CDC
CENTRE FOR DISEASE CONTROL
NORTHERN TERRITORY

THE NORTHERN TERRITORY
DISEASE CONTROL
BULLETIN

Vol. 21, No. 2, June 2014 ISSN 1440-883X

Dengue mosquito eliminated from Tennant Creek …… again!

William Pettit and Nina Kurucz, CDC, Darwin

Abstract

This article summarises the recent successful program to eliminate an incursion of the dengue mosquito, Aedes aegypti, from Tennant Creek in the Northern Territory.

Key words: Ae. aegypti; dengue; mosquito; elimination

Background

The Department of Health (DoH) has successfully eliminated the dengue mosquito, *Aedes aegypti*, from Tennant Creek for the second time. The latest elimination program in the town began in November 2011 following the detection of *Ae. aegypti* eggs in an oviposition trap which was part of the Northern Territory (NT) exotic mosquito surveillance program.[1] The elimination program was completed at the end of April 2014 when the Medical Entomology unit was certain that elimination had been achieved. It is the third successful DoH program of its type in the NT following similar dengue mosquito elimination programs in Tennant Creek (2004 to 2006)[2] and Groote Eylandt (2006 to 2008).[3]

Tennant Creek control program and discussion

The initial control program inspection found the dengue mosquito breeding in 146 properties in Tennant Creek (13.6% of those inspected).[1] It was found breeding primarily in discarded containers holding rainwater, but was also encountered in other water filled receptacles such as buckets and drums,

Contents

Dengue mosquito eliminated from Tennant Creek….again! 1
Measles update 3
Melioidosis: The 2014 Revised RDH Guideline 4
Policy and fact sheet update January—June 2014 8
TB in the Katherine Region 2011-2013 9
Public Health Association Australia (PHAA) 14th National Immunisation Conference, June 17-19, Melbourne. 12
Equity for the elderly 13
Update from RHDAustralia 15
A short stint in Utopia—March 2014 16
One Disease: Tackling scabies and crusted scabies across the Top End 18
The Adolescent Sexuality Education Project—Community driven approach to improve sexual and reproductive health outcomes for all Aboriginal young people across the NT-a further update 20
New Executive Director Northern Territory AIDS and Hepatitis Council 24
AIDS Candle Memorial 24
Conversation about alcohol and pregnancy: Prevention of FASD 25
Summary of STRIVE stakeholder workshop 26
Fact sheet: Shingles (Herpes zoster) 27
Congratulations Lesley Scott 29
Abstracts from peer reviewed published articles related to the NT 30
NT notifications of diseases by onset date and districts 34
Graphs of selected diseases and STIs 35
Comments on notifications 36
NT malaria notifications January-March 2014 36
Immunisation coverage 37
Disease control staff updates April-June 2014 39

Editor: Vicki Krause

Assistant Editors: Anthony Draper, Charles Douglas, Rosalind Webby, Belinda Farmer, Vanessa Johnston, Jiunn Yih Su, Peter Markey, Gabrielle Watt, Nathan Ryder, Lesley Scott

Production Design: Justine Glover and Lesley Scott

Email: vicki.krause@nt.gov.au
Centre for Disease Control
PO Box 40596
Casuarina
Northern Territory 0811

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

pet water containers, rainwater tanks, tyres, fishponds without fish, un-maintained pools and spas, plant cutting buckets, disused evaporative coolers, birdbaths and pot plant drip trays. The decrease in the *Ae. aegypti* population was dramatic over the first 3 rounds of property inspections (Figure). Since the commencement of this elimination program, field officers have conducted close to 9000 property inspections in and around the town searching for mosquito wrigglers and treating receptacles where the mosquito could breed. There are around 1200 properties in the town which include occupied residential blocks, vacant blocks, vacant houses, industrial businesses and rural blocks. There are an additional 107 residential properties and building structures on the 7 Aboriginal community living areas (town camps) surrounding Tennant Creek. The last detection of the dengue mosquito in the town was in June 2013, but because this mosquito can persist in the form of drought resistant eggs the program was continued through to the end of the subsequent wet season.

