



CENTRE FOR DISEASE CONTROL  
NORTHERN TERRITORY

# THE NORTHERN TERRITORY DISEASE CONTROL BULLETIN



Vol. 21, No. 4 December 2014

ISSN 1440-883X

## Water-related injury hospitalisations in the Northern Territory 2001 to 2011

*Steven Skov and Meredith Neilson, CDC, Darwin*

### Abstract

*This report describes the full range of non-intentional injury hospitalisations that resulted from water-related activities in the Northern Territory from 2001 to 2011. There were 1256 water-related hospital admissions, 884 (70.3%) in males and 372 (29.6%) in females. Aboriginal people comprised 27.1% (340) of all water-related hospital admissions. The age-standardised rate for all people over the 11 year period was 39.6 admissions per 100,000 population. The mean age of all persons admitted with water-related injury was 28.2 years. The number of hospitalisations increased substantially over the 11 year period. Similarly, the age-standardised rate of admission also increased rising from 25.3/100,000 in 2001 to 47.4/100,000 in 2011. The most common type of injury was fracture/dislocation/amputation followed by an open wound, contact with venomous animal and drowning/non fatal submersion. This report is an update of the previous water-related injury hospitalisation report published in 2010.*

*Key words: Water-related injury; hospitalisation; non-intentional*

### Background

Boating, fishing and recreational water activities are extremely popular in the Northern Territory

(NT), particularly in the Top End, owing to its warm climate, extensive coastline and abundance of fresh waterways. Compared to other parts of Australia, swimming in natural waterways is less popular due to the presence of dangerous jellyfish and crocodiles.

Nevertheless, rates of drowning deaths in the NT have at times been high, although deaths in young children have substantially declined since the advent of laws requiring private swimming pools to be fenced.

### Contents

Water-related injury hospitalisations in the Northern Territory 2001 to 2011 .....	1
Syphilis Alert .....	11
Auditing the availability of condoms in remote and urban settings in the Northern Territory .....	11
Policy and fact sheet update October-December 2014 .....	12
2013/14 Ross River virus Season in Darwin .....	13
Measles – 3 more cases, bringing the total to 53 so far in 2014 .....	15
Northern Territory Measles Awareness Campaign .....	16
Abstract from peer reviewed published article related to the Northern Territory .....	17
Hepatitis A Fact sheet .....	19
NT Notifications of disease by onset date and districts .....	21
Graphs of selected diseases and STIs .....	22
Comments on notifications .....	23
NT malaria notifications .....	23
Immunisation coverage .....	24
Disease Control staff updates .....	26

Editor: Vicki Krause

Email: Vicki.krause@nt.gov.au

Assistant Editors: Kelly Hosking  
Kate Hardie  
Rosalind Webby  
Meredith Neilson  
Steven Skov  
Heather Cook

Centre for Disease Control  
PO Box 40596  
Casuarina  
Northern Territory 0811



Website: <http://www.nt.gov.au/health/cdc/cdc.shtml>

Production Design: Roberta Smith/Justine Glover

In 2010 the NT Centre for Disease Control (CDC) published a detailed report on water-related injuries in the NT.<sup>1</sup> In this report we provide an update of the previous report as well as some extra detail concerning near drowning and jellyfish injuries.

## Methods

Hospitalisation data for injury was extracted using the criteria of any 'S' or 'T' International Classification of Disease version 10 (ICD10) code in the primary diagnosis field. This was then narrowed to only include the range S00 to T75 and T79 as per the definition of community injury used by the Australian Institute of Health and Welfare (AIHW).<sup>2</sup>

From this, water-related injuries were extracted according to the following criteria:

Injury codes in any diagnosis field:

- T75.1: drowning / submersion
- T63.0: toxic effect of contact with sea snake venom
- T63.5: toxic effect of contact with fish
- T63.6: toxic effect of contact with other marine animals
- T70.3: decompression sickness

Activity codes in any diagnosis field U52-U54, U64.4, U64.5: all are activities related to boating and water sports and recreational activities.

External cause codes in any diagnosis field:

- V90-V94 water transport accidents
- W16: diving, jumping into water causing injury
- W56, W58: contact with marine animals
- W65-W74: accidental drowning and submersion
- X20.05: contact with sea snake
- X26: contact with venomous marine animals and plants
- X37: victim of cataclysmic storm
- X38: victim of flood
- Y21: drowning and submersion, undetermined intent
- Supplementary factors related to other causes in any diagnosis field
- Y92.32, Y92.80-83: place of occurrence of the injury involved a water source

Intentional events such as those involving assaults or intentional self harm were included in the initial search but are excluded from the main body of analysis. They will be reported on in a dedicated section.

## *Drowning and submersion*

There is a range of ICD codes that denote drowning or submersion injuries. Code T75.1 is a principal diagnosis code specifically intended to denote drowning or submersion as the primary injury. The definition used by the AIHW for drowning in their injury reports<sup>3</sup> relies on the presence of the external cause codes W65-74 to be present rather than the presence of T75.1 as a principal diagnosis. These codes denote drowning or submersion which take place in specified places (eg a bath tub or swimming pool) but exclude drowning or submersion as a result of transport events or cataclysm (eg cyclones, floods). There is also the Y21 code denoting drowning or submersion of undetermined intent and the transport codes V90 and V92 which denote drowning or submersion as a result of a watercraft accident (eg a collision) or an event occurring on a watercraft (eg falling overboard). In addition there are codes for drowning/submersion as a result of assault or self harm.

One might expect that these external causes and qualifying codes would be present along with a principal diagnosis code of T75.1. However, this is not always the case. Part of the explanation for this may lie in the fact that a person may present to hospital with more than one injury. For example a person who has fallen into water may be suffering from a submersion injury but also have a fracture or laceration. In this instance, a subjective judgement is made as to which is the 'principal injury'. In addition, the ICD codes refer to drowning or submersion which is not the same thing. Drowning or near drowning is the injury resulting from inhaling water with a subsequent lack of oxygen. Submersion may include other injuries such as swimmer's cramp.

For the purpose of this report, we will report numbers based on the AIHW definition in order to allow for comparison of population rates with national data sets and also on the presence of any drowning or submersion code.

## Results

Over the 10 year period, there were 1256 water-related hospital admissions, 884 (70.4%) in males and 372 (29.6%) in females. Aboriginal people comprised 27% of all admissions (340). See Table 1.

**Table 1. NT water-related hospitalisations by sex and Aboriginal status**

	Aboriginal	Non-Aboriginal	Total
Male	205	679	884
Female	135	237	372
<b>Total</b>	<b>340</b>	<b>916</b>	<b>1256</b>

The age-standardised rate for all people resident in the NT over the 11 year period was 39.6 admissions per 100,000 population (95% CI 37–42.1) with a slightly lower rate for non-Aboriginal people (38.6 95% CI 35.6–41.6) compared to Aboriginal people (39.7 95% CI 34.7–44.7) which was not statistically significant. Overall, males had a significantly higher hospitalisation rate than females at 51.8 vs 26.4 per 100,000 population ( $p < 0.01$ ).

The mean age of all persons admitted was 28.2 years. The mean age of females admitted was 26.9 years compared to males at 29.6 years. Aboriginal people were substantially younger than non-Aboriginal people admitted: 19.8 years versus 32.2 years. See Table 2.

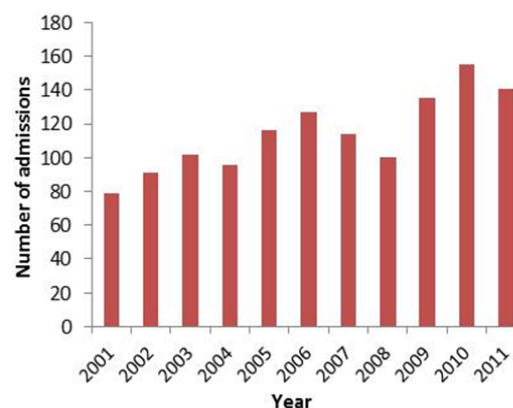
**Table 2. NT resident age-standardised water-related hospitalisation rate per 100,000 population by sex and Aboriginal status (95% CI)**

	Aboriginal	Non-Aboriginal	Total
Male	48.9 (40.9–56.9)	52.6 (47.8–57.4)	51.8 (47.8–55.8)
Female	31.1 (24.9–37.3)	23.2 (19.6–26.7)	26.4 (23.4–29.5)
<b>Total</b>	<b>39.7</b> <b>(34.7–44.7)</b>	<b>38.6</b> <b>(35.6–41.6)</b>	<b>39.6</b> <b>(37–42.1)</b>

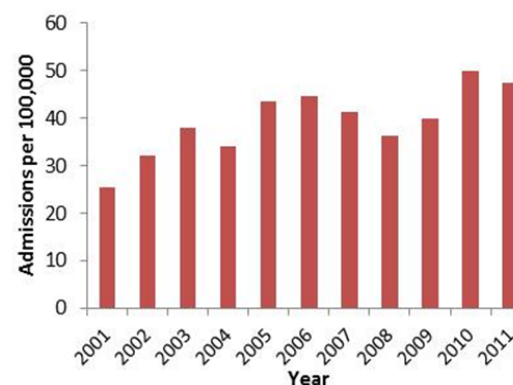
The number of hospitalisations increased substantially and progressively since 2001 with a

small decline in 2007 and 2008. The per capita rate has also been increasing with the age-standardised rate of admission rising from 25.3/100,000 in 2001 to being consistently above 35/100,000 since 2005 and was 47.4/100,000 in 2011. See Figures 1 and 2.

**Figure 1. NT water-related injury hospitalisations 2001-2011**



**Figure 2. NT age-standardised rate of water-related hospitalisations 2001-2011**

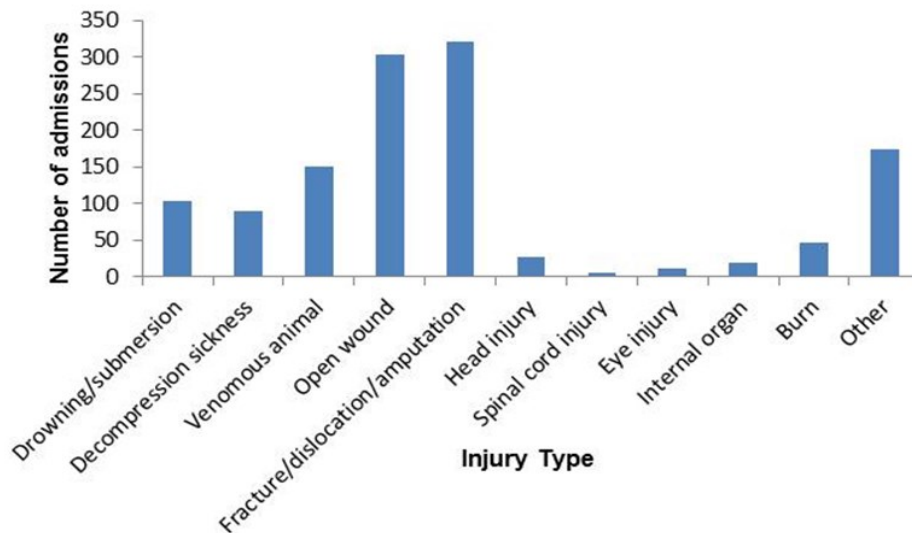


### Injury type

Injury type was classified according to the principal diagnosis recorded. The most common type of injury was fracture/dislocation/amputation followed by open wounds, contact with venomous animals and drowning/submersion. See Figure 3.

