specifically on the pathology request form 'MC&S for gonorrhoea.'

Acknowledgements:

We would like to thank Western Diagnostic Pathology for providing testing data for this study.

References:

1. Burckhardt F, Warner P, Young H. What is the impact of change in diagnostic test method on surveillance data trends in Chlamydia trachomatis infection? *Sex Transm Infect* 2006;82(1):24-30.
2. Dicker LW, Mosure DJ, Levine WC, Black CM, Berman SM. Impact of Switching Laboratory Tests on Reported Trends in Chlamydia trachomatis Infections. *Am J Epidemiol* 2000;151 (4):430-435.
3. Forward KR. The impact of switching to polymerase chain reaction for the diagnosis of Chlamydia trachomatis infections in women. *Can j Public Health* 2003;94:229-32.
4. Rekart ML, Brunham RC. Epidemiology of chlamydial infection: are we losing ground? *Sex Transm Infect* 2008;84(2):87-91.
5. Hook EW, Handsfield HH. Chapter 35 Gonococcal infections in the adult. In: Holmes KK, Sparling PF, Stamm WE, Piot P, et al., editors. *Sexually Transmitted Diseases*. 4th ed. New York: McGraw-Hill, 2008.
6. Whiley DM, Tapsall JW, Sloots TP. Nucleic acid amplification testing for Neisseria gonorrhoeae - an ongoing challenge. *J Mol Diagn* 2006;8(1):3-15.
7. Tapsall J. *Antibiotic resistance in Neisseria gonorrhoeae*. Geneva: World Health Organization, 2001. Available from www.who.int/drugresistance/Antimicrobial_resistance_in_Neisseria_gonorrhoeae.pdf
8. The Australian Gonococcal Surveillance Programme. Annual report of the Australian Gonococcal Surveillance Programme, 2004. *Commun Dis Intell* 2005;29(2):136-141.
9. The Australian Gonococcal Surveillance Programme. Annual report of the Australian Gonococcal Surveillance Programme, 2005. *Commun Dis Intell* 2006;30(2):205-210.
10. The Australian Gonococcal Surveillance Programme. Annual report of the Australian Gonococcal Surveillance Programme, 2006. *Commun Dis Intell* 2007;31(2):180-184.
11. The Australian Gonococcal Surveillance Programme. Annual report of the Australian Gonococcal Surveillance Programme, 2007. *Commun Dis Intell* 2008;32(2):227-31.
12. Commonwealth Attorney-General's Department [Internet]. Health Insurance Act 1973, Health Insurance (Pathology Services Table) Regulations 2005 [cited 30 July 2009]: Available from http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/framelodgmentattachments/4E6A71C0F5DF2F95CA2570A60009D319, 2005.
13. National Centre in HIV Epidemiology and Clinical Research. *HIV/AIDS, viral hepatitis & sexually transmissible infections in Australia. Annual Surveillance Report 2008*. Sydney, NSW: National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, 2008.
14. Middleton MG, Grulich AE, McDonald AM, Donovan B, Hocking JS, Kaldor JM. Could sexually transmissible infections be contributing to the increase in HIV infections among men who have sex with men in Australia? *Sex Health* 2008;5:131-40.

****

Change to Northern Territory Childhood Vaccination Schedule 1 October 2009

The NT childhood vaccination schedule changed on 1 October 2009 due to a global shortage of the PedvaxHIB™ vaccine and the availability of a new 10 valent pneumococcal vaccine (Synflorix®).

To facilitate the required change in *Haemophilus influenzae type b* vaccine it has been necessary to change from administering Infanrix®Penta to administering Infanrix®Hexa (DTPa-HepB-IPV-HIB) at 2, 4 and 6 months and adding an additional dose of Hiberix™ at 12 months of age. PedvaxHIB™ was previously used in the NT as it was shown to give earlier protection against Hib disease compared to other Hib vaccines especially in Indigenous children. Other jurisdictions changed to Infanrix® Hexa and Hiberix™ between 2005-2009 and there has been no noted increase in the incidence of Hib disease.[1] The NT Centre for Disease Control (CDC) will continue collaborative research work with Menzies School of Health Research to

closely monitor Hib carriage and disease in the NT.