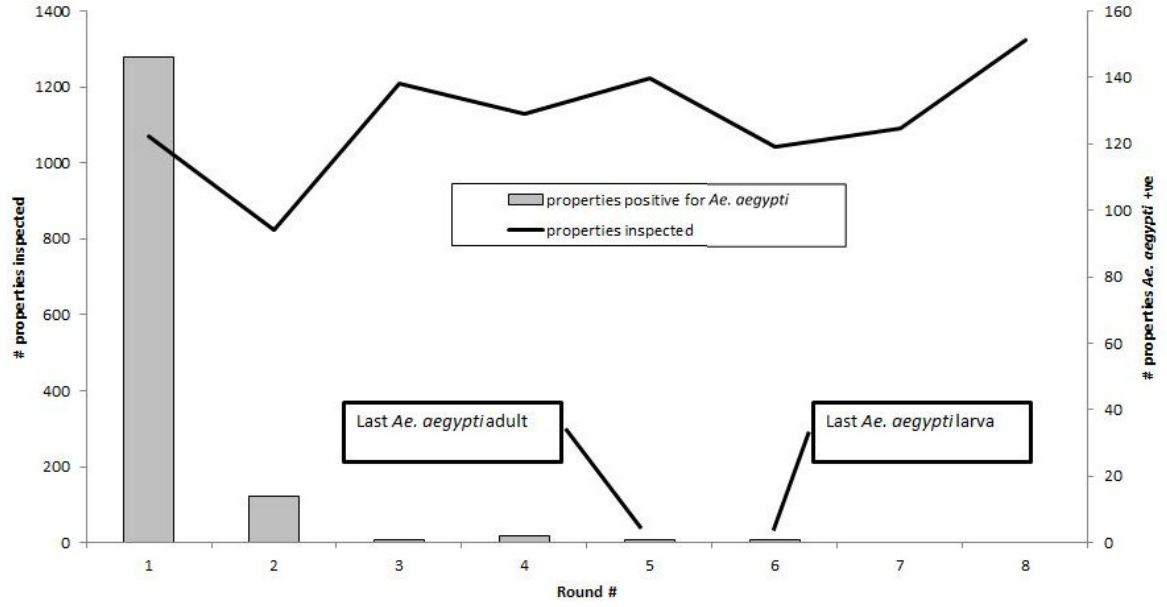
Up until the detection of an infestation of *Ae. aegypti* in Tennant Creek in 2004, establishments of this species had not been detected in the NT since 1956 when it was reported in settlements between Darwin and Newcastle Waters.[4] The disappearance of *Ae. aegypti* from the NT after the 1950s coincides with a general reduction of water tanks, drums and buckets as town water supplies became reticulated, steam trains were replaced with diesel versions, and fire water buckets and drums were replaced with fire extinguishers.[5]

Ae. Aegypti however, is periodically detected at NT ports associated with cargo imported from south-east Asia[6] and there is always a risk of it being brought across from Queensland where it is widely distributed.[4] Early detection of an exotic mosquito infestation provides DoH with an opportunity to control and eliminate it before the mosquito can become widespread throughout the Territory. The NT exotic mosquito surveillance program is one of the very few successful programs in the world able to maintain an *Ae. aegypti* free status in a demonstrated vulnerable and receptive geographic area for over 35 years.[3]

Conclusion

The recent elimination of *Ae. aegypti* from Tennant Creek means that the NT is once again *Ae. aegypti* free and there is no longer a threat of

Figure. *Ae. aegypti* positive properties in Tennant Creek (Nov 2011-Apr 2014)



dengue being able to be transmitted in the NT. Furthermore, there is no further risk of this mosquito species being spread from Tennant Creek to other centres in the NT or Western Australia. In Australia, the distribution of *Ae. aegypti* in Australia is once again restricted to Queensland.

Acknowledgements

The program owes much of its success to the commitment of the team at Medical Entomology, and the willing support of Environmental Health, National Critical Care and Trauma Response Centre, Centre for Disease Control and other DoH staff. The cooperation of Tennant Creek residents needs special acknowledgement. The program has received widespread community support for its survey and treatment activities in the town and region. The vast majority of residents and businesses have shown support by allowing access to their properties for inspection and treatment of receptacles. The Commonwealth Department of Health is gratefully acknowledged for providing external funding to conduct this vital work.