The profile of injury types was broadly similar for both males and females although 12% of

Figure 3. NT water-related hospitalisations by principal diagnosis



female admissions were for drowning/submersion and 10% for decompression sickness compared to 7% and 5% respectively for males. There was a somewhat different profile seen between Aboriginal and non-Aboriginal people. See Figure 4. There were no Aboriginal admissions for decompression sickness, which only occurs as a result of scuba diving. Admissions amongst Aboriginal people were relatively more common for open wounds (30% of all vs 22%) and contact with venomous animals (25% vs 6%) but less common for fractures and dislocations (13% vs 30%).

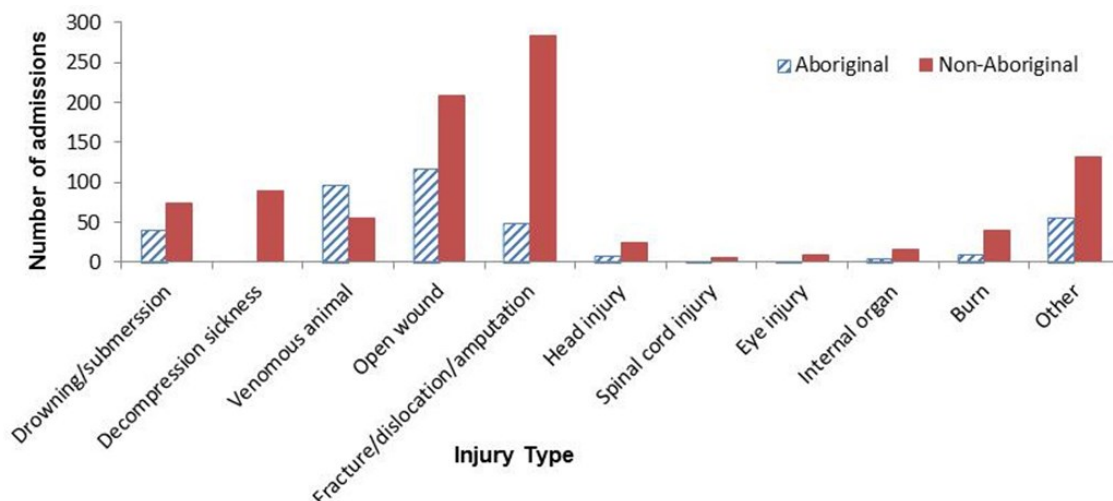
#### 'Impact' injuries

Just over half of all hospitalisations, 642 (51.1%), were the result of some type of

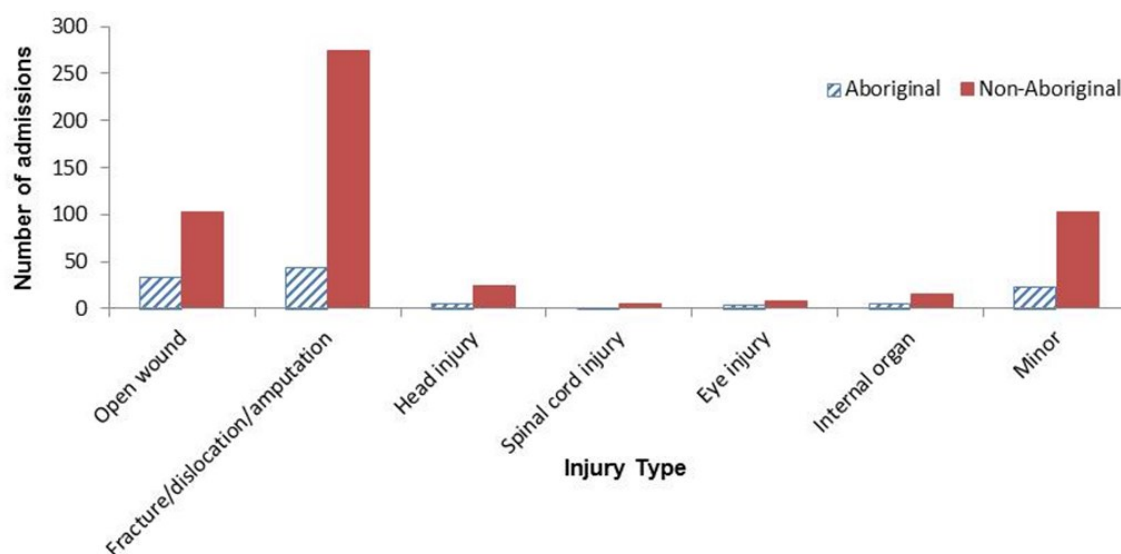
physical impact on the person resulting in a wound, fracture, contusion, internal organ or head injury. This excludes injuries resulting from contact with an animal. See Figure 5. Impact type injuries were more common in non-Aboriginal people comprising 57.8% (531/916) of admissions compared to only 32.6% (111/340) in Aboriginal people (Chi squ 38.4,  $p < 0.001$ ). The effect of impact injuries appears to have been more severe in non-Aboriginal people with fractures and dislocations accounting for 52% of impact injuries compared to 39% in Aboriginal people. There was a greater proportion of non-Aboriginal people admitted with 'minor' impact injuries.

Over the report time period there is an increasing trend of impact related injuries. See Figure 6.

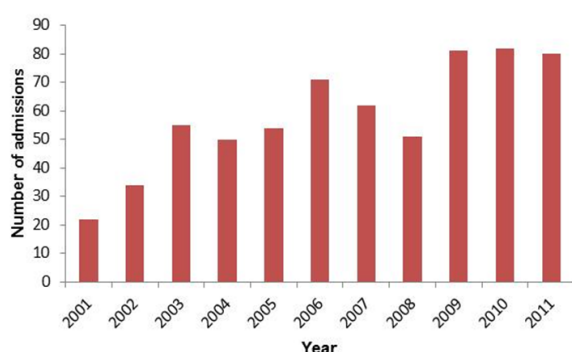
Figure 4. NT water-related hospitalisations by principal diagnosis and Aboriginal status



**Figure 5. ‘Impact’ related hospitalisations**



**Figure 6. ‘Impact’ related hospitalisations**



was no presence of either T75.1 or Y21 which specifically denote drowning or submersion. There were 10 cases of drowning / submersion as denoted by the presence of the T75.1 codes which also has external cause codes indicating either self harm (9 cases) or assault (1 case). These cases are not included in this analysis.

According to the AIHW definition of drowning there were 110 cases over the study period at an age-standardised rate of 3.6 per 100,000 population (95% CI 2.9-4.3). Rates were higher in non-Aboriginal people and males but not statistically significantly so. See Table 3.

***Drowning / submersion***

In this period, excluding cases of deliberate intent, there were 104 cases where T75.1 was the principal diagnosis, 107 cases where T75.1 was present anywhere and 110 where T75.1 or Y21 were present. Using the AIHW definition there were 110 cases of drowning or submersion during this time period. However, if one uses a definition which includes all the possible codes, the number rises to 144 cases. Of particular note is that the AIHW definition misses 7 cases where the T75.1 code is present and a further 3 where Y21 is present. Conversely, there are 10 instances which fulfil the AIHW definition but for which there is no T75 or Y21 code present. Within this data set there were 26 cases where the codes V90 or V92 were present which denote drowning or submersion relating to a watercraft event. However in 24 of them there

**Table 3. NT resident age-standardised hospitalisation rate per 100,000 population for AIHW defined drowning/submersion by sex and Aboriginal status (95% CI)**

	Aboriginal	Non-Aboriginal	Total
Male	4.1 (2.1 - 6)	4.5 (3.1 - 5.9)	4.1 (3 - 5.1)
Female	2.9 (1.4 - 4.5)	3.3 (1.9 - 4.6)	3.1 (2.1 - 4.1)
Total	3.5 (2.3 - 4.8)	3.9 (2.9 - 4.8)	3.6 (2.9 - 4.3)

According to the broader definition of drowning/submersion, there were 144 hospitalisations between 2001 and 2011. One person subsequently died. Males accounted for 94 or 65.3% of admissions while 100 or 69.4% were non-Aboriginal people. There was no statistically significant difference between the proportions of admissions for drowning between Aboriginal and non-Aboriginal people (12.9% vs 10.9% Chi squ 1.00,  $P > 0.05$ )

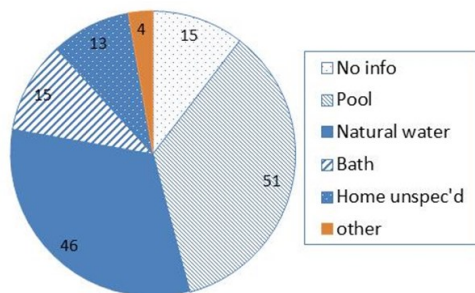
The great majority of people admitted for this reason were children: 86 of 144 admissions (59.7%) were in children under the age of 5 years with the overall median age for all such admissions being 3 years. For Aboriginal people, there were 29/44 admissions (65.9%) in under 5 year olds and 86/144 (59.7%) in non-Aboriginal people. This difference is not statistically significant.

Males accounted for 65.3% (94/144) of these admissions with the proportions for Aboriginal and non-Aboriginal males being 59% and 68% respectively.

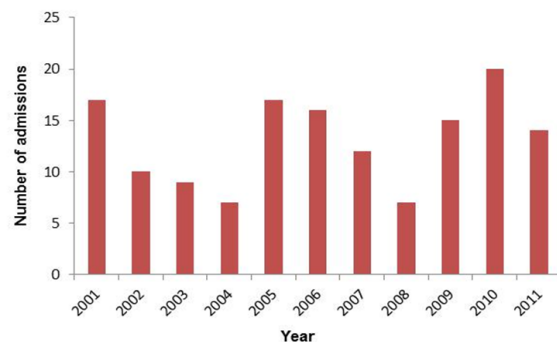
The majority of drowning/submersion events took place in a swimming pool followed by a body of natural water. See Figure 7. The event was slightly more likely to have taken place in a swimming pool for non-Aboriginal people and in a natural body of water for Aboriginal people but the differences were not statistically significant in either case.

Over time hospitalisations for drowning/submersion have fluctuated with no clear trend being apparent. See Figure 8 and 9.

