



## Ebola outbreak 2013 and on-going

*Rosalie Schultz, Central Australian Aboriginal Congress Aboriginal Corporation*

### My story on Ebola



**Figure 1. Dr Rosalie Schultz in Hazmat clothing**

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See the Box below for some facts on Ebola.

I volunteered to participate in the Ebola response after receiving an email: 'Click here to volunteer'. My conscience was tweaked because I had welcomed the Australian Government response to the Ebola crisis. I felt that this gave to me a responsibility to be part of the Australian response (see Figure 1).

In particular I was moved by the statement that Sierra Leone, a country in West Africa with a population of 6.092 million had only 120 doctors. This is less than the 164 doctors at Alice Springs Hospital situated in the town of Alice Springs in the southern end of the Northern Territory with a population of 28 000. If at least 120 doctors from around the world came to give support to Sierra Leone, this would double the number of doctors in the country.

#### **Some basic facts on Ebola from the *British Medical Journal* December 2014<sup>1</sup>**

- Ebola virus disease is a severe, often fatal, zoonotic infection caused by a virus of the Filoviridae family (genus Ebolavirus).
- Human to human transmission occurs through contact with body fluids from infected patients. The incubation period after infection is 1-21 days and patients are not considered infectious until they develop symptoms.
- Initial stages of infection are non-specific, which makes the differential diagnosis broad. A history of exposure and clinical suspicion of infection should prompt isolation.
- Management is currently focused on supportive care and infection control. Healthcare workers should familiarise themselves with local guidance.
- Case fatality rates range from 30% to 90%.
- Because of the high likelihood of infected people travelling, all countries should have tested and practised protocols ready for screening and managing patients.

#### **Public health announcement**

The public health announcement shown in Figure 2 is primarily directed, not at overseas

**Figure 2. Ebola public health announcement**



volunteers but, at community members and their households who may have Ebola Virus Disease (EVD). The actions of these people will determine the course of the devastating epidemic. They must go to a treatment centre, to be isolated - for the sake of everyone else's health.<sup>2</sup> However, the blood stained letters in the word 'Ebola' are misleading as bleeding is rare and a late sign of the disease. Common presentations are fever, fatigue, anorexia, vomiting, diarrhoea, headache and abdominal pain.<sup>1</sup>

#### **Clinical picture**

The Ebola virus spreads from person to person in body fluids, particularly in blood and faeces but also in sweat and semen.<sup>3</sup> However, people are not infectious until they develop symptoms. Infectivity and viral load increase dramatically from the time of symptom onset and continue to increase exponentially as the disease progresses. Corpses are highly infectious. Therefore isolation is more critical as people get sicker and die. Infectivity and viral load decline as people recover. Corpses, however, are highly infectious.<sup>4</sup>

Since there is no active treatment and no vaccination, the only way to stop the outbreak is to prevent it from spreading. This requires

everyone to avoid contact with infected people, including after a person's death. Isolation to prevent spread is the role of Ebola Treatment Centres (ETCs).

In the West African outbreak scenario, EVD is not managed in health care services other than ETCs because of the risk of nosocomial transmission.<sup>2</sup> However, in better resourced healthcare settings, EVD patients have been managed with routine infection control and no nosocomial transmission has occurred. The exceptionally high level of biosecurity measures that are provided in an ETC provide a high level of workplace and patient safety.<sup>5</sup>

### **Ebola Treatment Centres**

One of the great challenges is to entice people who may have EVD to come to the ETCs. Sadly, most people do not leave the ETC alive. Case fatality rates within ETCs are around 50 to 60% and this has not changed since the start of the epidemic.<sup>6</sup>

The best ETCs however can provide excellence in relief of the agony of EVD. They provide fluid resuscitation, opiates for the terrible pain of the disease, nursing care for incapacitating diarrhoea and vomiting and psychological counselling and support. Many of those with EVD come from families and communities that have been devastated by the deadly disease or who have family members that have disappeared to unknown ETCs or burial grounds. The safety and support of the ETC can be a source of respite.

I was struck by how the ETC looked like a detention centre, with razor wire keeping outsiders out and insiders in. Black smoke comes out of incinerators as we burn everything that comes out of the 'red zone,' which is where infected people are held. Burnt waste includes clothes, blankets, left-over food, mobile phones, books and personal belongings.

The overall case fatality may be up to 90%.<sup>1</sup> This is considerably higher than case fatality rates in ETCs, which may reflect some benefit from supportive care, particularly fluid replacement. However the lower death rate in the ETCs may also indicate that the most severely affected people die rapidly and never reach treatment. Population case fatality rates are

difficult to estimate due to delays, errors and incomplete registration of deaths, stigma and community resistance and inability to determine cause of death.<sup>7</sup> All corpses are managed as if infectious, with safe and dignified burial practices a central part of the EVD response. Ideally a mouth swab is taken to confirm whether or not EVD was the cause of death.

### **Ebola epidemic effects**

Apart from destroying individual people and communities, EVD has destroyed health care systems.<sup>8,9</sup> The international focus on EVD has drawn attention away from the need for primary health care; deaths and the flight of health care workers have taken away much of the workforce and the health system itself was patchy even before EVD arrived. As a result communities have abandoned health care services and many have completely collapsed. Now the countries affected by the epidemic have almost no primary health care services. The ongoing struggle to control the EVD outbreak – now with global assistance – is often the only health service available.<sup>10</sup>

The collapse of primary health care affects the conditions for which primary care is most effective:<sup>10</sup>

- Malaria: deaths from malaria, usually 100 000 per year across the region, are predicted to quadruple.<sup>11</sup> It is predicted that malaria deaths of 4500 per year in Sierra Leone<sup>12</sup> may reach 18 000 in 2014-2015.
- Childbirth: maternal mortality is expected to increase by 15%,<sup>11</sup> from an already alarming rate of around 1000 per 100 000 births.<sup>12</sup> This means that an additional 330 women in Sierra Leone will die from maternity related causes in the next 12 months – one per day.
- Childhood immunisation average rates: immunisation rates have plummeted, and there are reports that there is no childhood immunisation at all.<sup>11</sup> The tragedy is magnified since immunisation had been a recent success story. Childhood immunisation rates rose from 40% at the end of the civil war in January 2002 to over 95% of children in 2013. For many vaccines the reported rate is over 100% of the number of children, reflecting on-going catch up and strengthening of the health system.<sup>14</sup>

Underlying the inability of West African countries to respond to EVD is the instability of health care services. Health care is not funded systematically and most health care funding is channelled through tied grants from WHO with programs run by NGOs and philanthropic funds.<sup>9</sup> With no previous EVD in the region, there was no funding for EVD, and inadequate resources for disease outbreaks generally. When EVD arrived, many agencies left the countries to protect their staff from infection.<sup>9</sup>

### Personal reflection

I volunteered my time and expertise, seeking to enhance my understanding of international health and development through the prism of the EVD outbreak. The key learning for me was the critical role of comprehensive primary health care. Systemic support for health services to provide primary health care is what the countries affected by EVD have always needed, and need more than ever as the epidemic wanes. Recent immunisation program success shows it is possible, but health care must be developed in a comprehensive model. Then, when the next epidemic arrives, whether diabetes, swine flu or famine, services will be prepared to respond.

From my experience I would like to see Australia learn 2 lessons. Firstly we have international obligations - not just to staff an ETC, but to support the World Health Organisation for the protection of humanity and ourselves from a possible pandemic. Secondly there is a central role of government investment, throughout the world, in health services to ensure a comprehensive health care system that can manage unforeseen disease outbreaks.

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## Clinical presentations of acute post streptococcal glomerulonephritis notifications in the Northern Territory: a case for a change in case definition?

Rowena Boyd, CDC

### Abstract

To evaluate the accuracy of the current case definition for notification of acute post streptococcal glomerulonephritis (APSGN), we undertook a retrospective case series to describe the clinical presentations of notified APSGN cases. In 2013-2014 there were 99 notifications of APSGN in the Northern Territory. The majority of cases had haematuria (96%) and hypertension (88%). In only 2 instances, the clinical evidence component of the diagnosis was based solely on peripheral and facial oedema without haematuria or hypertension. In both these cases, retrospective review indicated APSGN may not have been the cause of their symptoms. Further review of the literature and consultation with experts in the field is required to determine if peripheral oedema and facial oedema should be united as a single 'clinical evidence' category for purposes of our case definition.

*Key words:* Acute post-streptococcal glomerulonephritis; APSGN; haematuria; hypertension; facial oedema

### Background

The Northern Territory (NT) has a high rate of acute post-streptococcal glomerulonephritis (APSGN) with 12.5 cases per 100 000 person-years and overrepresentation in the Indigenous population.<sup>1</sup> As per the *Northern Territory Guidelines for Acute Post-Streptococcal Glomerulonephritis*, each case triggers a public health response including screening of all contacts for clinical evidence of APSGN.<sup>2</sup> Close contacts aged between 1 and 17 years old receive an injection of benzathine penicillin regardless of whether they have evidence of APSGN. All other household contacts with skin sores or sore throat also receive treatment. Typically, people with APSGN present with oedema, haematuria and hypertension; however subclinical infection has been recognised.<sup>3</sup>

### Figure. NT Case definition of APSGN

#### Reporting

Both confirmed cases and probable cases should be notified. Possible cases should be reported to Centre for Disease Control (CDC) but not notified to Northern Territory Notifiable Disease System (NTNDS).<sup>1</sup>

#### Confirmed case

A confirmed case requires either:

1. laboratory definitive evidence

OR

2. laboratory suggestive evidence AND clinical evidence.

#### Probable case

A probable case requires clinical evidence only.

#### Possible case

A possible case requires laboratory suggestive evidence only.

#### *Laboratory definitive evidence*

Renal biopsy suggestive of APSGN.

#### *Laboratory suggestive evidence*

1. Haematuria on microscopy (RBC >10/ $\mu$ l)<sup>2</sup>

AND

2. Evidence of recent streptococcal infection (positive Group A Streptococcal culture from skin or throat, or elevated ASO titre or Anti-DNase B)<sup>3</sup>

AND

3. Reduced C3 level.

#### *Clinical evidence*

At least 2 of the following

- facial oedema
- $\geq$  moderate haematuria on dipstick
- hypertension<sup>4</sup>
- peripheral oedema

#### Notes

1. Possible (subclinical cases) are often found when screening individuals for APSGN but do not present with more than 1 clinical symptom. They do not have oedema or hypertension but on laboratory investigation are found to have haematuria, evidence of a streptococcal infection and a reduced C3. These cases should also be reported to CDC.

2. If microscopy is not available then moderate haematuria on dipstick fulfils this criteria.
3. If all other criteria have been fulfilled but the only evidence of recent streptococcal infection is isolation of Group C or Group G Streptococci from skin or throat, this could be notified as a confirmed case after discussion with CDC or an infectious disease physician.
4. Hypertension as defined in *CARPA Standard Treatment Manual*.

To be notified as a confirmed case of APSGN in the NT, a person needs to either have laboratory definitive evidence, or a combination of laboratory suggestive evidence and clinical evidence of APSGN (see Figure). Laboratory definitive evidence requires a renal biopsy, which is undertaken in only a minority of cases of suspected APSGN. The majority of confirmed notifications in the NT are therefore based on a combination of laboratory suggestive and clinical evidence. A probable case of APSGN requires clinical evidence only, which must include at least 2 of the clinical evidence manifestations (Figure).

A question arose regarding whether peripheral oedema and facial oedema alone are sufficient clinical evidence to support an APSGN diagnosis or whether a more specific case definition is required. Incorrect diagnosis and notification can lead to poor use of health resources, inappropriate use of antibiotics and discomfort to those receiving injections. The aim of this study was to describe the clinical presentations of APSGN cases reported to the Northern Territory Notifiable Disease Surveillance System (NTNDSS).

## Methods

Cases of APSGN notified in 2013 and 2014 were identified from the NTNDSS. Clinical data were obtained from medical records and the Centre for Disease Control APSGN notification form which is completed for each case at the time of notification.

## Results

For the 2 year period, there were 99 notifications of APSGN, which predominantly affected Indigenous people, who comprised 97% (96 /99) of notifications. Males represented 54 (55%) episodes and the median age was 6 years (range 0 to 54 years). Of the 99 notifications, 80 (81%) met the confirmed case definition and 19 (19%) met the probable case definition. Only 4 (4%) notifications were reported on the basis of laboratory definitive evidence following renal biopsy.

The Table below lists the proportion of people notified with components of the APSGN case definition. In only 2 notifications (1 confirmed and 1 probable case) the clinical evidence was based on oedema only (that is, the person was normotensive and there was no haematuria). In the first of these 2 notifications there was no laboratory evidence found to support the notification. In the second case, a paediatric assessment determined that APSGN was unlikely to be the cause of the child's symptoms.

## Discussion

As only a very small percentage of cases (4%) are based on laboratory definitive evidence, the

**Table. The proportion of people notified in the NT 2013 and 2014 with each or combined component(s) of the APSGN clinical evidence manifestations**

Symptom	Confirmed case N=80	Probable case N=19	Confirmed AND probable cases N=99	Data not available
Peripheral oedema	42/76 (55%)	7/16 (44%)	49/92 (53%)	7/99 (7%)
Facial oedema	54/78 (69%)	11/18 (61%)	65/96 (68%)	3/99 (3%)
Hypertension	73/79 (92%)	11/17 (65%)	84/96 (88%)	3/99 (3%)
Haematuria on dipstick	75/77 (97%)	15/17 (88%)	90/94 (96%)	5/99 (5%)
Peripheral AND facial oedema ONLY*	1/41 (2%)	1/11(9%)	2/52 (4%)	47/99

\*No haematuria or hypertension

majority of notifications rely on clinical evidence as the basis of notification and subsequent public health response that encompasses follow up of contacts. Therefore it is important to determine if it is appropriate for someone to be notified on the basis of facial and peripheral oedema alone, without haematuria or hypertension. Consideration should be given to changing the NT case definition to require 2 of the 3 following clinical manifestations;

- Generalised or facial oedema
- Hypertension
- Haematuria

Combining generalised and facial oedema into the one clinical evidence category would have several advantages. It would likely increase the specificity of our case definition, ensuring wise use of public health resources and the prevention of unnecessary use of antibiotics and discomfort associated with benzathine penicillin injection. The results of the data presented here suggest there would be little impact on the number of notifications, as under this revised definition only 2 of 99 cases would not have been notified. Furthermore, retrospective analysis of these 2 cases suggested that APSGN was probably not the cause of their symptoms. Hence, our data would tend to support a change of case definition.