To facilitate the change to the new pneumococcal vaccine, Prevenar (7vPCV) will no longer be used throughout the NT and will be replaced with Synflorix® (10vPCV). The NT is the first jurisdiction in Australia to commence using this new pneumococcal vaccine.

All children will receive 4 doses of Synflorix® administered at 2, 4, 6 and 18 months of age. In addition, the 18 month dose of Pneumovax23 for Indigenous children has been removed from the schedule and replaced with an additional (4th) dose of Synflorix® for all children.

As a result of these changes to the immunisation schedule all children in the NT will now receive 1 less needle at the 2 and 4 month vaccine encounters but non-Indigenous children will receive 1 additional a needle at the 18 month vaccine encounter.

Children who commenced immunisation prior to October 1 2009 can be directly switched to the new schedule without the need for complicated catch up vaccinations

Further information

Please contact CDC immunisation on 8922 8044 with any further questions.

Reference

1. National Notifiable Diseases Surveillance system [Internet]. Commonwealth of Australia; 2009 Oct 27[cited 2009 Sept 30]. Available from: http://www9.health.gov.au/cda/Source/Rpt_2_sel.cfm

Childhood immunisation schedule changes, 1 October at a glance

PedvaxHIB, Prevenar and Infanrix Penta will no longer be used after 1 Oct 2009.

Table 1 Vaccine replacements

Old vaccine	When it was given	New Vaccine	When to give it now
Infanrix Penta	2,4, 6 months	Infanrix Hexa	2,4, 6 months
PedvaxHIB	2,4 months	Infanrix Hexa	2,4, 6 months
PedvaxHIB	12 months	Hiberix	12 months
Prevenar	2,4,6 months	Synflorix	2,4,6 months
Pneumovax23 (Indigenous)	18 months	Synflorix (all infants)	18 months

Table 2 Vaccine ordering

Old order	Number of vaccines	New order	Number of vaccines	Calculation
Infanrix Penta	10	Infanrix Hexa	10	Same amount
Prevenar	10	Synflorix	12	Increase order by 25%
PedvaxHIB	10	Hiberix	3	Decrease order to 30%

Table 3 Vaccine side effects

Infanrix Hexa	Fever, pain, redness and swelling at the injection site, irritability and drowsiness.
Synflorix	Fever, pain, redness and swelling at the injection site, irritability and drowsiness, loss of appetite.
Hiberix	Fever, pain, redness and swelling at the injection site, irritability loss of appetite, rhinitis.

Table 4 Vaccine details

Vaccine	Dose	Preparation
Infanrix Hexa (DTPa-HepB-IPV-HIB)	0.5ml IMI	Reconstitute by mixing the contents of the syringe with the Hib pellet until it is completely dissolved
Synflorix (10vPCV)	0.5ml IMI	Pre-filled syringe
Hiberix *Haemophilus Influenzae* type b	0.5ml IMI	Reconstitute by mixing the contents of the syringe with the Hib pellet until it is completely dissolved.

Conjugate pneumococcal vaccine catch up schedule for all children in the NT 1 October 2009

For children with underlying medical conditions that predispose them to Invasive Pneumococcal Disease (page 246 Australian Immunisation Handbook) please contact your regional CDC for advice

Previous doses of 7vPCV or 10vPCV	Age at This Presentation	1st Dose 10vPCV	2nd Dose 10vPCV	3rd dose 10vPCV	4th Dose 10vPCV
None	3-6 months	Give Now	1 month later	1-2 months*	18 months
	7-17 months	Give Now	1-2 months*	Not needed	18 months or 2 months after 2nd dose (whichever is later)
	18-23 months	Give Now	Not needed	Not needed	18 months or 2 months after 1st dose (whichever is later)
1 Dose (given at least 4 weeks previously if <12 months or 8 weeks previously if >12 months)	5-11 months	Previously given	Give Now	1-2 months*	18 months
	12-23 months	Previously given	Give Now*	Not needed	18 months or 2 months after 2nd dose
2 doses	7-11 months	Previously given	Previously given	Give Now	18 months
	12-23 months	Previously given	Previously given	Not needed	18 months or 2 months after 2nd dose (whichever is later)