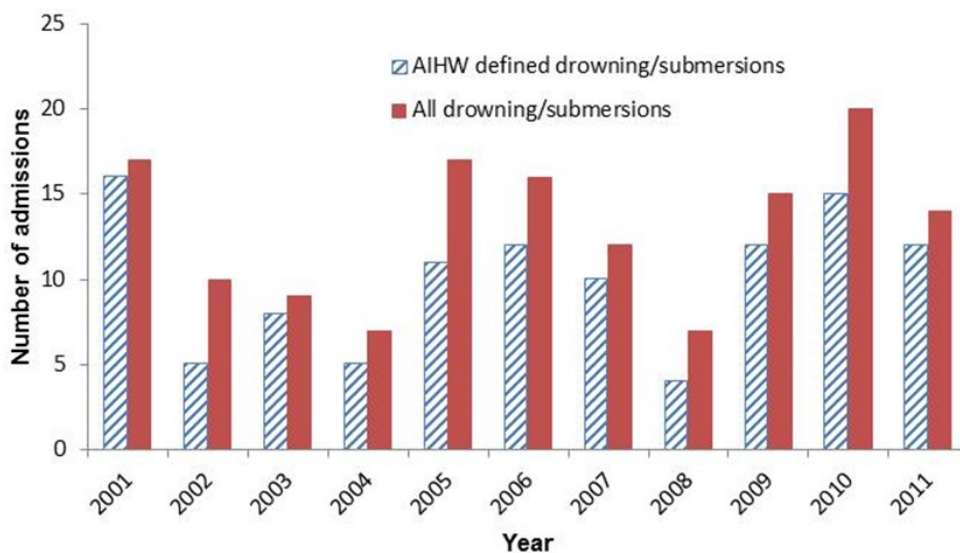
**Figure 7. Hospital admissions for drowning/submersion: Place of occurrence**



**Figure 8. Hospital admissions for drowning/submersion by year**



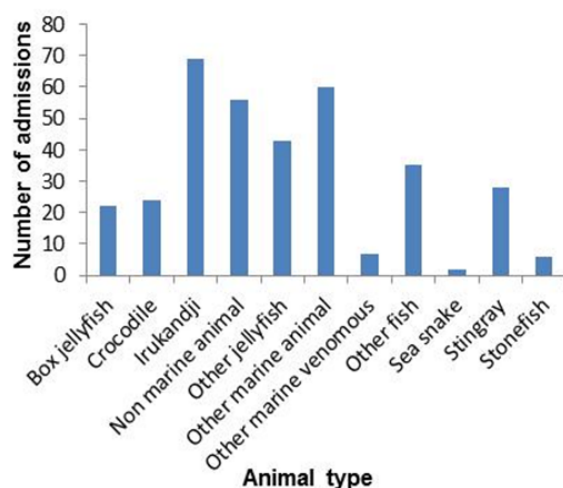
**Figure 9. Hospital admissions for drowning/submersion by year including AIHW definition of drowning/submersion**



### Contact with animals

The NT has in its waters a broad range of potentially dangerous marine life which can cause injury: most famously the saltwater crocodile, the box jellyfish (*Chironex fleckerii*) and a number of jellyfish species which can cause the Irukandji syndrome. There were 352 admissions to hospital which resulted from some type of contact with any animal of which 296 were from marine animals (23.6% of all water-related injury admissions). There were 134 admissions for jellyfish stings (10.7% of all) of which 22 were from box jellyfish, 69 from jellyfish causing Irukandji syndrome and 43 from 'other' jellyfish. See Figure 10.

**Figure 10. Hospital admissions for contact with animals**



### Activity during the injury

The activity being engaged in when the injury was sustained was either unspecified or not recorded in 606 (48.2%) cases. Fishing was the most common activity (110) recorded followed by swimming (108). Work for income of various types led to 150 or 12% of admissions.

Swimming was a more common activity for admissions in Aboriginal people accounting for 18.5% compared to only 4.9% of admissions for non-Aboriginal people (Chi squ 58,  $p < 0.001$ ).

On the other hand, all injuries resulting from scuba diving, snorkelling, water skiing, surfing or wind surfing occurred amongst non-Aboriginal people. See Table 4.

**Table 4 Activity leading to water-related hospitalisations**

Activity	Number of hospital admissions
No record	113
Boat sports	12
Diving	8
Fishing	110
Scuba snorkelling	32
Swimming	108
Water skiing	11
Surfing wind surfing	6
Adventure rafting	1
Other individual water sports	9
Other sports	19
Other leisure activity	143
Work for income	150
Non income work	17
Rest	24
Unspecified activity	493
<b>Total</b>	<b>1256</b>

### Boating

Boating is an extremely popular activity in the NT and 210 admissions were for injuries resulting from events on a watercraft: only 8 of these were in Aboriginal people. Only 26 of these involved drowning or submersion with the rest resulting from some type or impact, burn or other injury.

Of the 210 admissions, 120 were known to result from events involving a power-boat, while there were 12 from non-powered boat with the type of boat being unknown in the remainder.

### Time of the year

Over the 11 year study period, the months of the 'build up' had the greatest number of admissions with 36.6% of all admissions occurring between September and December. The dry and wet seasons accounted for 30.2% and 33.2% respectively. See Figure 11.

Admissions for injuries incurred when the person was in the water were particularly less frequent during the cooler months of the dry season. Only 26.4% of drowning admissions took place between May and August. Admissions for contact with venomous animals were also much less common during the dry season with only 13.6% (20/147) of such admissions during this time. Jellyfish stings were particularly uncommon during the dry season with only 16/134 admissions for all types of jellyfish stings during the 'dry'. This applied to both box jellyfish (0/22) and species causing Irukandji syndrome (6/69).

In contrast, injuries from events on watercraft were more frequent during the dry season with 83/210 (39%) occurring at this time.

A smaller proportion of admissions in Aboriginal people occurred during the dry season, build up and wet season compared to

non-Aboriginal people (25% vs 32% Chi squ 5.9,  $p < 0.05$ ).

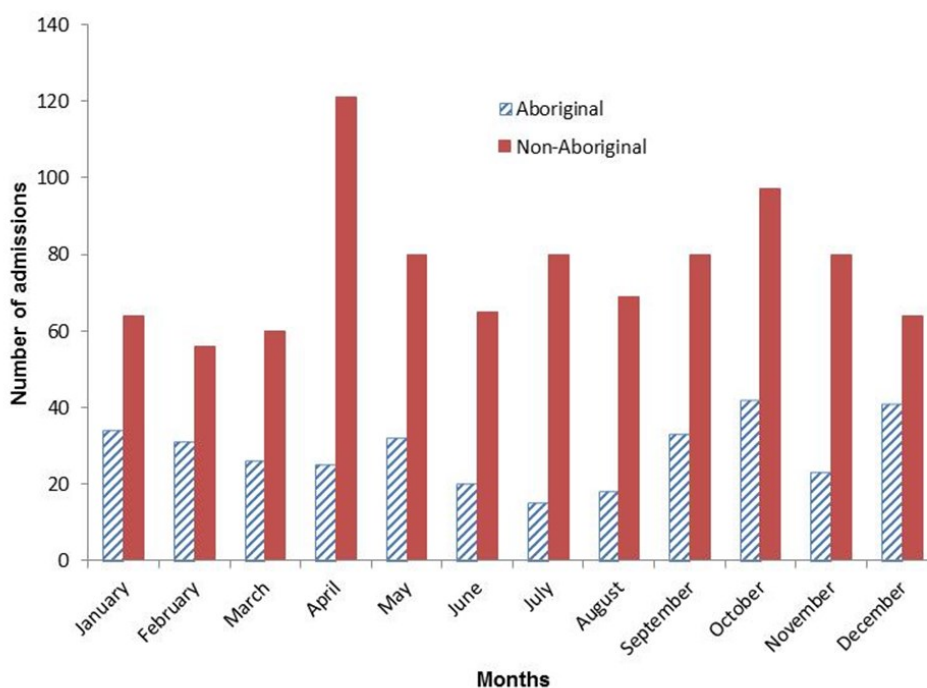
### Place of occurrence

In including Y codes for place in the search for water-related events, a more complete range of hospitalisations are found. However, during analysis, it becomes apparent that this strategy may also include a significant number of hospitalisations which are not water-related. For example, there are 223 hospitalisations for which the place recorded is 'Beach'. For many, the nature of the injury indicates something water-related (eg drowning, contact with a marine animal or involving a watercraft), but there are 172 for which there is no indication that the injury is water-related. Similarly there are 30 hospitalisations as a result of an event at a 'Swimming centre', but in only 12 is there a direct indication of a water-related injury.

### Deliberately inflicted injuries

There were 10 drowning/submersion hospitalisations that were coded as being the result of either assault (1) or a self-harm event (9). Three were in Aboriginal people and 7 in non-Aboriginal people.

Figure 11. Hospital admissions according to time of the year by month and Aboriginal status



## Discussion

This report demonstrates that males are 2.4 times more likely than females to be admitted to hospital for water-related injuries. Other reports on water-related injuries have reported similar findings.<sup>1,4,5</sup> Furthermore the age group most likely to be admitted to hospital with a water-related injury is relatively young with the mean age being 28.2 years old. This finding indicates that future water safety campaigns should target the young male population.

This study demonstrated that the age-standardised rate of hospital admissions for water-related injuries in the NT almost doubled in the 2001 to 2011 period reported. It is difficult to determine if this relates to a real increase in injuries or if it reflects a change in hospital coding practices.

Half of all water-related injury hospitalisations were due to an impact type injury. Over the reporting period there was a four-fold increase in impact related injuries. These injuries resulted in a wound, fracture, contusion or head injury. It is possible that this could also reflect a change in hospital coding practices towards greater coding of cause and place of injury information.

Admissions for drowning/submersion have fluctuated over time with no discernable trend being apparent. As indicated in similar water-related injury studies, children under the age of 5 years are the most frequent group to be admitted for drowning/submersion injuries.<sup>1,4,5</sup> Given that the median age for all drowning/submersion admissions was 3 years, the continued focus on water safety for the under 5 year old age group is important.

Contact with marine animals resulted in 23.6% of all hospital admissions for water-related injury in the reporting period. Of interest hospital admission for injury from jellyfish causing Irukandji syndrome was more frequent than admission for stings from the major box jellyfish *Chironex fleckeri*. This is likely to be due to a lower threshold for admission for Irukandji syndrome due to the potential risk of delayed cardiac abnormalities.

It is difficult to get a clear picture of the activity being engaged in when the injury was sustained due to the high number of unspecified or not recorded cases (48.2%). This may be a result of coding practices or due to the nature of case note documentation. When the activity was known fishing was the most common activity recorded (110 admissions) followed by swimming (108).

While there is an extensive body of work in the world literature describing drowning / submersion related injury, there is relatively little that describes non-drowning water-related injury. Chalmers and Morrison<sup>6</sup> provided a good overview of the literature concerning non-drowning water injuries in 2003. Henderson and Wilson<sup>4</sup> examined hospital admissions for water-related injuries in England from 1997/8 to 2003/4. Unfortunately, the inclusion criteria in most studies vary greatly making comparisons very difficult.