However a change in case definition could decrease the sensitivity of our surveillance system, which is already of concern for APSGN. Cases of APSGN are almost certainly under-

reported as notifications rely on reporting by a clinician and cannot be automatically notified by a laboratory. Missing a notification of APSGN may mean close contacts are not followed up, potentially resulting in secondary cases of APSGN which may otherwise have been prevented. Before a change in the case definition is made a further review of the literature and consultation with renal, paediatric, immunology and infectious disease physicians is required.

### Acknowledgements

The author would like to acknowledge Peter Markey and Lesley Scott in recognition of all the work they have done in APSGN surveillance.

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## Influenza seasonal vaccine 2015

*Rosalind Webby, CDC, Darwin*

Over 2,500 Australians die each year from complications caused by influenza. Less than half the people most at risk of developing life threatening complications from influenza are being vaccinated annually.

This year Indigenous children aged 6 months to less than 5 years will be vaccinated with FREE influenza vaccine under the National Immunisation Program (NIP).

Indigenous children under the age of 1 year have at least 10 times higher rates of influenza infection in the Northern Territory (NT) compared to non-Indigenous NT children. Vaccination will reduce infection, hospitalisations and complications associated with severe flu in this group.

Influenza, commonly known as the flu, is a viral infection that causes fever, runny nose, headache and severe muscle aches. Children can develop

ear infections, febrile seizures, bronchiolitis, pneumonia and gastrointestinal disturbance from influenza infection. Children receiving vaccine for the first time require 2 doses of influenza vaccine given at least 4 weeks apart. In subsequent years, a single annual influenza dose will be recommended. Influenza vaccine can be given with other routine childhood immunisations.

Other groups eligible for FREE vaccine are:

- Pregnant women in all trimesters
- Indigenous people 15 years and over
- Non-Indigenous people 65 years and over
- Children 6 months and over with chronic disease such as:
  - \*Chronic lung disease
  - \*Chronic heart disease
  - \*Chronic renal failure
  - \*Diabetes
  - \*Weakened immune systems
  - \*HIV infection

Health care workers are at an increased risk of both getting and spreading influenza so they should be vaccinated to protect themselves and the community.

Some ways to increase vaccination in your community include to:

- Generate a list of people in your community who should be vaccinated - this is your target population
- Ensure computerised records have annual influenza recalls for all eligible groups including pregnant women
- Increase health promotion activities such as posters, word of mouth communication and community radio
- Organise flu vaccination days
- Organise immunisation booths on specific days outside of the clinic

The Centre for Disease Control (CDC) can provide education on flu vaccination as well as information about immunisation. A postcard has been developed for the new Indigenous children's program and radio advertising in different Indigenous languages will be broadcast starting in May and June 2015.

Immunisation resources can be found at the following web sites or contact CDC on 89228044.

- [http://health.nt.gov.au/Centre\\_for\\_Disease\\_Control/Immunisation/index.aspx](http://health.nt.gov.au/Centre_for_Disease_Control/Immunisation/index.aspx)
- <http://www.immunise.health.gov.au/>

### **Quadrivalent influenza vaccines**

In addition to the trivalent NIP funded influenza vaccine, for the first time this year there are 2 brands of influenza vaccine on the private market that contain 4 strains of influenza virus (2 influenza A and 2 influenza B virus strains). These are referred to as quadrivalent vaccines and are not funded under the NIP.

The quadrivalent influenza vaccines contain the same 3 strains as the trivalent influenza vaccine and an additional B strain. The extent of any additional benefit from this additional strain will depend on which B strains are circulating and how much cross protection there is between B strains.

The safety profile of both the quadrivalent and trivalent influenza vaccines is expected to be similar. For more information see the Australian Technical Advisory Group on Immunisation (ATAGI) statement or the National Centre for Immunisation Research and Surveillance (NCIRS) influenza fact sheet. available at:

- <http://immunise.health.gov.au/internet/immunise/publishing.nsf/Content/ATAGI-advice-TIV> or
- NCIRS influenza fact sheet <http://www.ncirs.edu.au/immunisation/fact-sheets/influenza-fact-sheet.pdf>

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Northern  
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Centre for Disease Control

May 2015

## Influenza and its prevention

### What is influenza?

Influenza (often called flu) is a respiratory infection caused by the influenza virus of which there are 3 types; A, B and C. Types A and B cause most of the disease in humans and type A has 2 commonly occurring subtypes; H1 and H3. Influenza viruses are characterised by the way they mutate from year to year thereby forming new strains and evading the immune system. Because of this, vaccination is required annually to protect against the current influenza strains.

### How is it spread?

Influenza is spread from person to person through respiratory droplets produced during coughing and sneezing. It may also be spread when others touch surfaces contaminated by the droplets and then transfer the infection to their mouth and eyes, where the virus can enter the body. The incubation period is short, usually 1 - 3 days.

### What are the symptoms?

The presentation of influenza illness often has an abrupt onset with symptoms including; tiredness, fever, headache, chills, sore throat, loss of appetite and muscle aches. There may be an associated cough, nasal discharge and sneezing.

### How serious is influenza?

The severity of influenza depends on the strain, the patient's age, previous exposure to the strain and the presence of other medical conditions. Those at increased risk for severe disease or dying from influenza are listed in the groups recommended for annual vaccination.

### What is the infectious period?

Adults are infectious from the day prior to and up to 7 days from the onset of symptoms while children may remain infectious for 10 days. Immunosuppressed people may shed the virus for weeks. The ability to transmit the virus is higher when cough and fever are present.

### What is the treatment?

Treatment for influenza includes rest, increased fluids and pain relief. Anti-viral treatment can

shorten the duration of illness if commenced within 48 hours of the onset of symptoms.

### How can it be prevented?

Annual vaccination is recommended especially for those most at risk. The influenza vaccine is a safe and effective vaccine that does not contain any live virus, so people cannot catch influenza from having the vaccine. However, it does take around 2 weeks before the body is fully protected after vaccination. If you are exposed to someone with influenza infection during this time you may still become sick because your body is not yet fully protected.

To stop the spread of disease, people should cough into their upper arm or cover their mouths when coughing and wash their hands regularly. Regular hand-washing and disposing of tissues into the bin immediately, even when not coughing, may also help to prevent influenza. People with flu symptoms should stay at home and seek medical treatment as needed.

### Annual influenza vaccination recommendations

#### Who is eligible for FREE influenza vaccine?

1. All Indigenous children 6 months to <5 years.
2. All Indigenous people aged 15 years and older.
3. All non-Indigenous people aged 65 years and older.
4. All pregnant women.
5. People aged 6 months and over with conditions predisposing them to complications from influenza including:
  - Chronic heart disease (including congenital heart disease, coronary artery disease and valvular rheumatic heart disease)
  - Chronic liver disease
  - Chronic kidney disease
  - Chronic lung disease (including, bronchiectasis, emphysema and cystic fibrosis)

[www.nt.gov.au/health](http://www.nt.gov.au/health)

## Influenza and its prevention

- Severe asthma (requiring frequent hospital visits and multiple medications)
- Diabetes and other chronic metabolic diseases requiring regular medical follow-up
- Chronic neurological conditions that can affect respiratory function
- Haemoglobinopathies
- Children less than 10 years old on long-term aspirin therapy
- Immunosuppression, immunodeficiency or are receiving high dose immunosuppressive therapy.

**Influenza vaccination is recommended but not funded for the following groups**

1. People with obesity (BMI  $\geq 40\text{Kg/m}^2$ ).
2. Contacts of high risk patients including staff of nursing homes, long-term care facilities, all health care providers, carers of immunocompromised patients and household contacts of those in high-risk groups.
3. People travelling during the influenza season, especially if to a region where influenza is circulating.
4. Residents of nursing homes and other long-term care facilities (may be eligible for FREE vaccine if included in the groups above).
5. Homeless people and those persons providing care to this group.
6. People working with poultry and pigs.
7. Staff working in early childhood education and care and those who provide essential community services.

**When to vaccinate?**

The vaccine should be administered every year, as soon as it becomes available (usually mid March). Get your vaccine early in the year even if you were vaccinated late in the previous year.

**Who gets 2 doses of vaccine given at least 4 weeks apart?**

- Immunocompromised people, and
- Children 6 months to <9 years of age who are receiving influenza vaccine for the first time.

**Side effects**

- Local tenderness at the injection site is common.
- Fever and malaise occur less frequently (1-10%).

There is a small increased risk of fever and febrile convulsions in children 6 months to <5 years of age who receive influenza vaccine and Prevenar13® at the same time.

People with egg allergy, including anaphylaxis, can be vaccinated in facilities where staff can recognise and treat anaphylaxis.

Further information about vaccines and funding for influenza vaccination is available from your local doctor, health centre or Centre for Disease Control.

Information is also available from the Immunise Australia Program website at:

<http://www.immunise.health.gov.au>

**Influenza vaccination funding guideline**

<b>Free from your health care provider</b>	All Indigenous children aged 6 months to <5 years
	All Indigenous people aged 15 years and over
	All non Indigenous people aged 65 years and over
	All pregnant women
	All infants/people aged 6 months to 64 years with medical conditions listed above
Those not in the above groups can access the vaccine by prescription through their GP	

**For more information contact your nearest Centre for Disease Control**

Alice Springs 8951 7548 Darwin 8922 8804 Katherine 8973 9049  
Nhulunbuy 8987 0282 Tennant Creek 8962 4259 or <http://www.nt.gov.au/health/cdc/cdc.shtml>

## **New immunisation schedules, future National Immunisation Program vaccines and new national whole-of-life register**

*Rosalind Webby, CDC*

### **New Northern Territory childhood and adult vaccination schedules**

The Northern Territory (NT) childhood and the adult and special groups vaccination schedules have recently been updated (see pages 12 and 13). The main changes are the introduction of:

- Influenza vaccine for Indigenous children aged 6 months to under 5 years
- Pertussis containing vaccine (dTpa) for pregnant women from 28 weeks onwards
- 1<sup>st</sup> vaccines of Infanrix®hexa, Rotarix®, Prevenar®13 moved forward to start at 6 weeks
- ProQuad® (measles, mumps, rubella, varicella) vaccine as an alternative to PriorixTetra® (available from 1 July 2015).

### **Future additional vaccines to be added to the National Immunisation Program**

Following positive recommendations from the Pharmaceutical Benefits Advisory Committee (PBAC), the Australian Government has approved funding to list an **additional dose of pertussis-containing vaccine for infants and a shingles vaccine for older Australians** on the National Immunisation Program (NIP).

From October 2015, an 18 month dose of diphtheria-tetanus-pertussis (DTPa) vaccine will be reinstated at the 18 month schedule point on the NIP. This additional dose of pertussis containing vaccine will reduce the amount of whooping cough disease in toddlers and importantly reduce transmission to infants too young to be immunised.

In November 2016, a National Shingles Vaccination Program will be rolled out as an ongoing program for 70 year olds, with a 5 year catch up program for 71 – 79 year olds.

### **A national whole-of-life register, the Australian Immunisation Register, by October 2016**

As part of the Federal Budget 2015-2016, the Australian Government has approved the

expansion of Australian Childhood Immunisation Register (ACIR) to become the **Australian Immunisation Register (AIR)**, which will record all vaccines given to all ages through general practitioners and community clinics. ACIR will be expanded to include vaccine data for people up to 19 years of age from 1 January 2016 and become the AIR by October 2016.

### **Australian Adolescent School Vaccination Register**

The Hon Sussan Ley MP, Minister for Health recently announced that the National Human Papillomavirus (HPV) Vaccine Register will be expanded to an Australian School Vaccination Register. This will collect vaccination information for all vaccines given to adolescents in school including diphtheria, tetanus and acellular pertussis (dTpa) vaccine, human papillomavirus (HPV) vaccine and varicella (chickenpox) vaccine. It is anticipated that the Australian School Vaccination Register will be operational in the 2017 school year. The Adolescent and Australian Immunisation Register will be merged at some time in the future but a date has not yet been determined.

Please continue to send vaccine data to the NT Immunisation Register, this register is likely to link to the new national registers in the future.

### **Exemption categories for Commonwealth financial payments for immunisation changing from 1 January 2016**

From 1 January 2016, 'conscientious objection' will no longer be accepted or recorded on the ACIR as an exemption category for children who are not immunised. Children will need to be immunised, be on a recognised immunisation catch up schedule or have a medical contraindication to be eligible for the Family Tax Benefit Part A end of year supplement and child care subsidies (subject to the passage of legislation). For more information go to the Department of Human Services website at <https://www.dss.gov.au/our-responsibilities/families-and-children/benefits-payments/strengthening-immunisation-for-young-children>.

\*\*\*\*\*



Effective from April 2015  
**Adult and Special Groups Vaccination Schedule**

Disease	Recommendation	Vaccine note references	Vaccine
Hepatitis B	Special groups including Indigenous people who have not been previously vaccinated, or do not have immunity through natural infection	■ #	Engerix <sup>®</sup> -B paediatric formulation (< 20 years) Engerix <sup>®</sup> -B adult or H-B-VAX <sup>®</sup> II (≥ 20 years) H-B-VAX <sup>®</sup> II renal formulation also available
Influenza	Indigenous children 6 months - < 5 years	●	Vaxigrip <sup>®</sup> Junior (6 - 35 months) Vaxigrip <sup>®</sup> (3 - < 10 years) Fluvax <sup>®</sup> or Vaxigrip <sup>®</sup> (10 years and over) Other brands privately available
	Indigenous people 15 years and older		
	People 65 years and older		
Measles Mumps Rubella	Pregnant women in any trimester	●	Vaxigrip <sup>®</sup> Junior (6 - 35 months) Vaxigrip <sup>®</sup> (3 - < 10 years) Fluvax <sup>®</sup> or Vaxigrip <sup>®</sup> (10 years and over) Other brands privately available
	People ≥ 6 months of age at increased risk of complications ie: cardiac disease, chronic respiratory disease (including severe asthma), chronic neurological or immunocompromising conditions, diabetes and renal disease or any other condition requiring regular medical follow-up or hospitalisation in the preceding year		
Pneumococcal Disease	All people born after 1966 without a history of either 2 doses of a MMR containing vaccine, serological evidence of protection or a good history of natural immunity against all 3 diseases	●	M-M-R <sup>®</sup> II or Ptronix <sup>®</sup>
	Please see NT pneumococcal vaccination and revaccination guidelines		
Pertussis	Pregnant women from the 28th week of pregnancy or as soon as possible after delivery	♀ ⚙	Pneumovax23 <sup>®</sup> Prevenar 13 <sup>®</sup>
	Fathers and carers of infants under the age of 7 months		
Diphtheria Tetanus Pertussis	People at 50 years of age	◆ #	dTpa = Boostrix <sup>®</sup> or Adacel <sup>®</sup>
	People 65 years and older		

**Vaccine notes:** Additional vaccines are recommended for other risk groups. Refer to pages 130-175 and the disease specific sections of the 10<sup>th</sup> Edition Australian Immunisation Handbook (AIH) or ring your regional CDC for further advice.