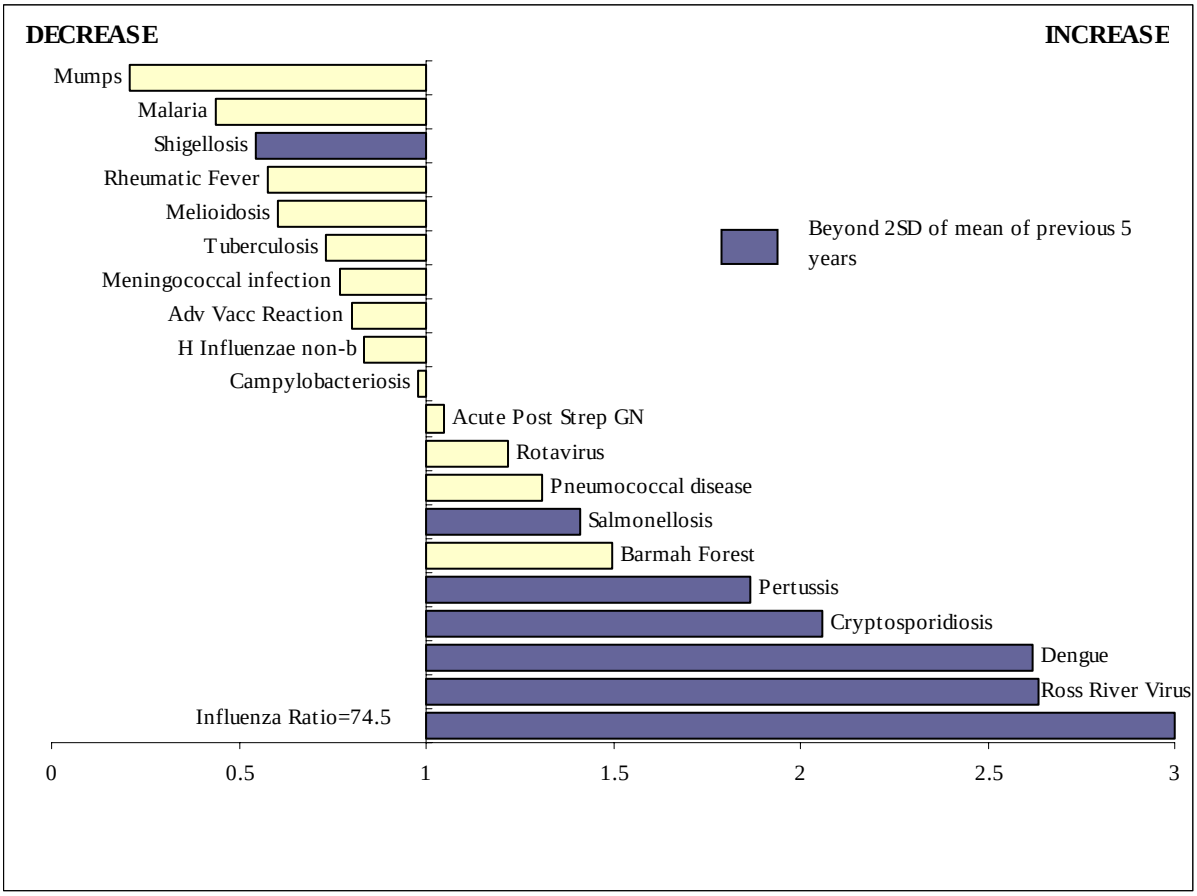
*Catch up dose of 10vPCV can be given at a minimum of 1 month apart to infants aged <12 months. For children aged >or = 12 months there should be a 2 month interval between doses of 10vPCV

If 3 doses of pneumococcal vaccine have been given, give the 4th dose up to 2 years of age. The 4th dose must be administered at least 2 months after the last dose.