The outcomes from this study will assist with guiding the NT Water Safety Advisory Council's (NTWSAC) water safety promotion efforts. The NTWSAC brings together both Government and non-Government agencies including the Royal Life Saving Society, Surf Life Saving NT, Department of Health and the Amateur Fisherman's Association of the NT. The vision for the group is for a safe and healthy lifestyle in and around the water with a goal to reduce drowning deaths by 50% by 2020. The patterns of injury described in this study broadly support the directions of the NTWSAC. The Centre for Disease Control will continue to support the NTWSAC with hospitalisation information analysis.

## Summary of key findings

- Males had a significantly higher hospitalisation rate compare to females (51.8 vs 26.4 per 100,000 population).
- There was no statistically significant difference in age-standardised water-related hospitalisation rate between Aboriginal and non-Aboriginal people.
- The mean age of all persons admitted was 28.2 years Aboriginal people were substantially younger than non-Aboriginal people admitted (19.8 years vs 32.2 years).

- The age-standardised rate of hospitalisations has increased substantially and progressively since 2001 (25.3 per 100,000 in 2001 to 47.4 per 100,000 in 2011).
- The most common type of injury were fractures/dislocations followed by open wounds, contact with venomous animals and drowning/submersion.
- 51.1% of all hospitalisations were the result of impact on the person. There was an increasing trend of impact related injuries over the analysis period.
- 110 cases of drowning, age-standardised rate of 3.6 per 100,000 population. 12% of female admissions were for drowning/submersion and 7% were for male.
- No significant difference between admissions for drowning based on Aboriginal status.
- 65.3% of drowning hospitalisations occurred in males.
- Most drowning events took place in swimming pools, the next most common being in a body of natural water.
- 352 hospital admissions were due to contact with animals, most due to contact with a jellyfish resulting in Irukandji syndrome.
- In 48.2% of cases the activity being engaged in when the injury was sustained was not recorded. Fishing was the most common activity followed by swimming. Swimming was the most common activity for admissions in Aboriginal people.
- The months of the 'build up' had the greatest number of admissions (36.6%).

## References

1. Skov S, Glover J. Water related injury hospitalisations in the Northern Territory 1999-2008. *NT Dis Control Bull.* 2010.8-1:(2)17;
2. Tovell A, McKenna K, Bradley C, Pointer S. 2012. Hospital separations due to injury and poisoning, Australia 2009-10. Injury research and statistics series no. 69. Cat. no. INJCAT 145. Canberra: AIHW
3. Australian Institute of Health and Welfare: Kreisfeld R, Henley G. 2008. Deaths and hospitalisations due to drowning, Australia 1999-2003. 04-Injury Research and Statistics Series Number 39. (Cat. no. INJCAT 109) Adelaide: AIHW.
4. Henderson H, Wilson R. Water incident related hospital activity across England between 1997/8 and 2003/4: a retrospective descriptive study. *BMC Public Health* 2006, 6:210.
5. Scott D, Hockey R, Barker R, Spinks D, Pitt R. Water related injury in Queensland. *Injury Bulletin.* Queensland Injury Surveillance Unit 2004:85.
6. Chalmers D, Morrison L. Epidemiology of Non-Submersion Injuries in Aquatic Sporting and Recreational Activities. *Sport Med.* 2003;(10): 745-770.

\*\*\*\*\*

## Protect yourself against tropical marine stingers

Rules for safe swimming apply to help reduce the risk of incidents involving marine stingers:



STINGERS  
(UNDERWATER)

- It is recommended that a full-body lycra suit, or equivalent, be worn to provide a good level of protection
- Enter the water slowly - this gives marine stinger time to move away
- Always swim at patrolled beaches, between the red and yellow flags
- Look for and obey safety signs
- Don't enter the water when beaches are closed
- Ask a lifesaver or lifeguard for help and advice if you need it
- Don't touch stingers washed up on the beach, they can still sting you

## Syphilis alert

*Teem-Wing Yip, Coordinator CDC Alice Springs*

All health services in the Northern Territory (NT) are asked to be alert to the significant increase in number of syphilis cases being notified in 2014 in the NT, especially in the 3 regions Alice Springs, Barkly, and Katherine.

The annual number of cases of syphilis notified to CDC in recent years from these 3 regions are as follows:

2011 - 55 cases  
2012 - 30 cases  
2013 - 44 cases  
2014 - 105 cases

The majority of these cases are in young people aged from 12 to 19 years of age. Population-based screening and contact tracing are being conducted intensively at present, so more cases are expected.

While the NT CDC's Sexual Health and Blood Borne Virus Unit is working with local health services to contain the outbreak, clinicians are reminded to:

- **Actively offer STI checks, including syphilis testing, to all sexually active**

**young people aged under 35 years** presenting to their services.

- **Test all patients presenting or diagnosed with an STI for syphilis.**
- **Treat symptomatic people immediately** (genital ulcer or rash/fever/myalgia).
- **Test and empirically treat all sexual partners of people** who are diagnosed with confirmed or probable infectious syphilis.
- **Test all pregnant women for syphilis** at the first visit, at 28 weeks, at 36 weeks, at delivery and at 6 week post-partum.

Syphilis is highly infectious in the early stages but is rapidly treated and cured with intramuscular benzathine penicillin, as per the CARPA manual. Untreated syphilis causes significant adverse outcomes. Importantly syphilis in pregnancy is associated with an increased incidence of in-utero death and other complications due to congenital syphilis and these outcomes increase during syphilis outbreaks.

Please contact the Syphilis Register for more information, Alice Springs 8951 7552 or Darwin 8922 7818.

\*\*\*\*\*

## Auditing the availability of condoms in remote and urban settings in the Northern Territory

*Jan Holt, Linda Garton and Nathan Ryder, CDC, Darwin*

Increasing access to condoms in remote communities and urban settings is a key strategy of the Sexual Health and Blood Borne Virus Unit (SHBBVU) to reduce the high rates of sexually transmitted infections (STIs) in the Northern Territory (NT). The SHBBVU Remote Sexual Health Program (the Program) provides support to primary health care services and other key stakeholders in remote communities to improve the distribution of condoms through clinics and where possible promote 24 hour 7 days a week access to condoms. The supply of durable steel condom dispensers that can be bolted to the wall is just 1 key initiative.

The Program provides ongoing sexual health clinical education for staff and the provision of culturally appropriate health promotion resources to raise awareness of STI prevention among the community population. The Adolescent Sexuality Education Program (ASEP) also consults widely with community members, elders and young people to advocate for condom access.

The Program has funding agreements in place with 5 organisations around the NT to provide a range of sexual health services (urban and remote) including the facilitation of condom distribution.

The Department of Health's primary health care services procure condoms through hospital stores and community controlled organisations through their own systems and the Program can provide additional coloured and flavoured condoms if requested.

All primary health care services provide condoms within the clinic environment and clinic dispensers/ baskets are routinely and regularly replenished with stock. Depending on the size of the community, condoms are also available within youth centres, shops and non-government organisations.

The challenge for primary health care services is to ensure dispensers outside the clinic are routinely stocked. The task of filling dispensers in the community is often not assigned to a specific person or job description; therefore, dispensers are filled on an ad-hoc basis and condom access after-hours can be unpredictable. Due to competing priorities in clinics and

communities, 24/7 access to condoms is not consistent and young people living remotely have limited access to condoms.

The Program has commenced collecting baseline data on condom availability and accessibility, including the number of condom dispensers installed, number of condoms ordered monthly, the availability of 24/7 access to condoms and whether specific persons are responsible for refilling the dispensers. This information will be detailed in an annual Condom Report.

The annual Condom Report will first be published in July 2015 and will help to identify gaps and challenges in condom availability and provide opportunities to collaborate with services and organisations to improve availability.

#### **Acknowledgements**

Kelly Hosking, Edwin Lubari (CDC Darwin) and Annette Cotterill (CDC East Arnhem).

\*\*\*\*\*

### **Policy and fact sheet update October-December 2014**

The Centre for Disease Control (CDC) fact sheets and guidelines are updated on a regular basis. Below is the single fact sheet updated over October to December 2014.

It can be found on the CDC website at [http://health.nt.gov.au/Centre\\_for\\_Disease\\_Control/Publications/CDC\\_Factsheets/index.aspx](http://health.nt.gov.au/Centre_for_Disease_Control/Publications/CDC_Factsheets/index.aspx)

- Hepatitis A fact sheet (see page 19)

## 2013/14 Ross River virus season in Darwin

Allan Warchot and Nina Kurucz, CDC, Darwin

### Abstract

This article summarises the 2013/14 wet season in Darwin urban in relation to rainfall, mosquito numbers and notified Ross River virus cases.

**Key words:** rainfall; vector mosquitoes; Ross River virus

### Background

Following one of the driest wet seasons on record, Darwin experienced an above average wet season in 2013/14, with heavy early and mid-wet season rainfall. Environmental conditions play a major role in mosquito abundance, and subsequently influenced the occurrence of mosquito borne disease transmission. This article summarises the 2013/14 Ross River virus (RRV) season in Darwin.

### Discussion

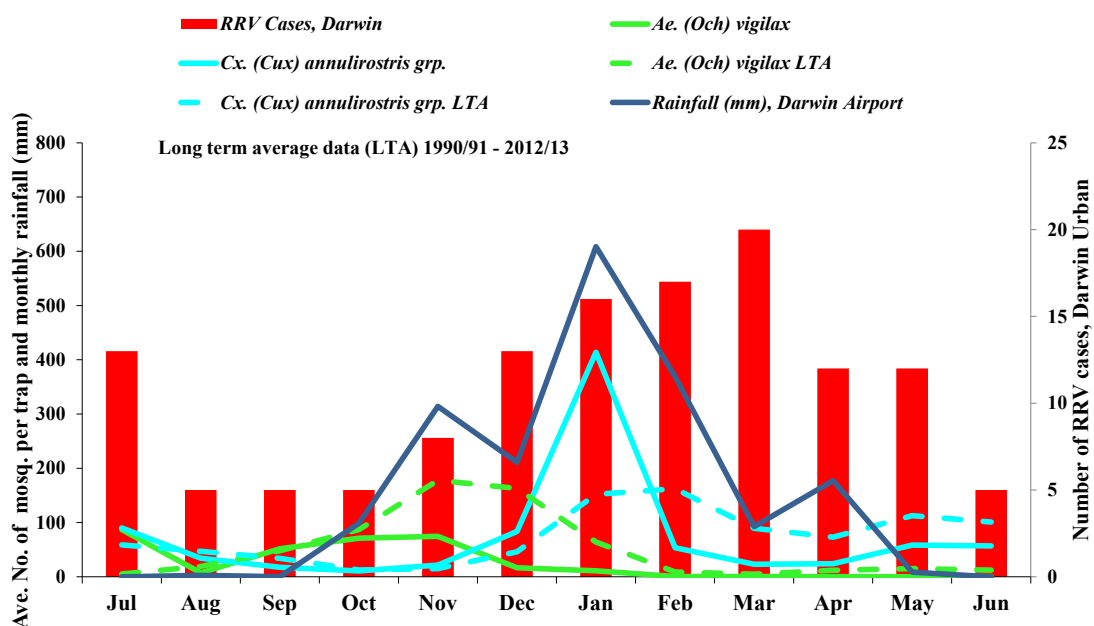
In 2013, Darwin experienced one of its wettest starts to a wet season in many years, with consistent heavy thunderstorms occurring

throughout November, followed by an early onset of the monsoon in late November. The early onset of the monsoon coincided with the first November cyclone (Tropical Cyclone Alessia) to cross the Northern Territory (NT) coastline since 1975.<sup>1</sup> Subsequently, Darwin Airport recorded total rainfall of 314.2mm, more than twice the November average of 141.7mm, while the Darwin Botanical Gardens, near the Darwin CBD, recorded 515.6mm for November (BOM Climate Data online).