■	= Household and sexual contacts of people with Hepatitis B, people on dialysis, migrants from endemic countries, people with chronic liver disease, HIV, Hep C, people who inject drugs, recipients of certain blood products and solid organ transplants.	⚙	= Can be given from the time the expectant mother has reached 28 weeks of pregnancy if no pertussis containing vaccine has been given in the previous 10 years.
●	= REPEAT VACCINE YEARLY. 2 doses given 4 weeks apart are recommended for children < 9 years of age who are receiving influenza vaccine for the 1st time and immunosuppressed individuals receiving influenza vaccine for the 1st time. Refer to AIH page 251 for recommended doses of influenza vaccine.	◆	= If no pertussis containing vaccine has been given in the previous 10 years.
♀	= The best time to administer dTpa vaccine is between 28 and 32 weeks of pregnancy, but the vaccine can be given any time during the 3rd trimester, up to and immediately after delivery. Give with every pregnancy.	#	= Provider or self-funded.

**Information:**

For more information contact your nearest Centre for Disease Control:

- Darwin 8922 8044
- Katherine 8973 9049
- Barkly 8962 4259
- Alice Springs 8951 7549
- East Arnhem 8987 0357
- NT Immunisation Register 8922 8315

Effective from  
**April 2015**

# Childhood Vaccination Schedule



Age	Hepatitis B	Rotavirus	Diphtheria Tetanus Pertussis Hepatitis B Polio Polio/Haemophilus influenzae type b	Conjugate Pneumococcal (13VPCV)	Haemophilus influenzae type b Meningococcal C	Measles Mumps Rubella	Hepatitis A	Measles Mumps Rubella Varicella	Diphtheria Tetanus Pertussis Polio	Human Papillomavirus	Varicella	Polysaccharide Pneumococcal	Adult Diphtheria Tetanus Pertussis	Influenza REPEAT YEARLY
Birth	✓		INFAIRIX®hexa 0.5ml IMI	Prevenar 13® 0.5ml IMI	Mentorix® 0.5ml IMI	M-M-R®II 0.5ml SC or Priorix® 0.5ml IMI	VAQTA® 0.5ml IMI	Priorix-Tetra® 0.5ml SC or ProQuad® 0.5ml SC	Infanrix®IPV 0.5ml IMI	Gardasil® 0.5ml IMI	Varivax® 0.5ml SC or Varinix® 0.5ml SC	Pneumovax23® 0.5ml IMI	Boostrix® 0.5ml IMI	Vaxigrip® Junior 0.25ml IMI or Vaxigrip® 0.25ml or 0.5ml IMI
6 weeks *		✓		✓										
4 months		✓		✓										
6 months		✓		✓	✓		☐							★
12 months				■			☐	✓ ‡						★
18 months									✓					★
4 years **														★
5 years														★
12 years										✓✓			✓	★
13 years														★
15 years														★

### Vaccine notes:

- ✓ = All children.
- = BCG for all Indigenous newborns, newborns who will live in Indigenous communities, newborns of overseas born parents from high incidence tuberculosis (TB) countries who will be going back for extended visits and newborns of families who have been treated for leprosy.
- \* = Hepatitis B Immunoglobulin for all newborns of Hepatitis B surface antigen positive mothers.
- \*\* = Do not give before 6 weeks of age.
- ☐ = All vaccines due at 4 years can be given from 3 years and 6 months of age.
- ☑ = ORAL VACCINE: first dose must be given by 14 weeks and 6 days of age, second dose must be given by 24 weeks and 6 days of age.
- = Indigenous children only.

### Information:

For more information contact your nearest Centre for Disease Control:

Darwin 8922 8044  
Katherine 8973 9049  
Barkly 8962 4259  
Alice Springs 8951 7549  
East Arnhem 8987 0357  
NT Immunisation Register 8922 8315

## Identifying Rheumatic Heart Disease patients requiring secondary prophylaxis in the hospital setting

*Raed Khuffash and Stephen Brady, Alice Springs Hospital, Alice Springs*

### Abstract

*Acute Rheumatic Fever (ARF) is an autoimmune response to bacterial infection with group A streptococcus (GAS). People with ARF are often in distress and require hospitalization. Despite the dramatic nature of the acute episode, ARF leaves no lasting damage to the brain, joints or skin. However, damage to the heart may progress to Rheumatic Heart Disease (RHD) causing irreversible damage to the heart valves leading to heart failure. People who have had ARF previously are much more likely than the wider community to have subsequent episodes causing or worsening their RHD. These ARF recurrences can be prevented by a 4-weekly Benzathine Penicillin G (BPG) injection. The rate of adherence to a BPG regimen to provide secondary prophylaxis for the prevention of GAS and recurrent ARF is recognised as low in Central Australia.*

*The aim of this retrospective audit was to determine the adherence rate of health staff at Alice Springs Hospital (ASH) at following the National Heart Foundation RHD Guidelines for giving secondary prophylaxis to those patients who attend with the diagnosis of ARF/RHD. Of the 43 ASH presentations that required BPG injection, only 40% received their prophylaxis despite 91% of patients being accurately recognized as having RHD. To improve adherence to the National Heart Foundation secondary prophylaxis guidelines, specific ASH guidelines need to be developed to improve identification of RHD patients and promote administration of opportunistic BPG injections. In addition, there needs to be easier accessibility and better integration of the Northern Territory RHD Register with the ASH computer software. Furthermore, more effort is required to increase awareness and education of junior staff of the high prevalence of RHD in Central Australia and the importance of opportunistic BPG injections when RHD patients present to hospital.*

*Key words: Acute rheumatic fever; rheumatic heart disease; group A streptococcus; Central Australia*

### Introduction

Acute Rheumatic Fever (ARF) is an illness caused by an immunological reaction to skin and upper respiratory tract infections with group A streptococcus (GAS). Not everyone is susceptible to ARF as only about 3-5% of the population have an inherent genetic susceptibility. The immune reaction causes an acute, generalized inflammatory response affecting mainly the heart, joints, brain and skin. Damage to the heart valves, commonly mitral and/or aortic valves, can persist once the acute episode has resolved. This is known and termed as Rheumatic Heart Disease (RHD). Individuals who have had ARF are at an increased risk of further episodes, causing further cardiac valve damage and steady worsening of RHD.<sup>1</sup>

Secondary prophylaxis with *Benzathine Penicillin G (BPG)* is recommended for all people with a history of ARF or RHD and is the only RHD control strategy reported to be successful and cost-effective at both community and population levels. This is supported by a Cochrane meta-analysis review, which concluded that the use of penicillin is beneficial in the prevention of recurrent ARF.<sup>2</sup> In addition, prospective data from New Zealand and Australia showed that few recurrences occurred among people who are fully adherent to the 4-weekly BPG regimen.<sup>3</sup>

The current recommended regimen for secondary prophylaxis is a 4-weekly intramuscular BPG injection, except in patients considered to be at high risk, for whom 3-weekly administration is recommended. While BPG is usually administered every 4 weeks, serum penicillin levels may be low or undetectable 28 days following the standard 1,200,000 U dose of BPG. Fewer streptococcal infections and ARF recurrences have been documented

among patients receiving 3-weekly BPG in comparison to the 4-weekly schedule. Although Australian Aboriginal and Torres Strait Islander people are at higher risk of ARF, the benefit of 3-weekly BPG injections are offset by the difficulties of achieving good adherence, even to the standard 4 weekly regimen.<sup>4</sup>

The Northern Territory (NT) RHD program has developed a RHD Register, a centralized computer database containing all known cases of ARF and RHD. The RHD Register also has the capacity to record the dates and locations of secondary prophylaxis making it easier for health professionals to follow the adherence rate and identify patients who are in need of their next dose of BPG. The Register, however, is not very accessible, which prevents many hospital health professionals from using it to identify RHD patients and to determine if the patient requires a BPG injection during their hospital presentation/admission. Hospitalization provides an opportunity to begin or re-establish secondary prophylaxis, and to educate patients and families on how important it is to prevent future episodes of ARF. This audit aims to identify and improve the recognition and administration rate of RHD secondary prophylaxis at Alice Springs Hospital (ASH) the hospital which serves the population of Central Australia.

## Background

According to the NT RHD Register as at September 2013, there were a total of 2,275 ARF/RHD patients listed in the NT. The ARF/RHD patient population is 95% Aboriginal, with 37% males and 63% females. Most of these patients are young adults. Furthermore, 32% of the confirmed ARF cases in 2013 were a result of recurrence rather than first episode cases. This high recurrence rate is directly attributed to the failure of secondary prophylaxis prevention. The secondary prophylaxis rate in the NT in 2013 was 62% with only 20% of patients receiving >80% of injections.<sup>5</sup> Despite the high rates of ARF, RHD and poor secondary prophylaxis in Central Australia, ASH does not have a defined protocol to identify RHD patients when they present to the Emergency Department (ED) or when they are

admitted to hospital. This audit was initiated to investigate the recognition rate of ASH doctors for RHD and to identify if RHD patients are receiving opportunistic BPG secondary prophylaxis injections during their hospital presentations.

The *Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (2<sup>nd</sup> edition)*<sup>6</sup> published in 2012 which is an evidence based review for the management of ARF and RHD in Australia provides current best practice for the secondary prevention of RHD and served as a reference to audit the current practice at ASH. The review highlights that the only RHD control strategy shown to be effective is regular (3 or 4 weekly) injections with BPG, aiming for 80% of scheduled injections with day 28 being the latest possible day to receive the injection before being at risk of another GAS infection. It is recommended that patients receive their next dose of BPG after their 3<sup>rd</sup> week to prevent late administration.<sup>6</sup> Alternatives to BPG are available, although they are less effective and require careful monitoring. They include:

- Oral penicillin, although it is less effective than BPG in preventing GAS infections and subsequent ARF. The consequences of missed oral doses must be emphasized and adherence monitored.
- For patients with confirmed severe allergic reactions to penicillin, a non-beta-lactam antibiotic (ex. Erythromycin) may be used.

The appropriate duration of secondary prophylaxis is determined by the age of the patient, age of onset of ARF, time since last episode, and ongoing risk factors. Generally, all patients who have had a confirmed episode of ARF will be on secondary prophylaxis for a minimum of 10 years after their last episode or until the age of 21 years, whichever one is longer. However, those with moderate to severe RHD should continue secondary prophylaxis up to the age of 35-40 years. Patients who have received heart valve replacement surgery are usually on lifetime BPG injections.<sup>5</sup>

## Methods

### *Time period of audit*

The audit was conducted retrospectively for a 3 month period, from 1 October to 31 December 2013. The RHD register is systematically updated at the end of each calendar year and this time period had been updated.

### *Case selection*

Patients were selected for inclusion if they missed or were 1 week away from missing their BPG injection and presented to hospital during the time period of 1 October to 31 December 2013. The ASH patient records were cross-matched with the RHD register to identify these individuals. Hospital presentations were either in the form of ED presentation or hospital admission.

### *Retrieval of records*

A list of hospital health record numbers (HRNs) was presented to medical records at ASH and the case records were retrieved over a 5-week period.

### *Analysis of records*

Each case note file was individually searched with reference to a standard list of criteria on a spread sheet created by the audit team which was led by a medical student with assistance from a hospital specialist physician, rheumatic heart disease nurse and information systems analyst.

The criteria included:

- Demographic data (Gender, Age, Address, Aboriginal or Torres Strait Islander)
- ED presentation date/Hospital admission date/ Episode number
- Triage category
- Discharge status
- If patient was identified as a RHD patient during their hospital presentation
- If BPG or any other secondary prophylaxis was prescribed during hospital presentation

Patients were excluded from analysis if they:

- Left before being seen by a doctor
- Were not a RHD patient
- Were not on secondary prophylaxis for RHD
- Were up-to-date with their secondary prophylaxis

Having obtained this information, the following questions were then asked for each patient:

- Is the patient a current RHD patient on secondary prophylaxis as identified by the NT RHD registry?
- If yes, have they missed or are they 1 week away from missing their last BPG injection?
- Have the ASH doctors identified the patient as having RHD during their ED presentation and/or hospital admission?
- Did the ASH doctors chart an opportunistic BPG injection to update the patient's secondary prophylaxis status?

### *Ethics Approval*

Ethics was applied for via the NT Research Ethics committee and was approved/registered by Menzies School of Health Research for the aforementioned dates and patient population.

## Results

### *Patient demographics and audit-specific data availability*

A request list of 100 patient HRNs was made to medical records. After the initial request, 11 files were unavailable. After a second request, 9 files remained unavailable. Every effort was made to access all relevant files. A list of 91 ED presentations/hospital admissions was retrieved. This initial list represented 54 patients, some of whom presented multiple times during the specified period of study. From the 91 presentations, 48 did not meet the criteria set above by the audit. This included 28 presentations of patients who were already up to date with their BPG injections, 6 patients who left before being seen by a doctor and 9 for whom case files were unavailable.

Only 43 presentations met the criteria. All patients were recognized as Aboriginal or Torres Strait Islander people and were from Alice Springs or the surrounding area.

**Data analysis according to audit Guidelines**

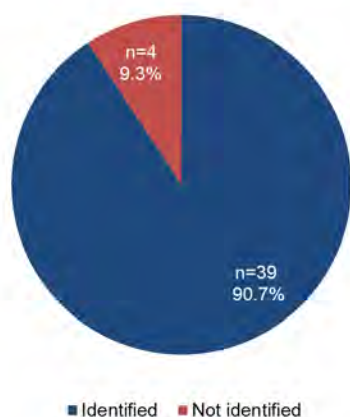
1. The number of hospital presentations/ patients requiring BPG injections from 1 October to 31 December 2013.

There was a total of 43 presentations to hospital whom were RHD patients during the 3 month study period. This included 34 patients; 14 females (41%) and 20 males (59%), some of whom presented multiple times.

2. The number of patients correctly identified as having RHD by ASH doctors.

From the 43 presentations, 91% (39) were correctly identified as RHD patients either through an alert on their triage ED sheet or via doctor history taking. See Figure 1.

**Figure 1. Identification rate and number of RHD patients at ASH**

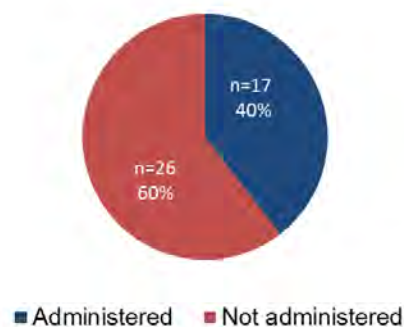


3. The number of opportunistic BPG injections given to RHD patients on secondary prophylaxis during their ED presentation/hospital admission.

From a total of 43 presentations, only 40% (17) of hospital presentations received BPG injections during their ED visit/hospital admission. See Figure 2.