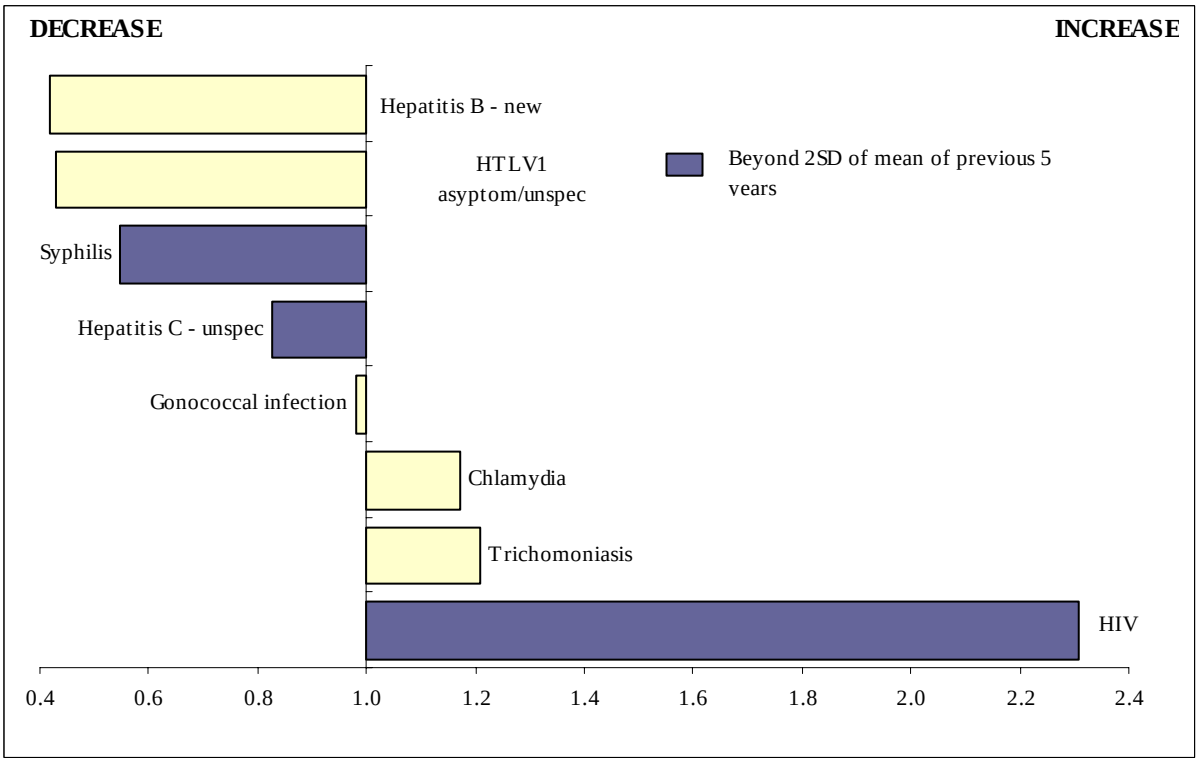
NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS
1 April—30 June 2009 & 2008