Above average rainfall can lead to increased vector mosquito numbers, and may contribute to increased breeding of vertebrate hosts for RRV, resulting in high numbers of non-immune young.<sup>2</sup> In addition, investigations have identified early to mid-wet season rainfall cut off points that can trigger conditions favourable for RRV epidemics in different regions of the NT<sup>3</sup>, with the monthly threshold of 279mm exceeded in Darwin in November 2013 and January 2014 respectively.

It appears that the above average rainfall, which exceeded the rainfall threshold, set the scene for a RRV outbreak, with a total of 345 RRV cases

**Figure. Monthly number of RRV cases, rainfall and average numbers of selected female mosquitoes per trap caught in the eleven continuous weekly CO2 baited EVS mosquito traps in Darwin – 2013/14.**



notified in the Darwin region in 2013/14, the highest since the 1990/91 outbreak.<sup>4</sup> Out of the 345 cases, 310 occurred in the Darwin Urban region, Palmerston and the Litchfield Shire. *Culex annulirostris* and *Aedes vigilax* were considered the probable vectors for RRV in Darwin Urban during the 1990/91 outbreak<sup>4</sup>, and were the probable vectors during the 2013/14 outbreak. Although numbers of both *Ae. vigilax* and *Cx. annulirostris* remained around or below the average for most of the year, there were brief periods when numbers of both species peaked above the average, most notably *Cx. annulirostris* in January (Figure).

However, when assessed as a population rate, the 3 most populous jurisdictions in the Darwin region, the Darwin urban area, Palmerston and Litchfield Shire, recorded 163, 196 and 530 cases per 100,000 respectively, compared to the 1990/91 RRV outbreak, with rates of 228, 165 and 866 cases per 100,000 respectively.<sup>5</sup> Although the total number of RRV cases in 2013/14 was the highest ever recorded, case rates were lower in Darwin Urban and Litchfield Shire compared to 1990/91, and only slightly higher in Palmerston. This shows that the 2013/14 outbreak was smaller in size compared to the 1990/91 outbreak.

It is suggested that the 2013/14 RRV outbreak was triggered by the above average November and high January rainfall, with RRV cases accelerating from December, and reaching a peak in March. Elevated *Aedes vigilax* numbers in November appeared to have initiated the outbreak, with *Cx. annulirostris* likely to have been the main vector, with well above average January abundance. There is also a potential that the backyard receptacle breeding mosquito *Ae. notoscriptus* was responsible for some of the wet season cases, although the role of this mosquito in urban RRV transmission in Darwin is unclear. Although the high number of notified RRV cases in December to February could be attributed to the appreciable abundance of *Ae. vigilax* and especially *Cx. annulirostris* in the preceding months, the April and May cases and probably some of the late March cases do not appear to be correlated with high vector abundance. This raises the question of the role

that *Ae. notoscriptus* might play in RRV transmission. Other possible factors may have been a greater than usual proportion of cases acquired during outdoor activities, such as fishing and camping, high numbers of viraemic host reservoirs which might have maintained above average transmission in spite of lower levels of mosquitoes, and a greater number of tests were performed by GPs.

## Conclusions

The 2013/14 RRV outbreak in the Darwin area appeared to have been triggered by above average rainfall, and more specifically the surpassing of monthly rain thresholds during the early and mid- wet season, creating favourable RRV outbreak conditions. Although RRV case numbers were the highest ever recorded in the NT, the outbreak per capita was smaller in size than the 1990/91 RRV outbreak.

## Acknowledgements

We would like to thank all Medical Entomology staff involved in the vector control programs.

## References

1. <http://www.bom.gov.au/announcements/sevwx/nt/ntrc20131122.shtml>
2. Jacups SP, Whelan PI and Currie, BJ. Ross River Virus and Barmah Forest Virus Infections: A Review of History, Ecology, and Predictive Models, with Implications for Tropical Northern Australia. *Vector-borne and Zoonotic Diseases* 2008; 8(2):283-297.
3. Jacups SP, Whelan PI and Harley, D. Arbovirus Models to Provide Practical Management Tools for Mosquito Control and Disease Prevention in the Northern Territory, Australia. *Journal of Medical Entomology* 2011; 48(2):453-460.
4. Whelan PI, Merianos A, Patel MS, Tai KS and Currie, B. The epidemiology of arbovirus infection in the Northern Territory 1980-92. *Arbovirus Research in Australia* 1993; 6:266-269.
5. Tai KS, Whelan PI, Patel MS and Currie, B. An outbreak of epidemic polyarthritis (Ross River virus) in the Northern Territory during the 1990-1991 wet season. *The Medical Journal of Australia* 1993; 158:522-525.

\*\*\*\*\*

## Measles – 3 more cases, bringing the total to 53 so far in 2014\*

*Heather Cook, CDC Darwin*

Following the large outbreak of 48 cases of measles experienced from January to March 2014 and the 2 unlinked imported cases reported in June 2014 a further 3 linked cases of measles (Genotype D9) were notified in the Northern Territory (NT) in November 2014.

On 4 November the Darwin Centre for Disease Control (CDC) was notified by the Royal Darwin Hospital Pathology Department of an unimmunised returned traveller from Bali diagnosed with measles. In the preceding week the case visited health services on 5 occasions while infectious. The only other reported public exposure during the infectious period was a brief visit to a shopping centre in the Palmerston area. Over 100 contacts from the health services visits were identified with almost all contacted via phone call or text message. In some instances where a current phone number was not available, CDC staff were able to identify the contact's usual health care provider (HCP) via the NT Department of Health (DoH) electronic health records. This enabled alerts to be placed on the usual HCP medical record and where appropriate the NT DoH electronic records.

On 6 November a media release was issued and an alert sent to all NT HCPs to inform the public and HCPs of the current case of measles and the need for heightened awareness and action.

On 13 November a general practitioner notified the CDC of a person with prodromal measles symptoms. This person had been identified as a contact of Case 1 and an alert had been placed on this contact's medical record as described above. The early detection of this suspected case (who became Case 2) enabled MMR vaccine to be given either by CDC staff (as a mobile roving clinic) or other HCPs to over 50 identified contacts. More than 100 further contacts were identified, most of whom were either able to be contacted or alerts placed in their medical records.

Case 3 was confirmed on 17 November 2014 and had been infectious since 11 November 2014. This case had not been identified as contact of the index case (Case 1) and on further interviewing no direct connection with the index case could be established. However Case 1 and 3

both resided in the Palmerston area. While infectious and prior to diagnosis, Case 3 had multiple visits to health care facilities and other public areas. This led to the individual further follow up of over 150 contacts.

Another update on measles was distributed to HCPs on 18 November and on 26 November further updated immunisation advice was circulated (see below).

A new initiative used in this response was the recording of details of contacts utilising the Australian Government Department of Health and Ageing web based outbreak reporting system or 'server' called 'NetEpi'. The use of the secure system, NetEpi was a simple but effective method to record the follow-up of contacts, enabling multi-user access to the information. This reduced the need for paper based documentation considerably.

### Acknowledgements

Thanks to the many Darwin CDC staff who worked tirelessly to manage the public health response for this cluster of complex measles cases. Also thanks to Kevin Freeman from Pathology Services at Royal Darwin Hospital (RDH) and to Tina Quirk from Infection Prevention and Management Unit RDH.

### References

1. Markey P, Lines S. Measles outbreak summary. *NT DIS Control Bull* 2014; 21 (1):23.
2. Lines S. Measles update. *NT DIS Control Bull* 2014; 21(2):3

### \*Addendum

On 31 December CDC was notified of a further NT case of measles, bringing the final total for 2014 to 54. The case was in an unimmunised teenager who had acquired the infection during a recent visit to Melbourne. An early diagnosis combined with the patient staying at home while unwell reduced the number of contacts requiring follow up. It is important that everyone is immune to measles -- especially those traveling. The measles vaccine (MMR) is free.

\*\*\*\*\*

## Northern Territory Measles Awareness Campaign

*Ros Webby, CDC Darwin*

Due to measles circulating in the Darwin region the age for the first dose of MMR vaccine was reduced to 9 months to protect infants who may no longer be fully protected by maternal antibodies. Mothers who have been vaccinated or have had measles in the past provide maternal antibodies to their infant which protects the infant until they are at least 6 months of age but after that age the maternal antibodies are less reliable. The 1<sup>st</sup> routine MMR is usually recommended at 12 months because a better immune response is generated at that age. Therefore the time between 6 and 9 months is a vulnerable period for infants when measles virus is circulating in a community.

Children who are vaccinated before 12 months of age in this outbreak setting still require an

additional 2 doses of MMR vaccine; a dose at the recommended 12 months and the other at 18 months of age, to achieve lifelong immunity.

Adults need to have 2 measles containing vaccines to be fully immune to measles. Some adults born between 1966 and 1996 may not have routinely received 2 measles containing vaccines after 12 months of age. In order to raise the level of awareness of the risk of measles CDC has launched a Measles Awareness Campaign to encourage everyone who is travelling overseas to check their measles immune status before they travel.

Online ads and TV ads have been launched to promote the need to have 2 MMR vaccines from 12 months of age and older to be protected from getting measles.

\*\*\*\*\*



---



---

## Abstracts from peer reviewed published articles related to the Northern Territory

### **Incidence of curable sexually transmissible infections among adolescents and young adults in remote Australian Aboriginal communities: analysis of longitudinal clinical service data**

*BJ Silver, RJ Guy, H Wand, J Ward, AR Rumbold, CK Fairley, B Donovan, L Maher, A Dyda, L Garton, B Hengel, J Knox, S McGregor, D Taylor-Thomson, JM Kaldor, on behalf of the STRIVE investigators*

*Sex Transm Infect Published Online First: 14 Nov 2014 doi:10.1136/sextrans-2014-051617*

**Objectives:** To undertake the first comprehensive analysis of the incidence of three curable sexually transmissible infections (STIs) within remote Australian Aboriginal populations and provide a basis for developing new control initiatives.

**Methods:** We obtained all results for Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG) and Trichomonas vaginalis (TV) testing conducted during 2009–2011 in individuals aged ≥16 years attending 65 primary health services across central and northern Australia. Baseline prevalence and incidence of all three infections was calculated by sex and age group.