4. The number of opportunistic BPG injections given to patients that were recognized as having RHD and on secondary prophylaxis (ie. likelihood of administering BPG if doctors have already recognized a patient as having RHD).

**Figure 2. Secondary prophylaxis rate**

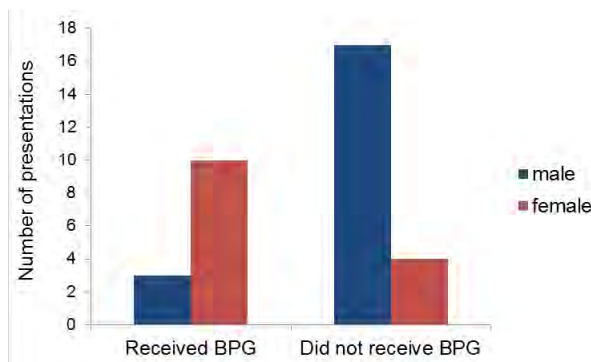


From a total of 39 correctly identified RHD presentations, only 44% (17) received their maintenance BPG injection during their hospital stay. This data demonstrates that patients being recognized as having RHD do not statistically have an increased chance of receiving BPG for secondary prophylaxis at ASH.

5. Gender differences as a factor in receiving RHD secondary prophylaxis.

Males make up 81% (17) of the group that did not receive secondary prophylaxis during their ED presentation/admission to ASH over the specified study period. In addition, males only comprised 23% of the patients who successfully received BPG injections. This data demonstrates that being a male has a higher risk of not receiving secondary prophylaxis at ASH (see Figure 3).

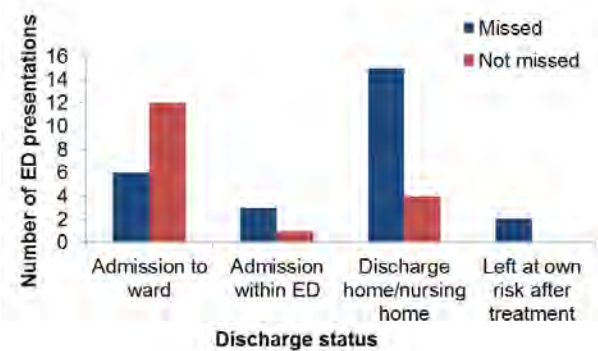
**Figure 3. Gender as a factor for receiving secondary prophylaxis at Alice Springs Hospital**



6. Departure status of RHD presentations.

Patients are more likely to receive their secondary prophylaxis if admitted to the hospital wards where the BPG administration rate is 67% in comparison to ED, which has a 25% BPG administration rate (see Figure 4).

**Figure 4. Discharge status of RHD patients in the study group**



## Discussion

The findings in this retrospective audit confirm the poor opportunistic secondary prophylaxis administration rate for patients who attended ASH and are prescribed BPG treatment, as recommended by the National RHD Guidelines.<sup>6</sup> Despite the recognition rate of 91% of patients with RHD who presented to ASH, there was a failure to perform the next required step of actually administering BPG injections within 28 days to identified individuals. Only 44% of patients who were correctly identified as having RHD received a BPG injection. Therefore, it seems that ASH doctors are identifying RHD patients very well but are not recognizing the opportunity to prescribe BPG injections while patients are in hospital.

Possible reasons behind the poor administration rate of BPG include, firstly, the lack of protocols at ASH to identify and follow up patients on secondary prophylaxis when presenting to hospital. Some patients have an alert on their file that identifies them as having RHD, however, not all RHD patients have this alert. It was noted that having the alert on the system was associated with a higher recognition rate.

Secondly, doctors at ASH have limited access to the NT RHD register. The register is a good tool that can help health professionals identify when RHD patients had their last BPG injection administered and when the next dose is due. Access to this would be a very helpful tool for busy ED doctors who have limited time to scrutinize the patient RHD history. The audit results support this as the ED

administration rate of BPG is 25% as compared to 67% if patients were admitted to the wards.

Thirdly, the lack of education for junior staff about the need to recognize RHD patients is an important factor. With high staff turnover at ASH, junior staff may need to be reminded about the importance of using hospital presentations as an opportunity to administer secondary prophylaxis to RHD patients. It is also an opportunity to remind/educate patients of the necessity of regular 4-weekly BPG injections to prevent further ARF episodes and worsening of RHD.

In a detailed NT study, adherence to BPG injections was improved when patients felt a greater sense of personalized care and 'belonging' to the clinic, and when recall systems extended beyond the boundaries of the community.<sup>6</sup> A study conducted in Katherine found that patients are more likely to receive >50% of their prescribed injections if they attended the clinic at least 4 times a year for reasons other than their BPG prophylaxis.<sup>7</sup> This was a result of the clinic giving opportunistic BPG injections. This same study also found that patients with more severe disease were less likely to receive their 4-weekly BPG injections. Another NT survey has found that adherence to secondary prophylaxis was much better in health centres where follow up was carried out to ensure patients receive their BPG injections and when there were dedicated staff members administering the BPG.<sup>8</sup>

The results also demonstrate that males constitute the majority of missed secondary prophylaxis. Males comprised 81% of the patients who did not receive their prophylaxis in hospital and only 23% of the group that successfully received BPG during their hospital presentation. Further study needs to be done to ensure no bias is taking place that might explain this significant difference in prophylaxis administration between genders, and to explore any specific cultural barriers that may be contributing to this discrepancy. In addition, a further look into triage category effects on administration of BPG injection may be of interest to help uncover any links between the level of clinical urgency of the presenting complaint and the likelihood of administering BPG in the hospital setting.

The persistence of high recurrence rates of ARF in Australia highlights that continued barriers to secondary prevention exist. In the NT in the 1990s, 28% of patients on secondary prophylaxis missed 50% or more of their scheduled BPG injections over a 12-month period, while 45% of all episodes of ARF were recurrences.<sup>9</sup> In 2013, the numbers are only improving slightly with 20% of RHD patients receiving the recommended >80% of annual BPG injections, an overall administration rate of 62% and an ARF recurrence rate of 32%. Improving on the administration of secondary prophylaxis while patients are in hospital will predictably improve the overall prophylaxis rate in the NT, reducing the burden of the disease on the patients and the healthcare system.

### Recommendations

1. Develop guidelines/protocols regarding the recognition of RHD patients and the need to administer BPG injections for those who are on secondary prophylaxis in the hospital setting.
2. Provide health education across all levels. Awareness of ARF and RHD needs to be incorporated into health staff orientation programs to accommodate for the high staff turnover at ASH, especially the ED.
3. Improve the quality and delivery of ongoing health education and support for patients and families. Use the expertise, experience, and community knowledge of Aboriginal Liaison Workers for patient education.
4. Increase accessibility to the NT RHD Register and improve its integration into the NT hospital computer software to assist doctors in flagging patients with RHD who are due for a BPG injection.
5. Develop and implement recall and reminder systems based on the local NT RHD register to accommodate the highly mobile Aboriginal population. It is also important to ensure that recall systems extend beyond community boundaries.

### Acknowledgements

We would like to acknowledge and thank Mick Arrundell, analyst in Clinical Information in Central Australia Health Services for assistance with the technical collection of information and Mark Russell, Public Health Nurse with the Centre for Disease Control in Alice Springs, for sharing his knowledge about the structure and function of the NT RHD Register and for sharing his excellent RHD PowerPoint presentation.

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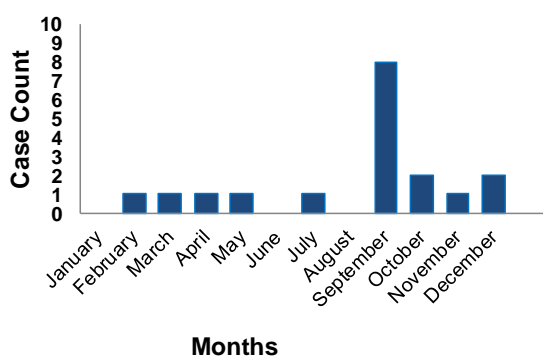
## Increased numbers and clustering of Acute Rheumatic Fever in an Aboriginal community: spike in endemic disease or true outbreak?

*Kate Hardie and Vicki Krause, CDC, Darwin*

Acute rheumatic fever (ARF) is endemic in Aboriginal communities in the Northern Territory (NT). In September 2014 doctors at a remote NT Aboriginal community clinic reported a higher than expected number of cases of ARF. They had seen at least 2 cases each week for 3 weeks, including apparent clustering within household-complexes.

There were 13 cases of definite ARF (Figure 1) during the 4-month period September to December 2014, compared with an expected 2.2 cases for that period (6.6 cases per year).

**Figure 1. Number of cases of definite ARF in this community in 2014**



There are no guidelines outlining a process for investigating a possible outbreak in a community setting or describing appropriate public health action. Ultimately the public health response was informed by consultation with specialists in fields including pathology, cardiology, public health, paediatrics and infectious diseases.

The primary aim of the consultative group and the community clinic response was to prevent further transmission of group A streptococcus

(GAS) if possible and to provide primary prophylaxis to close contacts given the potentially devastating effects of ARF/RHD. Secondary aims included coming to a better understanding of reasons contributing to the higher than expected number of cases and the role played by circulating types of GAS in cases and contacts.

The public health response was multi-faceted and involved education targeting household contacts using a short video about ARF developed for this community in one of the local languages, enhanced surveillance for ARF cases through the community clinic and active case finding with a paediatric cardiologist performing echocardiograms on child contacts. Throat and skin sore swabs were collected from close contacts to identify if a single dominant strain of GAS was circulating, and benzathine penicillin-G was administered to close contacts.

The pathology results from the close contacts that were swabbed eventually showed that there was no single dominant strain of GAS amongst the contacts of cases.

Ongoing monitoring of the number of cases of ARF from this community suggest that the incidence has returned to usual levels. CDC is convening a working group to develop an approach to investigation and public health action should a similar situation arise in the future.

### Acknowledgements

Josh Francis, Catherine Gargan, Emma Schimann, Vanessa Johnston, Deborah Holt, Bo Remenyi, Marea Fittock, Keith Edwards, Rob Baird, Anna Ralph, Christian James.

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# The Northern Territory Needle Syringe Program Minimum Data Set: Annual Report 2014

Jiunn-Yih Su<sup>1</sup>, David Decolongon<sup>1</sup> and Peter Sidaway<sup>2</sup>

<sup>1</sup> Sexual Health and Blood Borne Virus Unit, Centre for Disease Control, Darwin

<sup>2</sup> Northern Territory AIDS and Hepatitis Council

## Abstract

*The Northern Territory Needle and Syringe Program Minimum Data Set (NT NSP MDS) is a data collection system that was launched in 2014 to collect data on equipment distribution and client demographics for the program. It enables the NT NSP to monitor the current status and trends over time in injection equipment distribution, user demographics and the drugs injected. This first annual report provides baseline data against which future annual reports can be compared.*

*The report revealed that over half a million sharps were distributed through 13 primary and secondary NSP outlets across the NT in 2014. According to the data collected, while amphetamines were the most common 'drug last injected' overall, in young men aged less than 30 years it was steroids and other performance or image enhancing drugs that were the most popular type of 'drug last injected.' The information revealed in this report will inform service planning, program delivery and policy making regarding blood borne viruses such as HIV and viral hepatitis.*

*Key words: Needle and syringe program, harm reduction, minimum data set, blood borne virus*

## Introduction

Australia is a recognised world leader in harm minimisation strategies and harm reduction initiatives that prevent the transmission of blood borne viruses among people who inject drugs (PWID). Needle and Syringe Programs (NSPs) are central to these initiatives and were first established in Australia in 1987 as a response to the emerging HIV epidemic. Today, NSPs operate in all States and Territories, in a number of modalities, and provide a range of clinical and non-clinical services in support of PWID. NSPs receive an estimated 80% of the overall

government expenditure on harm reduction and distribute over 30 million needles and syringes each year.<sup>1</sup> Between 2000-2009 NSPs have been estimated to have prevented 32,050 new HIV infections and 96,667 new HCV infections, resulting in healthcare cost savings of AUD\$1.28 billion.<sup>2</sup>

The NT NSP was established in 1989 by the Sexual Health and Blood Borne Virus Unit (SHBBVU) and the Northern Territory AIDS and Hepatitis Council (NTAHC). In 2011, the NT Department of Health (DoH) commissioned a review of the NT NSP. One of the 17 recommendations made in the final report was for the DoH to engage with NSPs "to ensure that the quality of data collected and reported on client visits is of a standard that would enable the reach and penetration of the NT NSP to be assessed over time".<sup>3</sup> This would also bring the NT NSP in line with other jurisdictions that have established data collection systems for continuous quality improvement.<sup>4</sup> To this end the NT NSP Working Group tasked the SHBBVU and NTAHC to develop and implement the NT NSP MDS. The SHBBVU and NTAHC collaborated to develop a data collection system, and pilot-tested it in 2013. The purpose of the NT NSP MDS is to provide a Territory-wide standardised system that will collect data on the usage and clients of the NT NSP to inform the development and revision of NSP program and policy as well as service delivery.

The data collection for the NT NSP MDS officially commenced on 1 January 2014. This paper describes the data collection system for the NT NSP MDS, presents an analysis on the data collected in the first year, and discusses the implications for the NT NSP. After this first report for 2014, the SHBBVU plans to release an annual report on the NT NSP MDS each year on an ongoing basis.



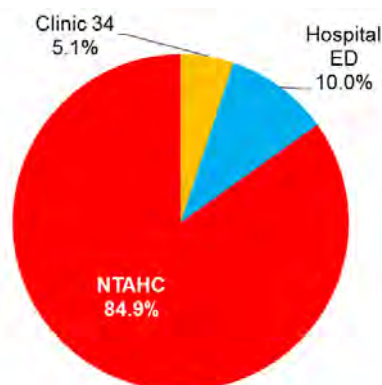
import them into the NT NSP Database for analysis. All statistical analyses presented in this paper were performed using STATA.

## Results

### Client demographics

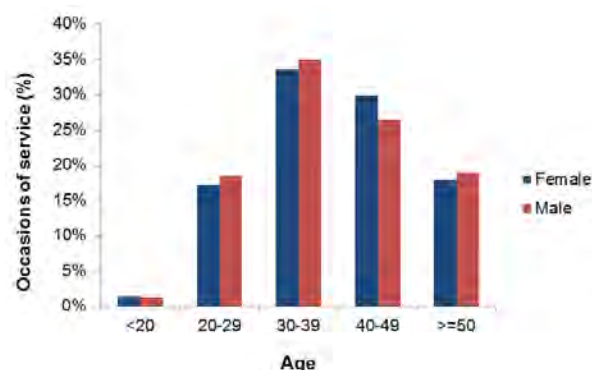
In 2014, a total of 8,339 occasions of service were recorded across the 13 primary and secondary NSP outlets in the NT, with 84.9% recorded by the 3 primary outlets (see Figure 2). In this context, an occasion of service is defined as the count of each time a PWID, or his or her proxy, encounters the service and completes a data collection form.