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		Total	
	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008
Acute Post Strep glomerulonephritis	1	2	0	2	5	7	6	0	1	1	13	12
Adverse vaccine Reaction	0	2	1	1	6	10	2	1	0	0	9	14
Arbovirus not otherwise specified	0	0	0	0	1	0	0	0	0	0	1	0
Barmah Forest	4	2	0	0	23	16	4	1	4	1	35	20
Campylobacteriosis	20	21	3	3	37	37	0	2	7	3	67	66
Chickenpox	0	6	0	0	16	5	5	8	6	0	27	19
Chlamydia	317	399	14	8	255	237	38	54	54	49	678	747
Chlamydial conjunctivitis	62	3	5	0	1	3	0	0	1	2	69	8
Cryptosporidiosis	10	13	0	1	30	2	2	4	5	1	47	21
Dengue	0	0	0	0	10	5	1	0	0	0	11	5
Donovanosis	0	1	0	0	0	0	0	0	0	0	0	1
Gonococcal conjunctivitis	1	0	0	0	0	0	0	0	0	0	1	0
Gonococcal infection	329	314	14	16	63	90	28	32	71	66	505	518
Hepatitis A	1	1	0	0	0	1	0	0	0	0	1	2
Hepatitis B - chronic	9	13	0	1	9	19	21	19	5	5	44	57
Hepatitis B - new	0	0	0	0	0	2	1	0	0	0	1	2
Hepatitis B - unspecified	14	10	3	0	14	22	1	1	8	6	40	39
Hepatitis C - new	0	0	0	0	1	0	0	0	1	0	2	0
Hepatitis C - unspecified	8	3	2	0	39	52	0	1	0	2	49	58
Hepatitis D	0	1	0	0	0	0	0	0	0	0	0	1
Hepatitis E	0	0	0	0	0	3	0	0	0	0	0	3
***H Influenzae* non-b**	1	0	0	1	1	0	0	0	0	0	2	1
HIV	0	1	0	0	6	3	0	0	0	0	6	4
HTLV1 asyptomatic/unspecified	9	15	0	0	0	2	0	0	0	0	9	17
HUS	0	0	0	0	0	1	0	0	0	0	0	1
Influenza	240	0	1	0	259	5	12	0	67	0	579	5
Legionellosis	0	0	0	0	1	0	1	0	0	0	2	0
Malaria	0	0	0	0	3	4	2	0	0	0	5	4
Melioidosis	0	0	0	0	4	5	0	0	0	0	4	5
Meningococcal infection	1	0	0	0	1	2	0	0	0	0	2	2
Mumps	0	8	0	0	1	0	0	0	0	1	1	9
Murray Valley encephalitis	0	0	0	0	1	1	0	0	0	0	1	1
Pertussis	4	12	0	0	57	113	4	2	4	9	69	136
Pneumococcal disease	11	5	1	2	8	4	0	0	2	1	22	12
Q Fever	0	2	0	0	0	0	0	0	0	0	0	2
Rheumatic Fever	2	4	0	0	0	5	0	0	5	0	7	9
Ross River Virus	11	5	3	0	85	45	3	1	5	4	107	55
Rotavirus	28	24	0	3	64	16	11	1	23	15	126	59
Salmonellosis	22	20	10	3	98	83	10	9	19	16	159	131
Shigellosis	13	20	2	0	1	6	4	6	1	1	21	33
Syphilis	14	32	1	2	26	18	1	2	4	12	46	66
Trichomoniasis	176	393	15	15	132	163	70	70	77	93	470	734
Tuberculosis	1	0	0	0	4	8	1	7	0	1	6	16
Typhoid	0	0	0	0	0	1	0	0	0	0	0	1
Varicella unspecified	1	0	0	0	0	0	0	0	0	0	1	0
Vibrio food poisoning	0	0	0	0	0	1	0	0	0	0	0	1
Yersiniosis	0	0	0	0	2	0	0	0	0	0	2	0
Zoster	5	3	0	1	23	14	1	1	2	0	31	19
Total	**1,315**	**1,335**	**75**	**59**	**1,287**	**1,011**	**229**	**222**	**372**	**289**	**3278**	**2916**

Ratio of the number of notifications (2nd quarter of 2009 to the mean of 2004-08); selected diseases



Ratio of the number of notifications (2nd quarter of 2009 to the mean of 2004-08); sexually transmitted diseases



Comments on NT notification graphs page 18

Syphilis

The decrease in this quarter is consistent with the decreasing trend noted in the last 3 years. Better and more consistent case management, contact tracing and the operation of the syphilis register may have contributed to this decrease.

Hep C unspecified

The decrease is consistent with the existing decreasing trend in the NT and also the national trend in recent years.