**Results:** A total of 17 849 individuals were tested over 35 months. Baseline prevalence was 11.1%, 9.5% and 17.6% for CT, NG and TV, respectively. During the study period, 7171, 7439 and 4946 initially negative individuals had a repeat test for CT, NG and TV, respectively; these were followed for 6852, 6981 and 6621 person-years and 651 CT, 609 NG and 486 TV incident cases were detected. Incidence of all three STIs was highest in 16-year-olds to 19-year-olds compared with 35+ year olds (incident rate ratio: CT 10.9; NG 11.9; TV 2.5). In the youngest age group there were 23.4 new CT infections per 100 person-years for men and 29.2 for women; and 26.1 and 23.4 new NG

infections per 100 person-years in men and women, respectively. TV incidence in this age group for women was also high, at 19.8 per 100 person-years but was much lower in men at 3.6 per 100 person-years.

**Conclusions:** This study, the largest ever reported on the age and sex specific incidence of any one of these three curable infections, has identified extremely high rates of new infection in young people. Sexual health is a priority for remote communities, but will clearly need new approaches, at least intensification of existing approaches, if a reduction in rates is to be achieved.

\*\*\*\*\*

### **Invasive group A streptococcal infection in the Northern Territory, Australia: Case report and review of the literature**

*Middleton B, Morris P, Carapetis J.*

*J Paediatr Child Health. 2014 Nov;50(11):869-73. doi: 10.1111/jpc.12659. Epub 2014 Jun 23.*

The increasing incidence of invasive group A streptococcus has been well documented in the temperate climates of North America, Europe and the United Kingdom. Studies also suggest that there are high rates of invasive group A streptococcus infection within the indigenous population of Northern Australia. This review article presents the case of infant Aboriginal twins with invasive group A streptococcal infection complicated by streptococcal toxic shock syndrome, highlighting both the severity and high transmissibility of invasive group A streptococcal disease. We review the epidemiology of group A streptococcal infection and suggest a potential role for chemoprophylaxis of household contacts to reduce the burden of disease within the indigenous population of Northern Australia.

**Barriers and facilitators of sexually transmissible infection testing in remote Australian Aboriginal communities: results from the Sexually Transmitted Infections in Remote Communities, Improved and Enhanced Primary Health Care (STRIVE) Study.**

*Hengel B, Guy R, Garton L, Ward J, Rumbold A, Taylor-Thomson D, Silver B, McGregor S, Dyda A, Knox J, Kaldor J, Maher L.*

*Sex Health. 2014 Nov 27. doi: 10.1071/SH14080. [Epub ahead of print]*

**Background:** Remote Australian Aboriginal communities experience high rates of bacterial sexually transmissible infections (STI). A key strategy to reduce STIs is to increase testing in primary health care centres. The current study aimed to explore barriers to offering and conducting STI testing in this setting.

**Methods:** A qualitative study was undertaken as part of the STI in Remote Communities, Improved and Enhanced Primary Health Care (STRIVE) project; a large cluster randomised controlled trial of a sexual health quality improvement program. We conducted 36 in-depth interviews in 22 participating health centres across four regions in northern and central Australia.

**Results:** Participants identified barriers including Aboriginal cultural norms that

require the separation of genders and traditional kinship systems that prevent some staff and patients from interacting, both of which were exacerbated by a lack of male staff. Other common barriers were concerns about client confidentiality (lack of private consulting space and living in small communities), staff capacity to offer testing impacted by the competing demands for staff time, and high staff turnover resulting in poor understanding of clinic systems. Many participants also expressed concerns about managing positive test results. To address some of these barriers, participants revealed informal strategies, such as team work, testing outside the clinic and using adult health checks.

**Conclusions:** Results identify cultural, structural and health system issues as barriers to offering STI testing in remote communities, some of which were overcome through the creativity and enthusiasm of individuals rather than formal systems. Many of these barriers can be readily addressed through strengthening existing systems of cultural and clinical orientation and educating staff to view STI in a population health framework. However others, particularly issues in relation to culture, kinship ties and living in small communities, may require testing modalities that do not rely on direct contact with health staff or the clinic environment.

\*\*\*\*\*

## **Indigenous liver cancer**

*Dr Josh Davis, Menzies School of Research*

**Extract from ABC Territory Radio News 21 October 2014**

### **Summary**

New research shows that Indigenous liver cancer patients average survival time from diagnosis is 2 months compared to non-Indigenous cancer patients with a survival time of 6 months. A report has been published by the *Medical Journal of Australia*. Josh Davis from Menzies School of Health Research says the remoteness of the Indigenous population in the Northern Territory adds to the problem with many of the population unable to be tested for hepatitis B which is the leading cause of liver cancer. Dr Davis says that population screening by mobile screening units and treating the hepatitis B early would help in the prevention of liver cancer.



Northern  
Territory  
Government



## Hepatitis A

Centre for Disease Control

November 2014

### What is hepatitis A?

Hepatitis is a general term used to describe inflammation of the liver. A variety of viruses and other substances, such as alcohol, can also cause hepatitis. The hepatitis A virus is the most common virus that causes hepatitis.

### How is it spread?

This virus passes through the digestive system of people with the infection and is spread when something contaminated with infected faeces is swallowed. Only a small amount of virus is necessary to spread the infection. The virus can potentially survive on objects and in water for months.

The virus can be passed on:

- by food, drink, eating utensils, toys or other objects that have been handled by an infected person
- after touching infected nappies, linen and towels or someone else's hands that have been in contact with faeces
- by oro-anal sex.

Outbreaks have also been reported as a result of drinking or bathing in water contaminated by sewage, or by eating shellfish, particularly oysters contaminated by sewage.

### What are the symptoms?

The symptoms generally develop 1 month after infection but may develop from 2 weeks to 2 months after infection.

Hepatitis A is an acute illness, starting with fever, loss of appetite, nausea, tiredness, abdominal discomfort and feeling generally unwell. Urine may become dark in colour and faeces paler. The eyes and skin may then become a yellow colour (jaundice), however this may be difficult to see in dark skinned people. The skin may also become itchy.

The symptoms are generally more severe in adults than children. Many children will not show any sign of the infection or have a mild illness without any jaundice.

The length and severity of illness varies but most people feel well within a month of onset.

Complications are rare. Hepatitis A does not cause chronic liver disease and people do not become 'carriers', as can occur with hepatitis B or C. After a person has recovered from hepatitis A they are immune and cannot get it again.

### What is the infectious period?

Infected people can pass the virus to others from 2 weeks before feeling unwell, until 1 week after the appearance of jaundice.

### Who is at risk?

Hepatitis A virus is worldwide and can affect anyone who is not immune. People at higher risk of contracting the infection are:

- international travellers and residents of areas with inadequate waste disposal, contaminated water and/or poor hygiene
- children and staff in day care centres, particularly if children are not toilet trained
- household members and close contacts of an infected person.

### What is the treatment?

There is no specific treatment for hepatitis A.

### How can hepatitis A be prevented?

Good hygiene is the best way to prevent hepatitis A. In situations where good hygiene may be compromised hepatitis A vaccination is recommended.

To avoid faecal spread hands should be washed thoroughly with soap and warm running water for at least 10-15 seconds and thoroughly dried:

- after going to the toilet
- before preparing or handling food
- after every nappy change
- after changing soiled linen.

Other measures include:

- never change nappies or let children sit on tables or counters where food is prepared or eaten
- wash change mat with warm soapy water (use disposable wash cloth or launder cloth)

after use)

- where the change mat is soiled with faeces wash as above then wipe with bleach and leave to dry
- clean books, toys, equipment, furnishings, floors and toilets regularly (including toilet door handles)
- avoid sharing drinks and eating utensils.

Child care centres should refer to the NHMRC publication "Staying Healthy in Child Care" for further advice on prevention in a child care centre.

### Hepatitis A vaccination

Hepatitis A vaccine is available for both adults and children and is safe and effective in preventing disease.

Vaccination is recommended for adults in the following at risk groups:

- travellers to moderate to high risk areas
- residents or frequent visitors to remote Indigenous communities
- child care and preschool staff
- intellectually disabled and their carers
- health care providers
- men who have sex with men
- injecting drug users
- people with chronic hepatitis B and C infections
- people with chronic liver disease
- solid organ transplant recipients
- plumbing and sewage workers
- HIV infected persons.

A pre-vaccination blood test to determine existing immunity is recommended to avoid unnecessary vaccination for:

- those born before 1950
- those growing up in areas with intermediate/high risk of hepatitis A infection such as Indigenous communities or countries such as Africa and Asia.

The recommended vaccination schedule is 1 injection, followed by a booster dose 6-12 months later. A combined hepatitis A and B vaccine is available if hepatitis B vaccination is also required, this is a series of 3 injections over a 6 month period.

The vaccine is effective by 4 weeks after the first vaccine.

These vaccinations are available on private prescription from a doctor. Some employers may fund hepatitis A vaccination for at risk workers.

As part of a national immunisation program free hepatitis A vaccine is offered to all Indigenous infants born on or after 1 May 2004. In the NT this vaccine is offered routinely at 12 and 18 months. Since the introduction of this vaccine for Indigenous infants there have been very few cases of hepatitis A acquired in the Northern Territory.

### How is hepatitis A controlled?

Good hygiene and appropriate vaccination are the best methods to control hepatitis A.

If hepatitis A does occur in a food handler or child care worker they should be excluded from work until 7 days after the onset of jaundice. People with hepatitis A should not prepare food for others while infectious.

Children with hepatitis A should be excluded from school or child care until a medical certificate of recovery is received and until 7 days after the onset of jaundice.

Close contacts of an infected person may be offered hepatitis A vaccination to prevent infection if given within 2 weeks of contact. A second vaccine given in 6-12 months is recommended to provide long lasting protection. Normal human immunoglobulin may be given to children less than 1 year of age or to people who are immune suppressed. Because the contact person may be infectious, extra care should be given to hygiene for several weeks to protect others. The protection provided by immunoglobulin lasts only 2-3 months.