**Figure 2. Occasions of service by type of NSP outlet (n=8,339), NT NSP MDS, 2014**



Less than 1% of occasions of service were recorded at the Yulara Medical Centre. Among these occasions of service, 6,542 (78.5%) were delivered to males while 1,794 (21.5%) were delivered to females (see Table 1, 3 occasions of service were excluded due to missing gender information). The highest proportion of occasions of service was recorded in the 30-39 year age group (34.5%), followed by the 40-49 year age group. The age distribution appears to be similar in males and females (see Figure 3).

**Figure 3. Proportion of occasions of service by age group and sex, NT NSP MDS, 2014**



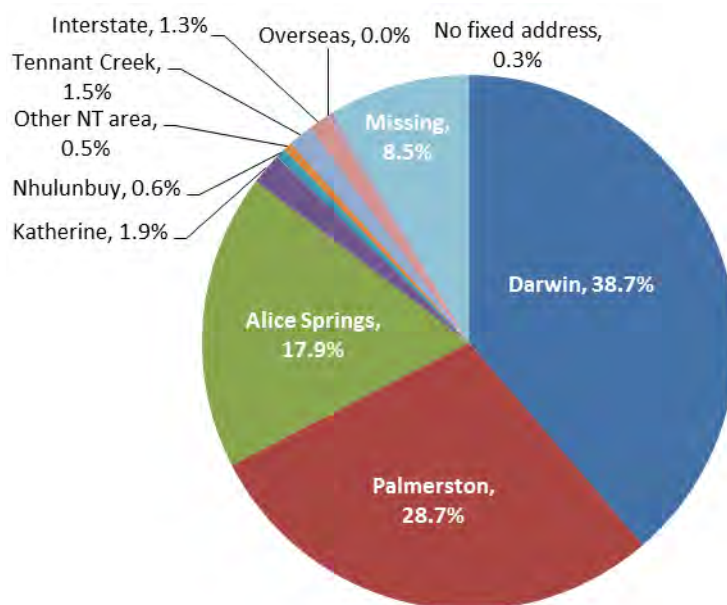
**Table 1. Number of occasions of service by client age group and gender, NT NSP MDS, 2014**

Client category	Female	Male	Total	Proportion
<b>Age group</b>				
<20	25	83	108	1.3%
20-29	308	1,207	1515	18.2%
30-39	600	2,275	2875	34.5%
40-49	533	1,722	2255	27.1%
>=50	321	1,233	1554	18.6%
Data missing	7	22	29	0.3%
<b>Ethnicity</b>				
Indigenous	302	1,071	1373	16.5%
Non-Indigenous	1,414	4,828	6242	74.9%
Data missing	78	643	721	8.6%
<b>Return or new client</b>				
Return client	1542	5297	6839	82.0%
New client	168	567	735	8.8%
Data missing	84	678	762	9.1%
<b>Collect for others?</b>				
Yes	796	1770	2566	30.8%
No	909	4060	4969	59.6%
Data missing	89	712	801	9.6%
<b>Total</b>	<b>1794</b>	<b>6542</b>	<b>8336</b>	

Non-Indigenous clients accounted for 74.9% of occasions of service while Indigenous clients accounted for 16.5%. The majority of clients were repeat users of the service (82.0%) while 8.8% were new clients. Nearly a third of clients (30.8%) stated that they accessed the NSP service for others. About 85% of the total occasions of service were delivered to residents of the 3 urban areas in the NT, namely Darwin, Palmerston and Alice Springs. Residence data was missing for 710 (8.5%) occasions of service (see Figure 4).

### Equipment distribution and returns

A total of 539,222 sharps were distributed through the NT NSP outlets in 2014 (see Table 2). These included needle tips, 1ml insulin syringes, and butterflies (winged infusion). Distribution of syringe barrels was not recorded to avoid double-counting. Of the sharps distributed, 95.9% were distributed through the 3 major distribution sites operated by NTAHC, and 91.9% were distributed through outlets located in the Top End region. Although the large majority of sharps were distributed in the urban areas (97.5%), the secondary outlets in the

**Figure 4. Proportion of occasions of service by residence location, NT NSP MDS, 2014****Table 2. Injecting equipment distributed by outlet type, region and urban/rural split, NT NSP MDS, 2014**

Category	Needle tip	Insulin syringe	Butterfly	Total	Proportion
<b>Outlet type</b>					
NTAHC	390,956	111,138	15,135	517,229	95.9%
Clinic 34s	14,062	3,510	1	17,573	3.3%
Emergency Departments	4,377	43	0	4,420	0.8%
<b>Region</b>					
Top End	379,247	101,618	14,643	495,508	91.9%
Central Australia	30,148	13,073	493	43,714	8.1%
<b>Urban/rural split</b>					
Urban areas (Darwin, Palmerston and Alice Springs)					
	398,132	112,355	15,136	525,623	97.5%
Regional areas (Nhulunbuy, Tennant Creek and Katherine)					
	11,263	2,336	0	13,599	2.5%
<b>Total</b>	<b>409,395</b>	<b>114,691</b>	<b>15,136</b>	<b>539,222</b>	

regional areas did distribute a significant number of sharps (just under 14,000).

The total number of sharps returned to the NSP outlets was 131,733, which represented 24.4% of the total number of sharps distributed during the same period. Data for returned sharps were missing in 7,728 occasions of service (92.7%). A total of 15,801 sterile filters were distributed in 2014 while data for this field were missing in 7,754 occasions of service (93.0%). As for sharps containers, 3,484 were distributed in 2,587 occasions of service, while in 5,752

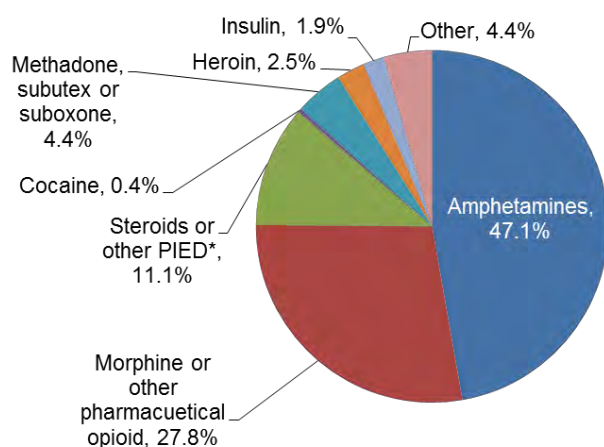
occasions of service (69.0%) the data were missing. Data missing in these fields indicates that the item was either not distributed (sterile filter or sharps container) or returned (sharps) in these occasions of service.

#### ***Last drug injected***

Data for the last drug injected were not available for about 20% of occasions of service (data were missing in 10.7% of occasions of service, and 9.1% of clients said they preferred not to answer this question). Among the 80%

where the last drug injected was reported, amphetamines were the most common (47.1%, see Figure 5), followed by morphine and other pharmaceutical opioids (27.8%) and steroids and other performance or image enhancing drug (PIEDs) (11.1%). However, in men aged 30 years or less, steroids and other PIEDs were the most common drug last injected (43.2% compared with the 38.2% for amphetamines). In women aged 30 years or less, amphetamines remained the most common drug last injected (69.0%).

**Figure 5. Proportion of occasions of service by last drug injected, NT NSP MDS, 2014 (\*PIED stands for performance or image enhancing drug)**



### **Additional services**

The NT NSP MDS also collected data relating to referrals and brief interventions conducted by NSP outlets. However, due to the very high proportion of missing data in the 2 fields under this category, it is not possible to perform any meaningful analysis on them.

### **Discussion**

This first annual report on the NT NSP MDS reveals that in 2014 a total of 539,222 sharps were distributed through the 13 primary and secondary NSP outlets across the NT. Assuming each sharp had resulted in 1 injection episode, this figure means that well over half a million injection episodes took place using sterile equipment, which could potentially have prevented the transmission of a blood borne virus in the same number of occasions of injection drug use.

The data shows that the majority of NSP clients in the NT were non-Indigenous males in the relatively older 30-39 and 40-49 year age groups, residing in the 3 urban areas in the NT, namely, Darwin, Palmerston and Alice Springs. It is worth noting that a small, but not insignificant, proportion of NSP clients resided in regional areas. Most occasions of service were delivered through the 3 primary urban outlets run by NTAHC, as compared with the secondary outlets. This situation is likely to continue as most clientele are urban-based. However, the data also show that secondary outlets have played an important role in expanding NSP coverage and access to regional areas in the NT, contributing to 13,599 of the sharps distributed.

Although the majority of NSP clients were returned clients collecting injecting equipment for themselves, about 30% of clients reported collecting injecting equipment for others. This indicates the presence of a significant amount of peer distribution, and suggests that the actual number of PWID in the NT is greater than what can be deduced from the data collected.

Sterile filters are important when injecting drugs in pill or powder form as they remove impurities, which can contribute to injecting related injuries. While 15,801 sterile filters were distributed to NSP clients in 2014, available data does not indicate how many clients injected drugs in pill or powder form, or what proportion of these clients collected sterile filters. As efforts to promote the use of sterile filters continue in the NT, 2014 data will serve as a baseline against which to measure future trends.

The collection and safe disposal of used injecting equipment is a key component of the NT NSP. In 2014, the number of sharps returned to the NSP outlets represented only about a quarter of the number of sharps distributed. One reason for this discrepancy is that sharps returned during after-hours and on weekends were not recorded by the data collection system of NT NSP MDS and the total number of these is unknown. Further, anecdotal evidence indicates a proportion of NSP clients would dispose of used injecting equipment in household or other refuse bins, rather than returning it to NSP outlets. This is sanctioned under current legislation as long as sharps are

placed inside a rigid-walled, puncture resistant container with a well-secured lid. While the relative absence of reports of inappropriately discarded injecting equipment in public places can be deemed indicative of high rates of safe disposal, efforts to promote safe injecting behaviour and the use of safe disposal systems should continue.

Amphetamines appear to have been the most popular type of drug among PWID in the NT in 2014. However, in men aged 30 years or less, steroids and other PIEDs were the most common type of drug used. This information has implications for policy-makers and health service providers in terms of devising suitable health promotion and disease prevention activities for this particular sub-population.

The data reported here serves as a baseline for future reports. A number of items however have already been identified for improvement after this first year's experience of data collection. Firstly, data from pharmacy-based outlets are currently not included in the NT NSP MDS. NTAHC supplied approximately 2000 fit kits (each with 5 1ml-syringes) to pharmacies in 2014. It would be advisable to modify the system so that data on pharmacy-delivered NSP services can be included. Secondly, almost all demographic variables contained a considerable proportion of missing data, leading to a certain degree of unreliability in the data collected. Given the fact that data collection forms are completed on a voluntary basis, this will be an ongoing challenge; besides, the intention to collect better data should not become a barrier to clients accessing NSPs. If certain variables continue to record high proportions of missing data, consideration will be made to delete them from the data collection form to make the data collection more practical and succinct. Further, the data collected do not capture the extent to which equipment is being reused or the extent to which receptive sharing occurs. Although such information would be useful for policy and program development, it is unlikely that the NT NSP MDS, as a regular NSP client survey, rather

than a behaviour survey for PWID, can collect such data.

The NT NSP MDS is a low-cost but extremely helpful monitoring and evaluation tool for the NT NSP. The data derived from this process establish an evidence base for the NT NSP that will enable the monitoring of trends in injecting drug use, the type and quantity of hardware distributed, location of demand, and important service user demographic information. This in turn should contribute to more effective service delivery and policy development in relation to harm reduction and blood borne virus prevention in priority populations. It is essential that this data collection and the annual reporting are maintained so that the NT NSP and other relevant policies and services can be informed by local evidence of consistent and good quality.

### **Acknowledgements**

The authors would like to thank Dr Matthew Thalanany and Katherine Moriarty for their helpful comments on the early draft of this report.

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## Northern Territory Cerebral Palsy Register report for birth years 1996 to 2011

*Emily O’Kearney and Keith Edwards, CDC Darwin*

### Abstract

*The Northern Territory Cerebral Palsy Register (NTCPR) is a clinical register managed by the Community Paediatric Section of the Centre for Disease Control, Northern Territory Department of Health. It was established in 2008 and has recently achieved the ascertainment level needed to be included in the Australian Cerebral Palsy Register’s report (greater than or equal to 1.5 cases per 1,000 live births).*

*This report provides information and statistics for demographics, birth details, timing of cerebral palsy (CP), cause of CP, motor type of CP, severity of CP and associated impairments of people with CP born between 1 January 1996 and 31 December 2011. It also compares Indigenous and non-Indigenous populations for some of the above variables. The report aims to assist service providers to make informed decisions regarding CP.*

*Key words: Cerebral palsy; Northern Territory Cerebral Palsy Register; classification; impairment.*

### Background

The Northern Territory (NT) of Australia is a unique jurisdiction. It has a population of around 231,000 with a higher proportion of younger people and the highest proportion of Indigenous people compared to the other jurisdictions.<sup>1</sup> In the 2011 census almost 1 in every 3 persons was Indigenous in the NT.<sup>2</sup> Most of the NT is classified as very remote by the Australian Bureau of Statistics.<sup>1</sup> There are 5 public hospitals and 1 private hospital in the NT.

### Methods

#### *Cerebral palsy registers*

The majority of people on the Northern Territory Cerebral Palsy Register (NTCPR) are registered by the following process. The allied health therapists provide information about the register (including a participant information sheet) to the

guardians of children with CP, and ask if they would like to provide consent. If written consent is obtained, either the therapist will fill out the registration form with the family or the Community Paediatric Allied Health Officer of the NT will speak with the family to obtain this information. Occasionally other health professionals will also assist in gaining consent and providing information to the NTCPR. The consent form for the NTCPR also asks for consent to provide information to the Australian Cerebral Palsy Register (ACPR).

The ACPR is a collaboration of all Australian states’ and territories’ CP registers to provide data for CP cases in each jurisdiction onto an electronic database. The aims of the ACPR are to:

- Monitor CP
- Identify interventions that effectively improve quality of life
- Identify causal pathways to enable prevention
- Evaluate future preventive strategies<sup>3</sup>

#### *Cerebral palsy*

All Australian state and territory CP registers and the ACPR use the same definition of CP. CP is defined as:

- An umbrella term for a group of disorders
- A condition that is permanent and not unchanging
- Involves a disorder of movement and/or posture and of motor function
- Is due to a non-progressive interference, lesion, or abnormality, and
- The interference, lesion, or abnormality originates in the immature brain<sup>3</sup>

CP is often classified in 3 ways: according to motor type, motor distribution and the severity of the CP. Motor type describes the type of movement disorder e.g. spastic, dyskinetic, ataxic or hypotonic. The motor distribution defines which limbs are involved e.g. hemiplegic, monoplegic, diplegic, triplegic or quadriplegic. Severity of CP is classified using

the Gross Motor Function Classification System (GMFCS). The GMFCS explains the gross motor functional ability of the child, mostly in walking, where the lower the score the more gross motor function the child has. Another classification system used is the Manual Ability Classification System (MACS) which describes the child's ability to handle objects. Again, the lower the score on the MACS the greater the ability a child has to manipulate objects.