HIV

Of the 6 cases, 4 acquired the infection overseas (as immigrants or returned travellers). Eighty three percent of the cases acquired the infection through heterosexual contact. There were no Aboriginal cases. There were 3 diagnosed as newly acquired

Shigellosis

Shigella notifications were 46% fewer than expected (21 vs. 38 five year mean) for this quarter. The reduction of notifications occurred across all regions of the NT, without an obvious cause.

Salmonellosis

Salmonella notifications increased this quarter to 40% above the 5 year mean. There were a few small outbreaks but most of the notifications were over a large geographical area and there was a wide range of serovars.

Cryptosporidiosis

Cryptosporidiosis notifications this quarter were sporadic and spread across a wide geographical area.

Dengue

All the dengue cases in the NT for the second quarter (11) were imported either from East Timor or Indonesia. There has been extensive outbreaks of dengue in an increasing tropical world trend of dengue disease, which is reflected in the increase in the number of imported cases into Australia. As well there has been a record outbreak in Cairns in 08-09. There are no dengue mosquitoes in the NT, with the recent eradication of the Groote dengue mosquito incursion being confirmed this year after a full wet season.

Ross River (RRV)

This is the highest number of cases in this quarter (107) since 1990/91. The higher number of RRV cases is mainly due to increased numbers of RRV disease cases in the Darwin region, particularly in the Palmerston and rural areas where there is no mosquito control. The attack rate in Darwin was just below Palmerston, with the lower rate in Darwin in spite of the very productive and extensive salt marsh swamps where DHF conducts an aerial larval mosquito control program. However there were also appreciable increases in the Alice Springs, the Barkly, and the East Arnhem regions. The increases are probably due to increased mosquito vector numbers in at least the Darwin and Barkly regions due to unusual monthly rainfall variations in the wet season rather than total wet season rainfall, which was average in Darwin and Alice but above average in the Barkly and East Arnhem. The increase in the Alice region is hard to explain as summer rainfall was relatively low. This indicates there may be other factors involved in the regions other than Darwin, such as movement of people after contracting the disease in another region.

Influenza

Refer to ‘Epidemiology of the pandemic (H1N1) 2009 influenza in the Northern Territory, June-September 2009’ article on page 1.

Immunisation coverage for children aged 12-<15 months at 30 June 2009

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% Fully vaccinated
Darwin	271	91.9%	91.5%	95.6%	95.2%	91.1%
Winnellie PO Bag	95	82.1%	82.1%	85.3%	86.3%	81.1%
Palmerston/Rural	239	92.9%	92.9%	95.4%	95.4%	92.9%
Katherine	113	92.0%	92.0%	96.5%	96.5%	92.0%
Barkly	32	81.3%	81.3%	96.9%	96.9%	81.3%
Alice Springs	118	89.0%	89.0%	95.8%	94.9%	89.0%
Alice Springs PO Bag	53	96.2%	96.2%	98.1%	98.1%	96.2%
East Arnhem	45	88.9%	88.9%	95.6%	95.6%	88.9%
NT	966	90.6%	90.5%	94.8%	94.7%	90.3%
Indigenous	412	88.1%	88.1%	94.4%	94.4%	88.1%
Non-Indigenous	554	92.4%	92.2%	95.1%	94.9%	91.9%
Australia Indigenous	3,471	84.6%	84.6%	92.4%	92.8%	84.3%
Australia Non-Indigenous	70,140	92.0%	92.0%	94.6%	94.5%	91.7%
Aus Total	73,611	91.7%	91.6%	94.5%	94.4%	91.3%