The NT Childhood Vaccination Schedule is available at: [http://www.health.nt.gov.au/Centre\\_for\\_Disease\\_Control/Immunisation/index.aspx](http://www.health.nt.gov.au/Centre_for_Disease_Control/Immunisation/index.aspx)

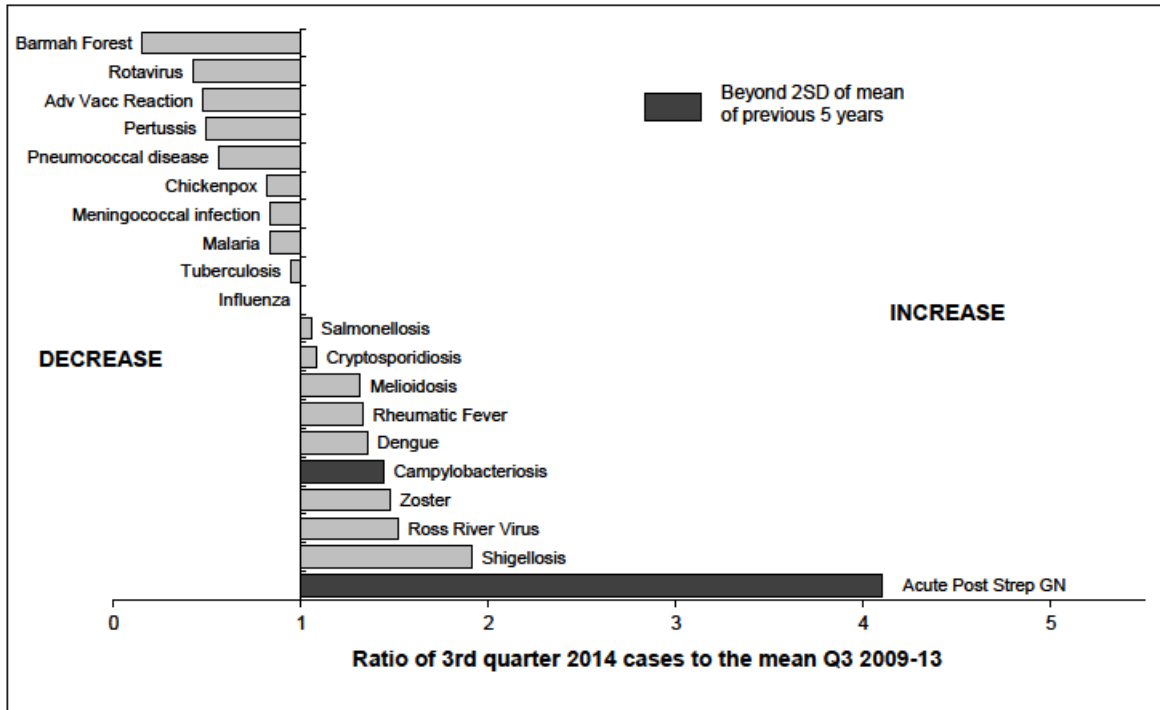
#### For more information contact the Centre for Disease Control in your region

Alice Springs	8951 7540
Darwin	8922 8044
Katherine	8973 9049
Nhulunbuy	8987 0357
Tennant Creek	8962 4259
or <a href="http://www.nt.gov.au/health/cdc">http://www.nt.gov.au/health/cdc</a>	

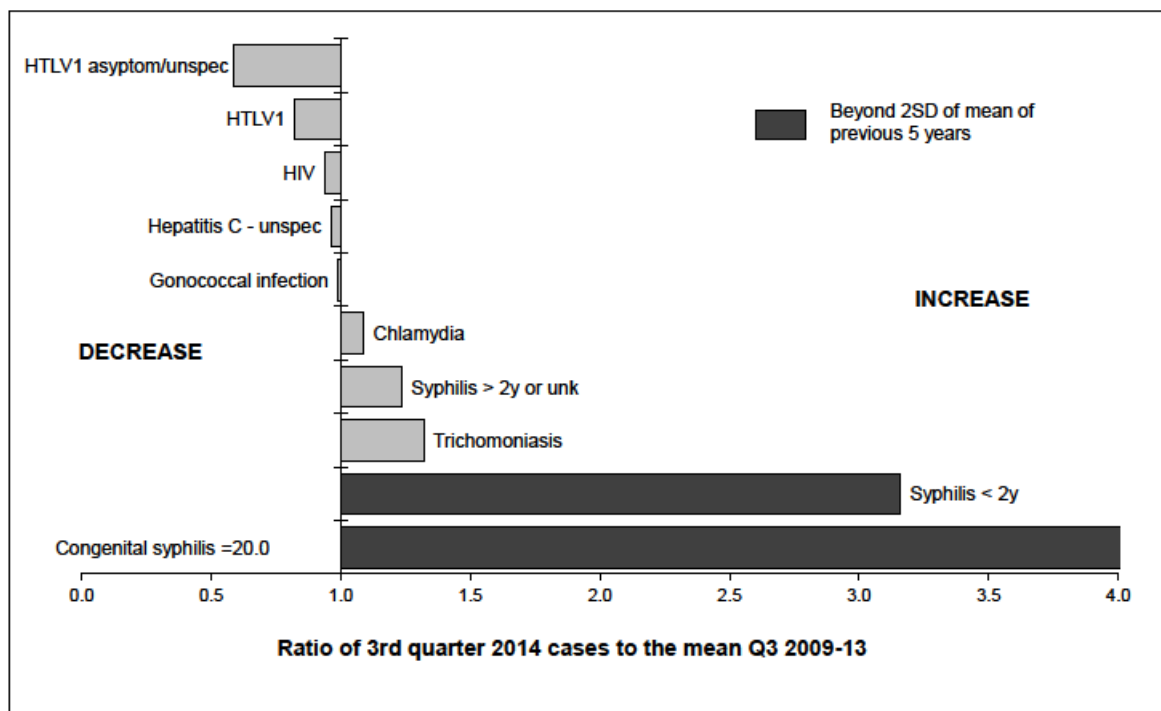
**NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS**  
**3rd Quarter (Q3) 1 July-30 September 2014 and 2013**

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		N T	
	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013
Acute post strep glomerulonephritis	9	1	6	2	7	2	6	1	4	3	32	9
Adverse vaccine reaction	0	2	0	0	4	10	1	1	1	4	6	17
Amoebiasis	0	0	0	0	0	1	0	0	0	0	0	1
Barmah Forest virus	0	11	1	0	3	64	0	1	0	6	4	82
Brucellosis	0	0	0	0	1	0	0	0	0	0	1	0
Campylobacteriosis	8	19	0	0	46	22	4	2	8	4	66	47
Chickenpox	2	6	0	0	19	19	0	0	13	0	34	25
Chikungunya	0	0	0	0	0	2	0	0	0	0	0	2
Chlamydia	188	273	27	26	399	387	55	47	100	78	769	811
Chlamydial conjunctivitis	0	1	1	0	2	5	0	0	0	1	3	7
Cryptosporidiosis	2	7	0	0	7	1	2	2	2	3	13	13
Dengue	0	0	0	0	13	19	0	3	0	0	13	22
Food/water borne disease	0	0	0	0	0	5	0	0	0	0	0	5
Gastro - related cases	6	11	0	0	0	4	0	2	0	0	6	17
Gonococcal conjunctivitis	0	0	0	0	0	1	0	0	0	0	0	1
Gonococcal infection	209	268	26	20	108	103	23	11	77	67	443	469
Group A strep invasive	6	6	1	1	9	9	2	4	3	3	21	23
Hepatitis A	0	0	0	0	2	0	0	0	0	0	2	0
Hepatitis B - chronic	2	16	0	0	7	10	2	6	0	0	11	32
Hepatitis B - new	0	0	0	1	1	0	0	0	0	0	1	1
Hepatitis B - unspecified	8	14	1	0	20	37	1	3	3	0	33	54
Hepatitis C - unspecified	6	10	0	1	36	51	1	0	6	2	49	64
H Influenzae non-b	2	0	0	0	0	0	0	0	0	1	2	1
HIV	0	1	1	0	1	7	0	0	4	0	6	8
HTLV1 asymptomatic/unspecified	9	22	0	0	1	0	0	0	1	1	11	23
Hydatid	0	0	0	0	0	1	0	0	0	0	0	1
Influenza	267	32	24	5	119	54	18	9	23	29	451	129
Legionellosis	0	0	0	0	1	1	0	0	0	0	1	1
Malaria	0	0	0	0	3	8	1	0	0	0	4	8
Melioidosis	0	0	0	0	5	2	0	0	0	0	5	2
Meningococcal infection	0	1	0	0	1	0	0	0	0	0	1	1
Mumps	0	0	0	0	0	1	0	0	0	0	0	1
Non TB Mycobacteria	0	0	0	0	0	1	0	0	0	0	0	1
Pertussis	13	3	1	0	16	23	0	0	2	1	32	27
Pneumococcal disease	7	12	3	1	4	3	0	0	2	4	16	20
Rheumatic Fever	5	13	0	2	21	6	5	5	6	6	37	32
Ross River Virus	3	2	2	0	60	60	5	5	6	6	76	73
Rotavirus	17	95	9	6	4	51	0	2	5	8	35	162
Salmonellosis	21	16	1	3	65	68	3	6	10	8	100	101
Shigellosis	4	11	2	2	17	1	2	3	1	6	26	23
Syphilis < 2y	14	4	0	0	3	6	1	0	6	0	24	10
Syphilis > 2y or unknown	14	3	0	1	6	7	0	1	1	2	21	14
Syphilis congenital	1	0	0	0	0	0	2	0	1	0	4	0
Trichomoniasis	258	299	52	55	284	229	139	135	166	136	899	854
Tuberculosis	2	1	0	0	7	12	0	0	1	1	10	14
Typhus	0	0	0	0	1	0	0	0	0	0	1	0
Varicella - unspecified	0	0	0	0	0	1	0	1	3	0	3	2
Yersiniosis	1	0	0	0	5	0	0	0	0	0	6	0
Zoster	12	14	1	0	49	37	0	7	6	7	68	65
<b>Total:</b>	<b>1,096</b>	<b>1,174</b>	<b>159</b>	<b>126</b>	<b>1,357</b>	<b>1,331</b>	<b>273</b>	<b>257</b>	<b>461</b>	<b>387</b>	<b>3346</b>	<b>3275</b>

**Ratio of the number of notifications in 3rd quarter (Q3) 2014 to the mean Q3 2009-13: selected diseases**



**Ratio of the number of notifications in 3rd quarter (Q3) 2014 to the mean Q3 2009-13: sexually transmitted diseases**



## Comments on notifications

### Campylobacter

The higher than usual number of *Campylobacter* notifications can be attributed to the introduction of a multiplex PCR test in late 2013. This test is much more sensitive than the traditional culture method. About 33% of all *Campylobacter* notifications in the Darwin region were detected by PCR only.

### Syphilis (of less than 2 years duration).

There were 24 cases of syphilis of less than 2 years duration in the 3<sup>rd</sup> quarter which was more than 3 times the 5 year mean. This reflects the outbreak which started in Central Australia in July and has spread to the Katherine region. An outbreak response has been implemented. (see page 11)

### Congenital syphilis

There were 4 cases of congenital syphilis notified in the 3<sup>rd</sup> quarter, whereas in recent

years between 0 and 3 cases were notified per year. The cases were not clustered and appear unrelated to current Central Australian/Katherine region syphilis outbreak. It is likely that the increases in these cases are related to a recent audit of cases and improved case ascertainment. However congenital syphilis cases are known to rise in outbreak settings.

### Acute post-streptococcal glomerulonephritis (APSGN)

There were 32 cases of APSGN notified in the 3<sup>rd</sup> quarter which was more than 4 times the expected number based on the 5 year mean. Cases were spread throughout the NT and there were a handful of communities with more than 1 case. NT-wide alerts were issued mid-July and again in August to raise awareness, improve case finding and to provide opportunities for a public health response. Notifications have declined since but still remain above expected levels.