The NTCPR uses mother's Indigenous status to classify a person with CP's Indigenous status. In this report, a person is described as Indigenous if their mother is Indigenous.

### ***Parameters of the NTCPR report***

The report focussed on children with CP born between 1996 and 2011. In total there were 109 children registered with CP born in the 16 year period. The crude rate of CP during these birth years is 1.86 per 1,000 live births. When counting only children who acquired CP in the pre or perinatal period, the prevalence of CP is 1.59 per 1,000 live births. Only children who were born in the NT and have CP were counted in this report and not children with CP who were born interstate and are now living in the NT. This is how the ACPR assigns cases to the states and territories. It is particularly difficult in the NT, with the transient population, to record all children living with CP in the NT at any one time.

All cases of CP where the timing of acquisition is unknown were counted as pre/perinatally acquired CP. All tables and figures in this report represent data for people born in years 1996 to 2011. Some records have missing data due to families not being contactable after a registration was received or being lost to follow up before all information could be collected.

Ethics approval was obtained from Menzies School of Health Research prior to commencement of this study.

### **Results**

Analysis of the data obtained from the NTCPR resulted in the following information.

### ***Demographics***

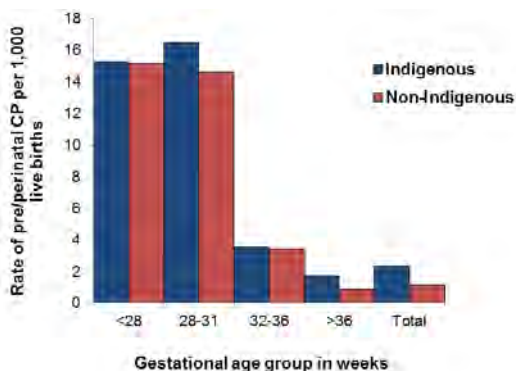
- 109 children were born with CP in the NT during 1996 to 2011 with a greater proportion of males (63%) compared to females (37%). This is consistent with national and international findings.
- There is a higher proportion of Indigenous people (57%) compared to non-Indigenous people (43%) born with CP over the 16 year period.
- Overall Indigenous people were 2.2 times more likely to acquire CP than non-Indigenous people during the study period.
- The rate of CP is more than double in the Indigenous population (2.84/1,000 births) compared to the non-Indigenous population (1.28/1,000 births).

### ***Birth details***

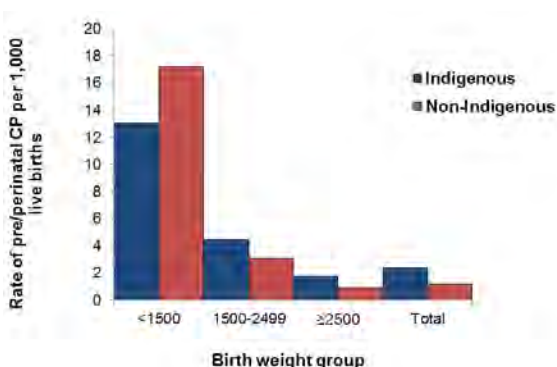
- The highest number of CP births occurred in the 30-34 year old maternal age group
- Children born to mothers greater than .40 and less than 20 years old were most at risk of CP.
- The maternal age group 40 years old and greater experienced the highest rate of CP for non-Indigenous mothers. The highest rate of CP in Indigenous children was to mothers between 30 and 34 years old.
- The greater than 36 week gestational age group accounted for the most number of people with CP but had the lowest rate of CP compared to lower gestational ages.
- Children born in the 28-31 week gestational age group were most at risk of CP as this gestational age group has the highest rate of CP (see Figure 1).
- Indigenous children born in the 28-31 week gestational age group were most at risk of CP and the rate of CP was highest in non-Indigenous children who were born at <28 weeks gestational age (see Figure 1).
- There were more CP births in the  $\geq 2,500$ g birth weight group than any other birth weight group.
- Children with a birth weight of <1,500g were by far most at risk of CP. This did not differ with Indigenous status (see Figure 2).

- There is a greater proportion of people with CP who are a twin when compared to all people born in the NT.

**Figure 1. Rate of pre/perinatal CP per 1,000 live births by gestational age and Indigenous status**



**Figure 2. Rate of pre/perinatal CP by birth weight and Indigenous status**

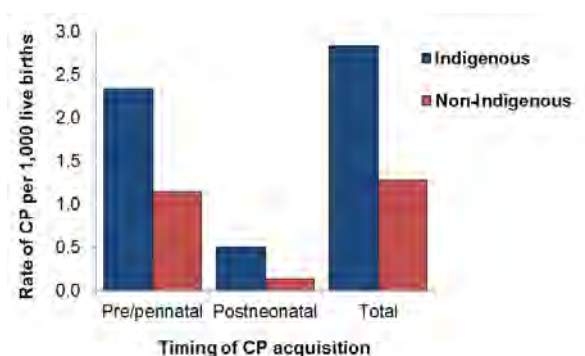


**Timing of acquisition of cerebral palsy**

- 85% of all people with CP born between 1996 and 2011 acquired their CP pre/perinatally.
- Indigenous people made up 55% of all people with pre/perinatally acquired CP, whereas 69% of all people with postneonatal CP are Indigenous.

- Indigenous people are more likely to have postneonataly acquired CP than non-Indigenous people, with 17% of all Indigenous people with CP born in the 16 year period acquiring CP postneonataly compared to only 11% of all non-Indigenous people with CP.

**Figure 3. Rate of CP by timing of CP acquisition and Indigenous status**

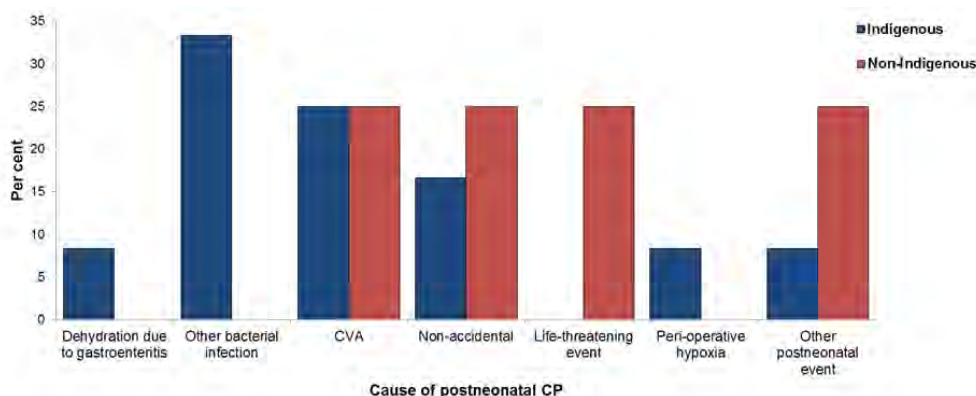


- The overall rate in the NT for pre/perinatal CP is 1.59 per 1,000 live births.
- The rate of pre/perinatal CP in Indigenous people is 1.6 times that of non-Indigenous people and the rate of postneonatal CP in Indigenous people is 3.6 times higher than the non-Indigenous postneonatal CP rate (see Figure 3).

**Causes of cerebral palsy**

- The most common causes of postneonatal CP were bacterial infections and cerebrovascular accident (CVA) (see Figure 4).
- Indigenous children were more likely to acquire postneonatal CP from bacterial infections and non-Indigenous children acquired postneonatal CP from 4 causes with the same likelihood; CVA, non-accidental, life-threatening event and other postneonatal event (see Figure 4).

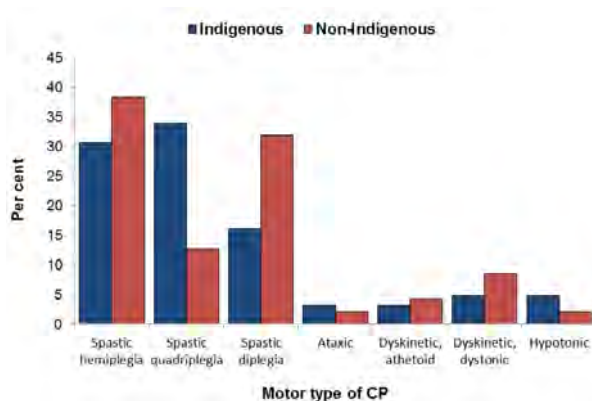
**Figure 4. Causes of postneonatal CP by Indigenous status**



### Type of cerebral palsy

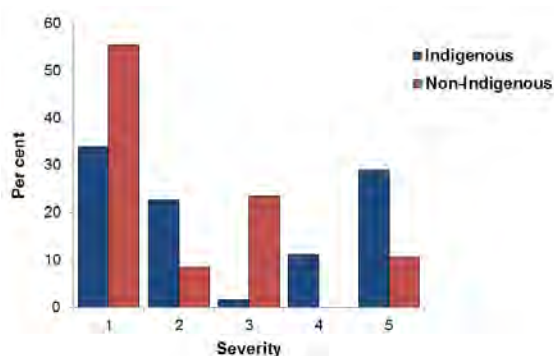
- The most common motor type of CP overall is spastic hemiplegia (see Figure 5).

**Figure 5. Percentage of people with CP by type of CP and Indigenous status**



- Spastic quadriplegia is the most common motor type of CP in Indigenous people whereas spastic hemiplegia is most common in non-Indigenous people with CP for children born in the 16 year period.
- The largest disparity between Indigenous and non-Indigenous motor types of CP occurs in spastic quadriplegia, with 78% of people with spastic quadriplegia being Indigenous and 22% being non-Indigenous.
- GMFCS level 1 is the most common severity for people with CP and this remains true when people with CP are categorised by Indigenous status (see Figure 6).
- Indigenous people make up 89% of the more severe CP with GMFCS levels 4 and 5 (see Figure 6).

**Figure 6. Percentage of people with CP by severity using GMFCS level and Indigenous status**



### Associated impairments

- Just over half of all people with CP do not have a vision impairment, 32% have some visual impairment and 8% are functionally blind.
- Most children with CP do not have a hearing impairment (69%). Only 21% have some hearing impairment while 3% are deaf.
- Just over one third of people with CP have a speech impairment and just under one third are non-verbal.
- 45% of all people with CP have impaired intellect and just under half (47%) have no intellectual impairment.
- Almost 40% of people with CP have epilepsy and almost 60% do not.

### Discussion

Cerebral palsy is an important cause of very significant morbidity in children. By definition, the condition does not improve and disabilities are lifelong leading to on-going morbidity in adults with huge social and financial consequences. As with many conditions, 'prevention is better than cure', though the prenatal causes of the majority of cases are not straight forward and a challenge to the health system.

Indigenous children have higher rates of cerebral palsy than non-Indigenous and the higher rates of preterm delivery of Indigenous babies contributes to this as does the lower health status of Indigenous mothers. The use of magnesium sulphate given to mothers before anticipated early preterm birth has been shown to reduce the incidence of cerebral palsy in their infants for certain prenatal conditions particularly when the gestational age is below 32 weeks and for mothers with high blood pressure due to eclampsia.<sup>4</sup>

The incidence of cerebral palsy caused postneonatically is also significantly higher for Indigenous children and sepsis is a significant factor. Again, remote location is a factor in conditions being diagnosed and treated later and strengthening of the primary health care system will help reduce these occurrences. The immunization program in the NT is currently

providing a high level of protection against the development of bacterial meningitis which would reduce postneonatal CP considerably but some of this vaccine protection predates this period such as *Haemophilus influenza B* vaccination that was introduced in 1992- 1993.

The analysis of information contained in the NT CPR confirms the high rates of cerebral palsy in the NT compared to other states and emphasizes the increased risk of CP for Indigenous children. Although the location of CP clients was not included in this report, many of the Indigenous children live in remote communities with limited access to allied health support. Similarly, learning difficulties which often arise as a consequence of CP are often best addressed by attendance at special schools and such schools are not available in remote communities.

### Conclusion

Ongoing analysis of the NT CPR will allow further insights into cause and the possible impact of prevention strategies. It will also allow discrepancies in service provision to be identified more specifically, in regards to allied health support and special schooling.

If you would like more information regarding the NTCPR, please contact the Community Paediatrics Allied Health Officer at:

T: 08 8922 8044

F: 08 8922 8310

E: cp.register@nt.gov.au

### Acknowledgements

Dr Peter Markey, Rowena Boyd, and Anthony Draper, Centre for Disease Control, Northern Territory Department of Health. Hayley Smithers-Sheedy, Australian Cerebral Palsy Register, Cerebral Palsy Alliance. All those who provided or assisted to gain registrations for the NT CPR.

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## NT malaria notifications January to March 2015

*Belinda Farmer, CDC Darwin*

There were 2 cases of malaria notified in the 1<sup>st</sup> quarter of 2015. 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	Papua New Guinea	International Student	<i>Plasmodium vivax</i>	No	Darwin
2	Uganda	Expatriate visiting	<i>Plasmodium malariae</i>	Yes	Darwin

## Close encounters of the insect kind - unique bites in the rainforest

*Peter Whelan AM, Consultant Entomologist*

### Background

On the evening of Monday 23 February 2015 a group of runners from Casuarina Hash House Harriers experienced 'bites' while running at Lee Point rainforest north of Darwin. They were sharp mildly painful bites with either no or minimal long-term after effects. For most of the runners who experienced bites on the run, the cause did not appear to be midges or mossies, but rather the so-called 'unique-headed bug'. I have personal experience of bites on this run and can confirm the bites are the same as I have encountered and when I subsequently collected the attacking bug.