Immunisation coverage for children aged 24-<27 months at 30 June 2009

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% MMR	% Fully vaccinated
Darwin	256	95.7%	95.7%	93.8%	96.5%	94.9%	92.2%
Winnellie PO Bag	97	99.0%	99.0%	97.9%	99.0%	99.0%	97.9%
Palmerston/Rural	235	97.4%	97.4%	95.3%	97.9%	95.7%	95.3%
Katherine	119	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Barkly	25	92.0%	92.0%	92.0%	96.0%	100.0%	88.0%
Alice Springs	128	91.4%	91.4%	89.8%	93.8%	92.2%	89.8%
Alice Springs PO Bag	57	98.2%	98.2%	98.2%	98.2%	98.2%	98.2%
East Arnhem	50	96.0%	96.0%	96.0%	98.0%	96.0%	96.0%
NT	967	96.5%	96.5%	95.1%	97.3%	96.2%	94.6%
Indigenous	429	97.2%	97.2%	95.8%	97.9%	97.4%	95.6%
Non-Indigenous	538	95.9%	95.9%	94.6%	96.8%	95.2%	93.9%
Australia Indigenous	3,386	95.2%	95.2%	93.9%	97.5%	94.4%	91.8%
Australia Non-Indigenous	70,406	95.0%	95.0%	94.7%	95.7%	94.0%	92.9%
Aus Total	73792	95.0%	95.0%	94.6%	95.8%	94.0%	92.9%

Immunisation coverage for children aged 60-<63 months 30 June 2009

Region	Number in District	% DTP	% Polio	% MMR	% Fully vaccinated
Darwin	229	79.5%	79.9%	78.6%	78.2%
Winnellie PO Bag	110	93.6%	93.6%	93.6%	93.6%
Palmerston/Rural	183	77.6%	77.6%	77.6%	77.6%
Katherine	106	90.6%	90.6%	91.5%	90.6%
Barkly	27	96.3%	96.3%	96.3%	96.3%
Alice Springs	131	87.0%	87.0%	86.3%	86.3%
Alice Springs PO Bag	47	91.5%	91.5%	91.5%	89.4%
East Arnhem	60	93.3%	93.3%	93.3%	93.3%
NT	893	85.3%	85.4%	85.1%	84.8%
Indigenous	413	91.0%	91.0%	91.3%	90.8%
Non-Indigenous	480	80.4%	80.6%	79.8%	79.6%
Australia Indigenous	3,129	79.9%	79.9%	80.1%	79.4%
Australia Non-Indigenous	64,693	83.3%	83.2%	83.1%	82.6%
Aus Total	67822	83.2%	83.1%	82.9%	82.4%

Immunisation coverage 30 June 2009

Immunisation coverage rates for NT children by regions based on Medicare address postcode as estimated by the Australian Childhood Immunisation Register are shown on page 20.

Background information to interpret coverage

Winnellie PO Bag is postcode 0822, which includes most Darwin Rural District communities, some East Arnhem District communities and some people who live in the Darwin "rural area" who collect mail from the Virginia store or Bees Creek. Alice Springs PO Bag is postcode 0872, which includes Alice Springs District, Nganampa and Ngaanyatjarra communities.

The cohort of children assessed at 12 to <15 months of age on 30 June 2009 were born between 01 Apr 2008 and 30 Jun 2008 inclusive. To be considered fully vaccinated, these children must have received 3 valid doses of vaccines containing diphtheria, tetanus, pertussis, and poliomyelitis antigens, either 2 doses of PRP-OMP Hib or 3 doses of another Hib vaccine, and 2 doses of hepatitis B vaccine (not including the birth dose – latest doses due at 6 months of age). All vaccinations must have been administered by 12 months of age.

The cohort of children assessed at 24 to <27 months of age on 30 June 2009 were born between 01 Apr 2007 and 30 Jun 2007 inclusive. To be considered fully vaccinated, these children must have received 3 valid doses of vaccines containing diphtheria, tetanus, pertussis, and poliomyelitis antigens, either 3 doses of PRP-OMP Hib or 4 doses of another Hib vaccine, and 2 doses of hepatitis B vaccine (not including the birth dose) and 1 dose of measles, mumps, rubella vaccine (latest doses due at 12 months of age). All vaccinations must have been administered by 24 months of age.