\*\*\*\*\*

## NT malaria notifications July—September 2014

*Elizabeth Stephenson, CDC, Darwin*

There were 4 cases of malaria notified in the 3<sup>rd</sup> quarter of 2014. The following table provides details about where the infection was thought to be acquired, the infecting agent, whether chemoprophylaxis was used and where the patient lived.

No. cases	Origin of Infection	Reason Exposed	Agent	Chemoprophylaxis	NT Region
1	Sudan	Expatriate visiting relatives	<i>P. falciparum</i>	No	Darwin
1	Uganda or Sudan	Expatriate visiting relatives	<i>P. falciparum</i>	Yes	Darwin
1	PNG	Expatriate visiting relatives	<i>P. vivax</i>	No	East Arnhem
1	India	Recreation	<i>P. vivax</i>	No	Darwin/ Katherine

\*\*\*\*\*

### Immunisation coverage for children aged 12-<15 months at 30 September 2014

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% Pneumo	% Fully vaccinated
Darwin	317	90.2%	90.2%	89.6%	89.9%	89.9%	89.3%
Winnellie PO Bag	84	91.7%	91.7%	91.7%	91.7%	92.9%	90.5%
Palm/Rural Area	268	87.3%	87.3%	87.7%	87.7%	87.3%	86.9%
Katherine	103	92.2%	92.2%	92.2%	92.2%	94.2%	92.2%
Barkly	13	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%
Alice Springs	159	82.4%	82.4%	82.4%	82.4%	83.6%	82.4%
Alice Springs PO Bag	53	84.9%	84.9%	84.9%	84.9%	84.9%	84.9%
East Arnhem	40	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%
NT	1037	88.1%	88.1%	88.0%	88.1%	88.5%	87.7%
NT Non-Indigenous	651	89.1%	89.1%	88.9%	89.1%	89.2%	88.6%
NT Indigenous	386	86.5%	86.5%	86.5%	86.5%	87.3%	86.0%
Australia	76802	92.4%	92.4%	92.2%	92.0%	92.1%	91.5%

### Immunisation coverage for children aged 24-<27 months at 30 September 2014

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% MMR	% Fully vaccinated
Darwin	291	94.8%	95.2%	95.2%	94.8%	95.2%	93.8%
Winnellie PO Bag	78	98.7%	98.7%	97.4%	98.7%	97.4%	97.4%
Palm/Rural Area	256	96.1%	96.1%	96.1%	96.1%	96.5%	95.7%
Katherine	124	96.0%	96.0%	95.2%	96.0%	96.8%	95.2%
Barkly	20	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alice Springs	110	93.6%	94.5%	96.4%	93.6%	95.5%	92.7%
Alice Springs PO Bag	43	97.7%	97.7%	97.7%	97.7%	97.7%	95.3%
East Arnhem	45	91.1%	91.1%	91.1%	91.1%	93.3%	91.1%
NT	967	95.6%	95.8%	95.8%	95.6%	96.1%	94.7%
NT Non-Indigenous	594	94.4%	94.8%	95.1%	94.4%	95.5%	93.8%
NT Indigenous	373	97.3%	97.3%	96.8%	97.3%	97.1%	96.2%
Australia	77251	95.2%	95.2%	94.3%	94.7%	94.7%	92.8%

### Immunisation coverage for children aged 60-<63 months at 30 September 2014

Region	Number in District	% DTP	% Polio	% MMR	% Fully vaccinated
Darwin	264	88.3%	88.3%	88.6%	87.1%
Winnellie PO Bag	99	98.0%	98.0%	98.0%	98.0%
Palm/Rural Area	235	93.6%	93.6%	93.6%	93.2%
Katherine	100	96.0%	96.0%	96.0%	95.0%
Barkly	24	87.5%	87.5%	87.5%	87.5%
Alice Springs	139	91.4%	91.4%	92.1%	90.6%
Alice Springs PO Bag	39	92.3%	92.3%	94.9%	92.3%
East Arnhem	45	93.3%	93.3%	93.3%	93.3%
NT	945	92.3%	92.3%	92.6%	91.6%
NT Non-Indigenous	557	91.2%	91.2%	91.4%	90.3%
NT Indigenous	388	93.8%	93.8%	94.3%	93.6%
Australia	77048	92.7%	92.7%	92.7%	92.2%

## Immunisation coverage 30 September 2014

*Compiled by Charles Strebor, CDC, Darwin*

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 Sep 2014 were born between 1 Apr 2013 and 30 Jun 2013 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 or 3 doses of PRP-OMP Hib or 3 doses of another Hib vaccine, 3 doses of hepatitis B vaccine and 3 doses of pneumococcal vaccine. 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 Sep 2014 were born between 1 Apr 2012 and 30 Jun 2012 inclusive. To be considered fully vaccinated, these children must have received 3 or 4 valid doses of vaccines containing diphtheria, tetanus, pertussis, 3 doses of vaccines containing poliomyelitis antigens, either 3 or 4 doses of PRP-OMP Hib or 4 doses of another Hib

vaccine, and 3 doses of hepatitis B vaccine and 1 dose of measles-mumps-rubella (MMR) vaccine. 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 Sep 2014 were born between 1 Apr 2009 and 30 Jun 2009 inclusive. To be considered fully vaccinated, these children must have received 4 or 5 valid doses of vaccines containing diphtheria, tetanus, pertussis antigens, 4 doses of poliomyelitis vaccine and 2 valid doses of MMR vaccine. All vaccinations must have been administered by 60 months (5 years) of age.

### Interpretation and comment

The vaccination coverage rates for children in the NT are comparable with the national average for all age cohorts, with NT children being below the national average for the 12 to <15 months (NT 87.7%, National 91.5%) and for the 60 to <63 months (NT 91.6%, National 92.2%) cohorts, though above the national average for the 24 to <27 months cohort (NT 94.7 %, National 92.8%). Indigenous children were less likely (Indigenous 86.0%, Non-Indigenous 88.6%) to be fully immunised than non-Indigenous children in the 12 to <15 month cohort but more likely to fully immunised than non-Indigenous children in the 24 to <27 (Indigenous 96.2 %, Non-Indigenous 93.8%) and the 60 to <63 (Indigenous 93.6 %, Non-Indigenous 90.3%) cohorts.

Further information about the Australian Childhood Immunisation Register coverage may be found at: <http://ncirs.edu.au/immunisation/coverage/index.php>

\*\*\*\*\*

## Disease Control staff updates

### Farewell to CDC stalwart Ivor Alexander extract from CE Len Notaras's forecast 12 September 2014

I would like to extend my thanks and best wishes to one of the Centre for Disease Control's longest standing employees and an important part of Health's East Arnhem presence, Ivor Alexander.

After 32 years with the Department, the Communicable Diseases Officer will be moving in to semi-retirement, shifting his attention to his rod and reel while still keeping up many of his other commitments to the health fraternity and the Gove community. Over the 20 years or so that I have known Ivor, I would be quick to commend his professionalism as well as his enduring commitment to the Department, Gove and 'the job'.

As well as Ivor's dedication to his role with the CDC, his great ability as an educator should also be celebrated. I am glad to hear he will continue his education sessions with Flinders Medical students as an adjunct lecturer and faculty member with its remote clinical program; as well as his work with St John Ambulance and a raft of NGOs in the East Arnhem region.

After many years in Gove, Ivor's commitment to the area is unwavering and I understand he now plans to give even more back to the beautiful town he calls home, continuing his duties as Parade Commander on important community events including Kapyong Day, ANZAC Day, Vietnam Veterans Day and Remembrance Day.



*Photo: Ivor Alexander with CDC East Arnhem staff at his farewell morning tea .*

\*\*\*\*\*

### Top End

**Lesley Scott**, RN Senior Branch Manager, commenced extended long service leave from September 2014 up to 15 March 2015.

**Heather Cook** will act in the Senior Branch Manager position during Lesley's leave. **Elizabeth Stephenson** and **Kelly Hosking**, will jointly back fill **Heather Cook's** N5 position.

**Georgina Sailor**, Immunisation Data Entry Officer, has begun work with the NT Immunisation Register. Georgina joins the team after several years working with ACIR and Medicare in the Casuarina office.

**Kate Hardie**, Public Health Physician, replaces **Vanessa Johnson** who is on maternity leave. Kate is a GP and has been a locum in Maningrida over the years and recently finished

her specialist Public Health training. In the past year she worked for 3 months with WHO in Suva and was involved in the Ebola response planning.

**Hannah Lee** will act as the relieving AO3 at Clinic 34 Darwin until 13 Feb 2015.

**Storm Barratt**, AO3 Medical Entomology, commenced in the new position in November. She had worked in the T2 position there since 2012. **Jazmin Srakaew-Stephenson** has joined Medical Entomology in Darwin on a 4 month contract as T1 officer starting 1 December 2014.

**Fiona Simpson**, Public Health Nurse Sexual Health, has joined the Nhulunbuy CDC. She previously worked as a RN at the Emergency Department at Gove District Hospital.

## Central Australia

**Danny Williams**, Remote Sexual Health Aboriginal Health Practitioner resigned in November to work at Harts Range Clinic. Danny has been a valuable member of the Remote Sexual Health program bringing with him lots of cultural and bush experience. Danny will be missed from the program but no doubt we will keep in close contact in the future.

**Helen Goodwin**, Public Health Nurse, joined the Remote Sexual Health Team in November, after moving from Kunnanura where she worked as the Program Coordinator for Foetal Alcohol Spectrum Disorder prevention for the last 3 ½

years. Helen is a Registered Midwife and has completed a Graduate Certificate in Health Promotion and a Cert IV in Assessment and Training. Helen has also worked as a Remote Area Nurse 10 years ago in Lake Nash.

**Alexandra Hodgson**, Administrative Support Officer since 2008 resigned in early November to move back to Victoria to be close to her family. Alex has been essential in the day to day functioning of CDC in Alice Springs, and she will be missed.

**Emma Fajardo**, Alice Springs Adolescent Sexuality Education Program, resigned in October.

\*\*\*\*\*

## Alderman in CDC

On 3 November **Justine Glover**, Public Health Nurse CDC Darwin, was officially declared the winner of the Waters Ward by-election with 2883 votes (53.7%) and was duly elected as an Alderman on the City of Darwin Council. Many of the Darwin CDC staff were at her inauguration ceremony on the 11 November.

Justine will continue to work full time at CDC as the responsibilities of the Alderman position fall outside normal business hours.

Justine was also elected as the Chair of Kidsafe NT in October.



*Photo: Justine Glover with the Lord Mayor, Katrina Fong Lim and CDC Darwin colleagues past and present at her inauguration. Left to right: Mary Verus, Maureen Egan, Justine Glover, Karin Promchinwong, Janine Weston*

\*\*\*\*\*

**2015 Centre for Disease Control Conference**  
Save the dates  
**8-10 September 2015, Darwin**