#### Unique-headed bug

*A true bug; Order Hemiptera Family  
Enicocephalidae;*

**Unique-headed bug**, also called gnat bug, is one of about 130 species of unique bugs worldwide (order Heteroptera ie true bugs) that have an unusual elongated head that is constricted behind the eyes and also at the base (Figures 1 and 2). The unique-headed bug is found throughout the world and is about 2-4 mm long. They are very primitive true bugs that are unique in that their forewings are entirely membranous, as opposed to having a thickened basal portion as in all other true bugs. Both the beak and the antennae have four joints, and the front pair of legs is adapted for grasping prey. Though some species are found in all zoogeographic regions, little is known of their habits. Probably males and females swarm or collect in leks\* for mating, and most inhabit leaf litter.<sup>1\*</sup>

\*Leks—assembly areas where animals carry on displaying courtship behaviour

### Description

From my investigations at Casuarina Beach rainforest, these bugs appear to be present over a long period of the year. So far, they have been in or closely associated with rainforests at Lee Point, Casuarina Beach and East Point, where

**Figure 1. Unique-headed bug. Note head and piercing mouth part with sharp pointed tip tucked under, and sharp tip front legs. NB the photos below are not of this bug but unique headed bugs of other species.<sup>2</sup>**



**Figure 2. Side view of unique-headed bug showing beak and front legs.<sup>2</sup>**



they are more common in the evening in high humidity during the late dry to wet season. They are usually present in, or in close proximity to, well-developed monsoon rainforest with leaf litter, probably forming small swarms or individuals flying. They are encountered primarily by being collected on the sweat of bodies on the trunk or arms when the insects are flying. When trapped on skin by sweat, they pierce the skin by their sharp pointed legs or beak (Figures 2 and 3) in an effort to free themselves. It is possible that there may be some attraction for these bugs to hot bodies.

It is possible their proboscis or beak has some saliva or poison for immobilising prey, as the bites are sharp, immediate and usually mildly painful, sometimes resembling mild wasp stings, while some people have very appreciable localised reactions. Local reaction to a bite from a bug at Casuarina Beach rainforest attributed to these bugs is seen in Figure 4, when I was present during the bites. I have been bitten many times in the Casuarina rainforest and have collected these bugs from my skin at the time of the bites.

Many bites in this area have probably been erroneously attributed to midges in the past.

It is possible their front legs are also attributed to 'bites' (Figure 3). Because they blunder on to people by accident, application of insect repellents offers no protection. Covering up the trunk and arms offers some protection, and avoiding these rainforest tracks in the evening is advisable for people who react to bites.

**Figure 3. Front leg of unique-headed bug with piercing tips<sup>3</sup>**



**Figure 4. Bite reaction 1 day after bite at Casuarina rain forest 4 August 2014**



Samples were sent to the Department of Health Medical Entomology Laboratory and to the School of Biological, Earth and Environmental Sciences, University of New South Wales where Professor Gerry Cassis confirmed them as unique-headed bugs of unknown species, but possibly new. More and complete insects are required for speciation.

## References

1. Encyclopedia Britannica, Unique-headed bug, <http://www.britannica.com/animal/unique-headed-bug>
2. Unique-headed bug images, Google, [https://www.google.com/search?q=unique-headed+bug&rls=com.microsoft:en-au&oe=UTF-8&startIndex=&startPage=1&safe=active&gfe\\_rd=cr&gws\\_rd=ssl&hl=en&sa=X&oi=image\\_result\\_group&ei=WaGQVa3tMMHbmAW755nYAAQ&ved=0CBQQsAQ&tbm=isch](https://www.google.com/search?q=unique-headed+bug&rls=com.microsoft:en-au&oe=UTF-8&startIndex=&startPage=1&safe=active&gfe_rd=cr&gws_rd=ssl&hl=en&sa=X&oi=image_result_group&ei=WaGQVa3tMMHbmAW755nYAAQ&ved=0CBQQsAQ&tbm=isch)

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

### Endemic melioidosis in residents of desert region after atypically intense rainfall in Central Australia, 2011

*Yip TW, Hewagama S, Mayo M, Price E, Sarovich D, Bastian I, Baird R, Spratt B, Currie B*

*Emerging Infectious Diseases, www.cdc.gov/eid, Vol. 21, No. 6, June 2015, p 1038-1040.*

After heavy rains and flooding during early 2011 in the normally arid interior of Australia, melioidosis was diagnosed in 6 persons over a 4-month period. Although the precise global distribution of the causal bacterium *Burkholderia pseudomallei* remains to be determined, this organism can clearly survive in harsh and even desert environments outside the wet.

### Reasons for delays in treatment of bacterial sexually transmissible infections in remote Aboriginal communities in Australia: a qualitative study of healthcentre staff

*Hengel B, Maher L, Garton L, Ward J, Rumbold A, Taylor-Thomson D, Silver B, McGregor S, Dyda A, Knox J, Kaldor J, Guy R and on behalf of the STRIVE Investigators*

*Sexual Health 06/2015; DOI:10.1071/SH14240*

**Background:** Remote Aboriginal communities in Australia experience high rates of bacterial sexually transmissible infections (STIs). To control the transmission and decrease the risk of complications, frequent STI testing combined with timely treatment is required, yet significant delays in treatment have been reported. Perceived barriers to timely treatment for asymptomatic patients in remote communities were explored.

**Methods:** A qualitative study was undertaken as part of the STRIVE (STIs in Remote communities, Improved and Enhanced primary health care) project; a cluster randomised

controlled trial of a sexual health quality improvement program. During 2012, we conducted 36 in-depth interviews with staff in 22 clinics in remote Australia.

**Results:** Participants included registered nurses (72%) and Aboriginal health practitioners (28%). A key barrier to timely treatment was infrequent transportation of specimens to laboratories often hundreds of kilometres away from clinics. Within clinics, there were delays checking and actioning test results, and under-utilisation of systems to recall patients. Participants also described difficulties in physically locating patients due to: (i) high mobility between communities; and (ii) low levels of community knowledge created by high staff turnover. Participants also suggested strategies to overcome some barriers such as dedicated clinical time to follow-up recalls and taking treatment out to patients.

**Conclusions:** Participants identified barriers to timely STI treatment in remote Aboriginal communities, and systems to address some of the barriers. Innovative strategies such as point-of-care testing or increased support for actioning results, coupled with incentives to individual patients to attend for results, may also assist in decreasing the time to treatment.

### A multi-target PCR for direct detection of penicillinase-producing *Neisseria gonorrhoea* for enhanced surveillance of gonococcal resistance

*Buckley C, Trembizki E, Baird R, Chen M, Donovan B, Freeman K, Goire N, Guy R, Lahra M, Regan D, Whiley D on behalf of the GRAND study investigators*

*J. Clin. Microbiol. doi:10.1128/JCM.00540-15*

A multi-target PCR was developed for direct detection of penicillinase-producing *Neisseria gonorrhoeae* (PPNG). The assay was validated by testing 342 PPNG isolates and 415 clinical samples. The method is suitable for routine detection of PPNG strains. Its multi-target approach reduces the potential for false-negative results caused by sequence variation.

## Risk posed by the Ebola epidemic to the Pacific islands: findings of a recent World Health Organization assessment

A Craig, A Ronsse, K Hardie, B Pavlin, V Biaukulaa, E Nilles

WPSAR Vol 6, No 2, 2015 | doi: 10.5365/wpsar.2015.6.1. [http://www.wpro.who.int/southpacific/programmes/communicable\\_diseases/disease\\_surveillance\\_response/ebola-risk-pacific.pdf](http://www.wpro.who.int/southpacific/programmes/communicable_diseases/disease_surveillance_response/ebola-risk-pacific.pdf)

**Objective:** To assess the public health risk posed by the ongoing Ebola virus disease (EVD) epidemic in West Africa to Pacific island countries and areas and to highlight priority risk management actions for preparedness and response.

**Method:** The likelihood of EVD importation and the magnitude of public health impact in Pacific island countries and areas were assessed to determine overall risk. Literature about the hazard, epidemiology, exposure and contextual factors associated with EVD was collected and reviewed. Epidemiological information from the current EVD outbreak was assessed.

**Results:** As of 11 March 2015, there have been more than 24 200 reported cases of EVD and at least 9976 deaths in 6 West African countries. Three EVD cases have been infected outside of the West African region, and all have epidemiological links to the outbreak in West Africa. Pacific island countries' and areas' relative geographic isolation and lack of travel or trade links between countries with transmission means that EVD importation is very unlikely. However, should a case be imported, the health and non-health consequences would be major. The capacity of Pacific island countries and areas to respond adequately varies greatly between (and within) states but in general is limited.

**Discussion:** This risk assessment highlights the needs to enhance preparedness for EVD in the Pacific by strengthening the capacities outlined in the World Health Organization *Framework for Action on Ebola*. Priority areas include the ability to detect and respond to suspected EVD cases quickly, isolation and management of cases in appropriately resourced facilities and the prevention of further cases through infection prevention and control. These efforts for Ebola should enhance allhazards public health preparedness in line with the International Health Regulations (2005).

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## Fact sheets, guidelines and web page updates April to June 2015

The Centre for Disease Control (CDC) fact sheets and guidelines are updated on a regular basis.

Below are the fact sheets that are new\* or updated over April to June 2015.

- Tuberculosis – what you need to know
- The Mantoux test
- Two-step Mantoux testing
- *Naegleria fowleri* in the Northern Territory
- Nontuberculosis mycobacterial lung disease\*
- Non-healing ulcers
- Fifth disease
- Influenza and its prevention
- The Northern Territory Immunisation Register – information for health practitioners\*

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

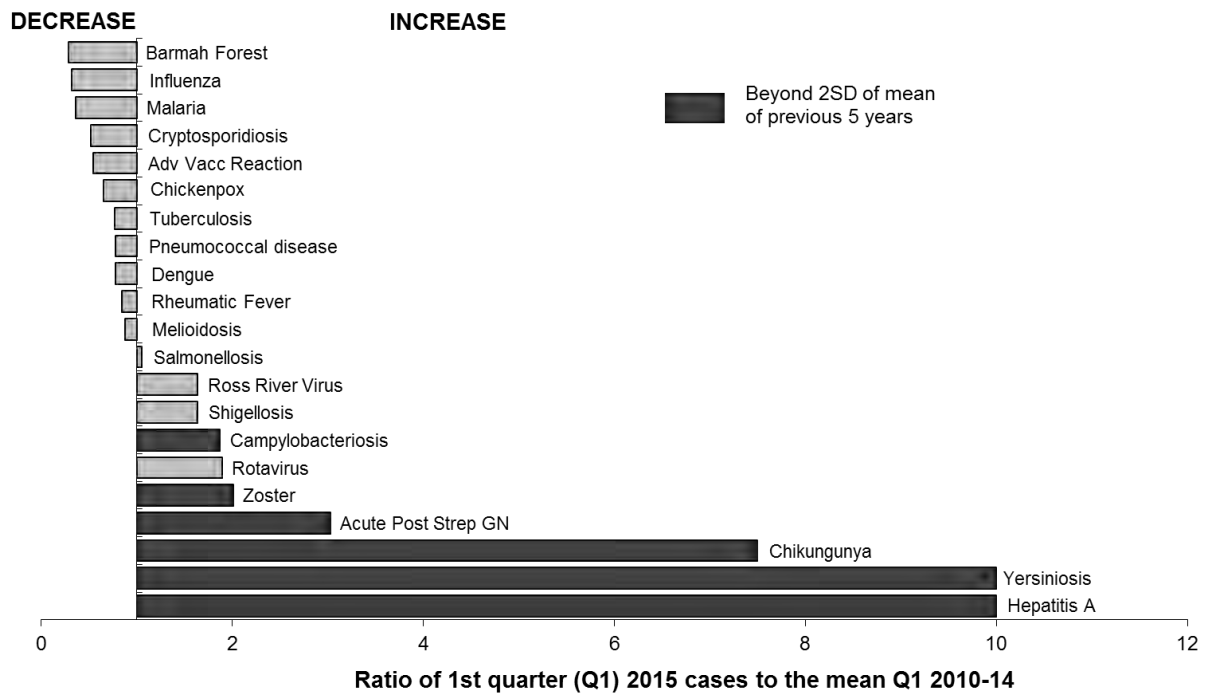
The *Nontuberculous mycobacterial disease (NTM) Guidelines for health professionals in the Northern Territory* was placed on the CDC website. It can be found at [http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/10/88.pdf&siteID=1&str\\_title=Nontuberculous mycobacteria.pdf](http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/10/88.pdf&siteID=1&str_title=Nontuberculous%20mycobacteria.pdf)

A new CDC web page has been developed and published for professionals. The page has links to fact sheets/policies and information for specific condition/topics and can be found at [http://www.health.nt.gov.au/Centre\\_for\\_Disease\\_Control/Resources\\_for\\_Health\\_Practitioners/index.aspx](http://www.health.nt.gov.au/Centre_for_Disease_Control/Resources_for_Health_Practitioners/index.aspx)

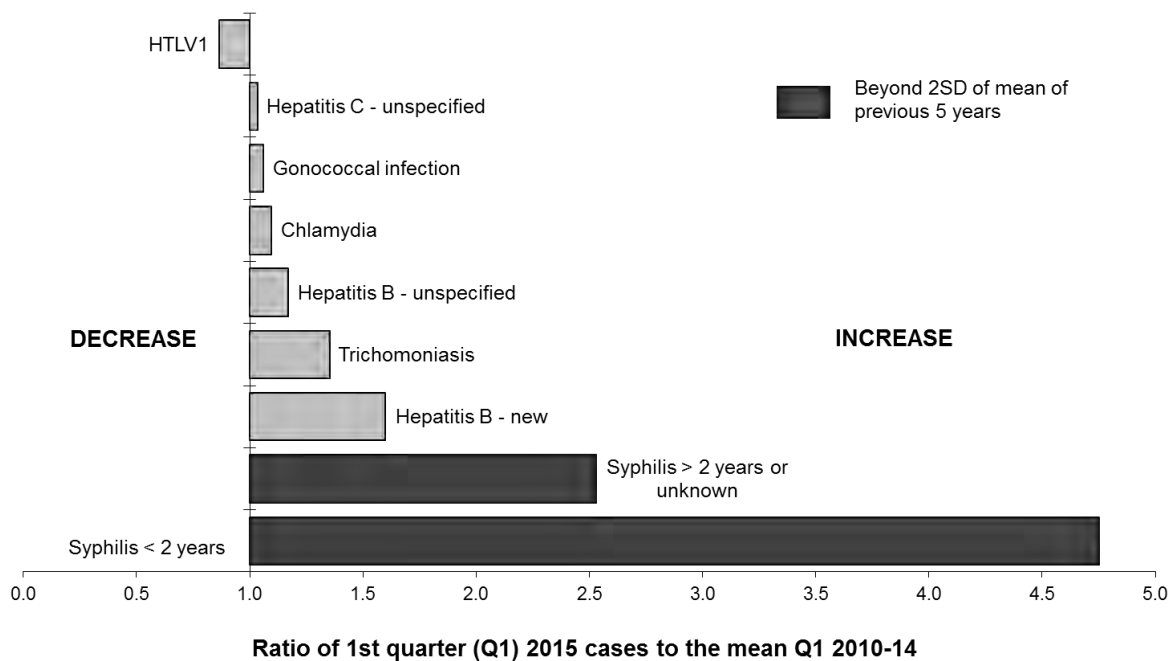
**NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS**  
**January — March 2014 and 2015**