The cohort of children assessed at 60 to <63 months of age on 30 June 2009 were born between 01 Apr 2004 and 30 Jun 2004 inclusive. To be considered fully vaccinated, these children must have received 4 valid doses of vaccines containing diphtheria, tetanus, pertussis antigens, 4 doses of poliomyelitis vaccine and 2 valid doses of measles, mumps, rubella vaccine (latest doses due at 4 years of age). All vaccinations must have been administered by 60 months (5 years) of age.

Interpretation

Immunisation coverage in NT children was above the national average in the 24 to <27 months and 60 to <63 months cohort but below the national average in the 12 to <15 months. Immunisation coverage in Indigenous children in the NT was higher across all cohorts compared to the national coverage of Indigenous children. Indigenous NT children had lower coverage than non-Indigenous NT children in the younger cohort (ie 12 to <15 months) but higher than non-Indigenous children in the older cohorts.

Immunisation coverage for NT children as a whole at 60 to <63 months of age (84.8%) remains lower than the younger cohorts, and this is a concern across Australia, with the national average for this cohort being 82.4%. For Indigenous NT children, immunisation coverage is lower at a younger age (i.e. 88.1% at 12 to <15 months cohort) but higher for the older age group (ie 90.8% at 60 to <63 months), reflecting a concern that Indigenous children are not as immunised in a timely manner in early childhood.

NT Malaria notifications April-June 2009

Merv Fairley, CDC, Darwin

5 notifications of malaria were received for the second quarter of 2009. The following table provides details about where the infection was thought to be acquired, the infecting agent and whether chemoprophylaxis was used.

Number of cases	Origin of infection	Reason exposed	Agent	Chemoprophylaxis
1	PNG	Holiday	*P. vivax*	No
1	Ghana	Resident	*P. falciparum*	No
1	PNG	Holiday	*P. vivax*	Yes
1	PNG	Holiday	*P. falciparum*	No
1	PNG	Relapse	*P. vivax*	No

Disease Control staff updates

Immunisation

Ursula (Uschi) Janssen has joined as the H1N1 Immunisation Co-ordinator to oversee the rollout of the pandemic influenza vaccine. Uschi has worked as a Remote Area Nurse in Gunbalanya as well as a school nurse at Kormilda College and recently completed her graduate diploma in remote health. **Nellie Olsen** and **Diane Frey** have both started as Immunisation Data Entry Officers.

TB/Leprosy

James Trauer started at TB/Leprosy in the registrar rotation position, but will be staying on in the TB/Leprosy training position to commence AFPHM training for a total of 18 months. James is also training in respiratory medicine and is previously from Victoria.

RHD

Grace Mutoti replaced **Sharron Livesey** as the RHD RN and Sharron returned to Remote Health as the A/Nursing Coordinator. Grace has been recently working in the Royal Darwin Hospital prior to joining CDC.

Medical Entomology

Myron Kulbac has commenced work as a Technical Officer in Medical Entomology.

Alice Springs

Alice Springs has had a recent influx of new staff, **Teem-Wing Yip** has commenced as the Coordinator and Public Health Medical Officer for Alice Springs. Teem-Wing came to the Territory as a final year medical student, and has stayed in Alice to work since then. Teem Wing has worked throughout the Alice Springs hospital and also at Congress and is currently doing a Masters of Public Health.

Other Alice Springs staff movements:

- **Paula Sutton** – commenced as the trachoma programme officer
- **Debbie Heller** – acting business and human resource manager.
- **Mark Rowe** – finished up as the male sexual health co-ordinator.
- **Lauren Coelli** – acting in the remote sexual health team
- **Jodi Pipes** – remote sexual health coordinator
- **Jill Taylor** – sexual health data manager
- **Paula Sutton** – clean face health promotion project officer with trachoma project
- **Nicole Goulding** – PHN trachoma project
- **Michelle Callard** – pandemic flu vaccine coordinator
- **Claire Hewitt**, Hazel Erickson, Megan Petery – pandemic flu immunisation RN
- **Kaylene Prince** – timeliness vaccine project
- **Pam Brook** – immunisation timeliness project