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		NT	
	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Acute Post Strep glomerulonephritis	8	2	2	0	4	2	5	2	2	8	21	14
Adv Vacc Reaction	3	3	1	0	3	6	0	1	2	1	9	11
Barmah Forest	0	0	0	0	12	6	0	1	0	0	12	7
Campylobacteriosis	11	27	0	0	68	38	12	2	8	8	99	75
Chickenpox	5	7	0	0	4	14	6	5	1	8	16	34
Chikungunya	0	0	0	0	3	0	0	0	0	0	3	0
Chlamydia	243	190	13	21	347	375	57	40	112	98	772	724
Chlamydial conjunctivitis	1	2	0	0	2	2	0	0	0	1	3	5
CJD	0	0	0	0	1	1	0	0	0	0	1	1
Cryptosporidiosis	4	11	3	0	12	16	6	4	2	5	27	36
Dengue	2	0	0	0	18	28	0	0	3	1	23	29
Gastro - related cases	1	4	0	0	6	0	0	0	0	0	7	4
Gonococcal conjunctivitis	1	0	0	0	0	0	0	0	0	1	1	1
Gonococcal infection	268	197	17	11	112	115	36	19	87	113	520	455
Gonococcal neon ophthalmia	1	0	0	0	0	0	0	0	0	0	1	0
Group A strep invasive	7	5	1	1	4	5	1	1	1	4	14	16
Hepatitis A	0	0	0	0	2	1	0	0	0	0	2	1
Hepatitis B - chronic	2	14	0	0	1	4	4	5	1	0	8	23
Hepatitis B - new	0	0	0	0	1	1	1	0	0	0	1	1
Hepatitis B - unspecified	20	4	1	1	30	36	1	1	3	0	55	42
Hepatitis C - new	0	0	0	0	0	1	0	0	0	0	0	1
Hepatitis C - unspecified	12	11	0	1	38	37	0	1	2	2	52	52
H Influenzae b	0	1	0	0	1	0	0	0	0	0	1	1
H Influenzae non-b	0	2	0	0	0	2	0	0	1	1	1	5
HIV	0	1	0	0	3	4	0	0	0	0	3	5
HTLV1 asyptom/unspecified	10	5	1	0	1	1	0	0	1	0	13	6
Influenza	5	12	0	0	38	182	0	33	2	20	45	247
Legionellosis	0	0	0	0	1	4	0	0	1	0	2	4
Leptospirosis	0	0	0	0	1	0	0	0	0	1	1	1
LGV	0	0	0	0	0	1	0	0	0	0	0	1
Listeriosis	0	0	0	0	0	0	1	0	0	0	1	0
Malaria	0	0	0	0	2	3	0	0	0	0	2	3
Measles	0	1	0	0	0	45	0	0	0	2	0	48
Melioidosis	0	1	0	0	27	24	5	5	2	2	34	32
Meningococcal infection	0	0	0	0	0	2	0	0	0	0	0	2
Mumps	0	1	0	0	0	0	0	0	0	0	0	1
MVE	0	0	1	0	0	0	0	0	0	0	1	0
Non TB Mycobacteria	0	0	0	0	1	1	0	0	0	0	1	1
Pertussis	1	4	0	0	12	10	0	2	1	0	14	16
Pneumococcal disease	5	8	0	0	4	3	1	0	3	1	13	12
Q Fever	1	0	0	0	0	0	0	0	0	1	1	1
Rheumatic Fever	8	9	0	2	5	9	3	4	1	5	17	29
Ross River Virus	7	6	1	4	151	143	10	11	17	21	186	185
Rotavirus	4	5	0	0	35	8	0	2	0	1	39	16
Salmonellosis	20	22	4	5	86	72	6	4	25	12	141	115
Shigellosis	16	5	0	0	13	10	24	3	2	6	55	24
Syphilis < 2y	20	3	0	0	6	3	0	0	12	0	38	6
Syphilis > 2y or unknown	23	5	1	0	6	6	0	0	10	0	40	11
Trichomoniasis	276	257	23	57	290	291	137	141	182	135	908	881
Tuberculosis	0	1	0	0	6	1	0	0	0	0	6	2
Typhus	0	0	0	0	1	0	0	0	0	0	1	0
Varicella - unspecified	1	0	0	0	0	1	0	0	0	0	1	1
Yersiniosis	2	0	0	0	1	2	0	0	1	0	4	2
Zoster	8	10	1	2	71	31	12	7	4	6	96	56
<b>Total</b>	<b>996</b>	<b>836</b>	<b>70</b>	<b>105</b>	<b>1,430</b>	<b>1,547</b>	<b>328</b>	<b>294</b>	<b>489</b>	<b>464</b>	<b>3313</b>	<b>3246</b>

**Ratio of the number of notifications in the first quarter 2015 to the 5 year mean (2010-14): selected diseases**



**Ratio of the number of notifications in first quarter 2015 to the 5 year mean (2010-14): sexually transmitted diseases**



## Comments on notifications from 1st quarter 2015

### Acute post-streptococcal glomerulonephritis

There were 20 cases of acute post-streptococcal glomerulonephritis (APSGN) notified in the first quarter of 2015 compared with an expected 7 based on the 5 year mean. This continues from 2014 which had the highest annual count of APSGN since 2005 (102) and the second highest ever. A Territory-wide alert was issued in January 2015 when 5 sporadic cases occurred in a 2 week period. There was no clustering in communities and no communities met the criteria for a community-wide public health response.

### Campylobacteriosis

The increase in campylobacteriosis is attributed to the introduction of nucleic acid testing in 2013. The new testing method is much more sensitive leading to an increase in notifications that are PCR positive but culture negative.

### Chikungunya

There were 3 cases of imported chikungunya this quarter with infections acquired in Timor-Leste and Indonesia (1 each from West Timor and Bali).

### Hepatitis A

There were 2 cases of hepatitis A in the 1<sup>st</sup> quarter of 2015. Both were acquired overseas, in

Bangladesh and India. There were no cases of hepatitis A in the NT linked to the nationwide outbreak of hepatitis A associated with consumption of imported frozen berries.

### Syphilis (both <2 years duration and >2 years or unknown duration)

The outbreak detected in Alice Springs and Katherine districts in mid-2014 is still ongoing and this has led to a sharp increase in the notifications of syphilis of < 2 years' duration. As some of the outbreak cases were tested for the first time (mostly in very young people) it is not possible to demonstrate evidence of seroconversion in these cases and they are categorised as syphilis of > 2 years or unknown duration. This has led to a sharp increase in this > 2 years of unknown category.

### Varicella zoster – shingles

There were 96 cases of shingles notified this 1st quarter compared to 48 for the 5 year mean. The higher than expected number of zoster cases continues which is likely due to the uptake of PCR testing for diagnoses combined with the recognition that zoster is a notifiable condition.

### Yersiniosis

An increase in yersiniosis notifications is noted and attributed to the introduction of more sensitive nucleic acid (PCR) testing methods in 2013.

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## Save the date

### Northern Territory Centre for Disease Control

### 2015 Conference

### 'Thinking outside the square'

Waterfront Charles Darwin University Campus

Kitchener Road, Darwin

8-10 September, Darwin

### Immunisation coverage for children aged 12-<15 months at 31 March 2015

Region	Number in district	%DTP	%Polio	%HIB	%Hep	%Pneumo	%Fully vaccinated
Darwin	9	91.70%	91.70%	91.70%	91.70%	91.70%	91.40%
Winnellie PO Bag	4	91.90%	91.90%	91.90%	91.90%	93.50%	91.90%
Palm/Rural	1	93.70%	93.70%	93.70%	93.70%	93.30%	93.30%
Katherine	0	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%
Barkly	39	91.70%	91.70%	91.70%	91.70%	91.70%	91.70%
Alice Springs	270	89.70%	89.70%	89.70%	89.70%	90.50%	89.70%
Alice Springs PO Bag	116	96.00%	94.00%	94.00%	94.00%	96.00%	94.00%
East Arnhem	75679	87.20%	87.20%	84.60%	87.20%	87.20%	84.60%
NT	76118	92.60%	92.50%	92.40%	92.50%	92.70%	92.20%
Non-Indigenous (NT)	75784	94.30%	94.20%	94%	94.20%	94.00%	93.70%
Indigenous (NT)	334	89.50%	89.50%	89.50%	89.50%	90.40%	89.50%
Australia	75679	91.80%	91.70%	91.60%	91.50%	91.40%	91.00%

### Immunisation coverage for children aged 24-<27 months at 31 March 2015

Region	Number in district	%DTP	%Polio	%HIB	%Hep	%MMR	%MenC	%Varicella	%Fully vaccinated
Darwin	252	94.0%	94.0%	94.0%	94.0%	88.5%	95.2%	88.9%	85.7%
Winnellie PO Bag	59	93.2%	93.2%	89.8%	94.9%	86.4%	89.8%	86.4%	86.4%
Palm/Rural	228	94.7%	94.7%	93.0%	94.7%	92.1%	92.5%	91.2%	89.0%
Katherine	3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Barkly	6	100.0%	100.0%	83.3%	100.0%	100.0%	100.0%	100.0%	83.3%
Alice Springs	127	92.9%	92.9%	90.6%	92.9%	84.3%	89.8%	83.5%	81.1%
Alice Springs PO Bag	35	100.0%	100.0%	97.1%	100.0%	94.3%	97.1%	88.6%	88.6%
East Arnhem	40	95.0%	95.0%	95.0%	95.0%	92.5%	95.0%	92.5%	92.5%
NT	750	94.4%	94.4%	92.9%	94.5%	89.3%	93.2%	88.8%	86.5%
Non-Indigenous (NT)	449	93.3%	93.3%	91.3%	93.5%	89.5%	92.2%	89.3%	87.1%
Indigenous (NT)	301	96.0%	96.0%	95.3%	96.0%	89.0%	94.7%	88.0%	85.7%
Australia	77950	94.9%	94.9%	93.6%	94.5%	89.6%	93.5%	91.0%	87.6%

### Immunisation coverage for children aged 60-<63 months at 31 March 2015

Region	Number in district	%DTP	%Polio	%MMR	%Fully vaccinated
Darwin	260	93.5%	93.5%	93.1%	91.9%
Winnellie PO Bag	66	97.0%	97.0%	97.0%	97.0%
Palm/Rural	227	94.3%	94.3%	95.2%	94.3%
Katherine	86	96.5%	96.5%	97.7%	96.5%
Barkly	19	94.7%	94.7%	94.7%	94.7%
Alice Springs	119	89.9%	89.9%	91.6%	89.1%
Alice Springs PO Bag	37	94.6%	94.6%	94.6%	94.6%
East Arnhem	40	95.0%	95.0%	95.0%	95.0%
NT	854	93.9%	93.9%	94.4%	93.3%
Non-Indigenous(NT)	559	92.5%	92.5%	92.7%	91.8%
Indigenous (NT)	295	96.6%	96.6%	97.6%	96.3%
Australia	78088	92.9%	92.9%	92.8%	92.3%

## Immunisation coverage at 31 March 2015

*Charles Strebtor, 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 xx.

### 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 31 March 2015 were born between 1 October 2013 and 31 December 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 31 March 2015 were born between 1 October 2012 and 31 December 2012 inclusive. To be considered fully vaccinated, these children must have received meningococcal C vaccination (given at the 12 month schedule point), and dose 2 of measles, mumps, rubella (MMR) and dose 1 varicella vaccination (given in combination as MMRV at the 18 months schedule point). All vaccinations must have been administered by 24 months of age.

The inclusion of these 3 additional immunisations has caused a drop in the reported

coverage rates which are measured at 2 years of age. The primary reason for the decrease is that uptake and/or reporting of the 18 month dose of MMRV is lower than for other vaccines. It is expected that these children will catch-up by their 4<sup>th</sup> birthday when they present for their next scheduled vaccination, if not before. Over time parents and providers will become more familiar with the due date for MMRV and timely coverage should improve.

The cohort of children assessed at 60 to <63 months of age on 31 Mar 2015 were born between 1 Oct 2009 and 31 Dec 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: 12 <24 months cohort (NT 92.2%, National 91.0%); 24 to <27 months cohort (NT 86.5%, National 87.6 %) ; and for the 60 to <63 months cohort (NT 93.3%, National 92.3%).

Indigenous children were less likely (Indigenous 89.5 %, Non-Indigenous 93.7%) to be fully immunised than non-Indigenous children in the 12 to <15 month cohort and less likely to be immunised in the 24 to <27 cohort (Indigenous 85.7 %, Non-Indigenous 87.1%) but more likely to be fully immunised in the 60 to <63 cohort (Indigenous 96.3%, Non-Indigenous 91.8%).

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

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## Disease control staff updates April-June 2015

### Top End

**Vicki Gaffney** left Katherine CDC in April 2015 after 4 years working in the TB Program. Vicki has moved to Orange in New South Wales to be closer to her family. **Judy Creighton**, formerly the Sexual Health and Blood Borne Virus nurse in Katherine, has taken on Vicki's role as the TB Public Health Nurse in Katherine.

**Cathy Blacker** is a new Rheumatic Heart Disease (RHD) Public Health Nurse in Darwin. Cath was previously working with Darwin Corrections and has also worked as a Public Health Nurse in Maningrida. **Gemma Farmer** has joined the RHD team in Darwin until October 2015 as the RHD Register Coordinator while **Chris Chamberlain** is on long-service leave.

**Chunya Rae** has commenced work as an Administrative Officer at CDC in Darwin. Chunya will be working with the RHD and Immunisation teams as well as providing cover for administrative staff who are on leave.

Congratulations to **Bill Petit** who came 12th out of 1000 participants in the City to Surf in Darwin, the same position as last year. He is hoping to make it to the top 10 next year!

Welcome back to **Katherine Moriarty** who returns to her Sexual Health and Blood Borne Virus Policy (SHBBV) position after 12 months on leave. Farewell to **David Decolongon** who served the unit well covering for Katherine Moriarty's leave. Welcome also to **Darren Lee** who has joined the SHBBV team as an Administrative Officer.



**Bill Petitt finishing the Darwin City to Surf**

**Kaylene Prince**, Public Health Nurse, has joined the immunisation team to assist with the implementation of the influenza vaccine program for children. **Brendan Johnson**, Public Health Nurse, has returned to trachoma after a short term position in immunisation to also assist the remote roll out of the influenza vaccine program for children.

### Central Australia

Farewell to **Teem-Wing Yip** who was the Medical Officer and Coordinator of the Alice Springs CDC. Teem-Wing commenced in the Department of Health in January 2006 as a Resident Medical Officer in the Alice Springs Hospital before working in CDC in 2009. Teem-Wing has moved to Singapore to be closer to her family in Hong Kong and Thailand and to undertake Intercultural Studies.

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