References

1. Whelan PI, Pettit W and Krause V. Dengue mosquito incursion into Tennant Creek 2011. *NT Dis Control Bull*. 2012; 19(1):16-21.
2. Whelan PI, Pettit W, and Krause V. Dengue Mosquito Eradication Project Tennant Creek. End of January 2005 Progress Report. *NT Dis Control Bull*. 2005;12(1):24-29.
3. Whelan PI, Kulbac M, Bowbridge D and Krause V. The Eradication of *Aedes aegypti* from Groote Eylandt NT Australia 2006-2008. *Arbovirus Res Aust*. 2009;10:188-199.
4. Russell RC, Currie BJ, Lindsay MD, Mackenzie JS, Ritchie SA and Whelan PI. Dengue and climate change in Australia: predictions for the future should incorporate knowledge from the past. *MJA*. 2009;190(5):265-268.
5. Whelan PI. The vulnerability and receptivity of the Northern Territory to mosquito-borne disease, Transactions of the Menzies Foundation. 1981; Living in the North (2). 2-4.
6. Kurucz N and Pettit W. Incursion of *Aedes aegypti* in port areas of Darwin NT Australia, April and May 2013. *NT Dis Control Bull*. 2012; 20(4): 29-30.

****

Measles update

Sophie Lines, GP Registrar trainee, CDC, Darwin

As of 23 June 50 cases of measles have been notified in the Northern Territory (NT) in 2014.[1] Following the NT measles outbreak which totalled 48 cases starting in mid-January and ending mid-March this year[2], there have been 2 further measles cases, both in travellers returning from Bali in the month of June. Recent cases have also been reported in Queensland, Victoria, WA, Tasmania and SA, with 40 cases reported nationally over the period 1 May-23 June 2014.[3]

As of 23 June there have been a total of 227 measles cases notified nationally in 2014, with 45% (n=85) of these cases acquiring their disease overseas and 32% (n=68) able to be linked to these imported cases. Of these nationally reported cases, the 15-19 year and 30-34 year age groups represented over a third of cases and 9% of cases (n=18) were in those aged less than 12 months.[3]

The NT Centre for Disease Control has launched a campaign to promote heightened measles awareness in the community. The campaign particularly targets adults and encourages them to be up-to-date with their immunisations which, for measles, means making sure they have had 2 measles containing vaccines. A very high risk group for getting measles at any age if non-immune is overseas travellers, as they are much more likely to be exposed in airplanes, airports and overseas countries. Make sure all overseas travellers who are uncertain of their immune status take advantage of getting a FREE measles vaccine prior to travel to avoid getting sick overseas and/or bringing measles back with them to the NT.

References

1. Northern Territory Notifiable Disease System (NTNDS).
2. Markey P, Lines S. Measles Outbreak Summary. *NT Dis Control Bull* 2014; 21(1):23.
3. National Notifiable Diseases Surveillance System (NNDSS). Available at URL: http://www.health.gov.au/cdnareport

Melioidosis: The 2014 Revised RDH Guideline

Bart Currie,
Royal Darwin Hospital and Menzies School of Health Research, Darwin

Abstract

Since the start of the 2009/2010 wet season the numbers of confirmed melioidosis cases in the Top End of the Northern Territory have far exceeded historical averages, with the majority of the increase being in the urban Darwin region. The Darwin Prospective Melioidosis Study commenced on 1 October 1989 and over the years the approach to diagnosis and treatment of melioidosis has evolved, based on the cumulative experience of Royal Darwin Hospital (RDH) clinicians and the RDH and Menzies laboratory staff and that of colleagues elsewhere in Australia and overseas. In February 2014 the RDH Melioidosis Guideline was revised and is presented here. Antibiotic doses in patients with renal impairment and durations of the intravenous and oral phases of therapy based on clinical parameters have been refined and are now presented in Tables.

Epidemiology

Melioidosis results from infection with the soil and water bacterium *Burkholderia pseudomallei*.[1] Disease occurs in humans and many animals and mostly follows percutaneous inoculation, although inhalation of aerosolized bacteria is probable during severe weather events such as tropical storms and cyclones. Aspiration has also been documented with near drowning and instances of ingestion have occurred from mastitis-associated infected breast milk.[2, 3] Zoonotic transmission is exceedingly rare, as are person-to-person transmission and laboratory-acquired infection.

The known endemic distribution of *B. pseudomallei* has expanded beyond the traditional melioidosis-endemic regions of Southeast Asia and northern Australia, with recent case reports of melioidosis from the Americas, Madagascar, Mauritius, India and elsewhere in south Asia, China and Taiwan.[4]

The first reported case of melioidosis in the Northern Territory was in 1960.[5] Since October 1989 we have prospectively documented all cases of melioidosis in the Top End. Over the 20 years from 1 October 1989 until 30 September 2009 there were 540 culture-confirmed cases with 78 deaths (14%) in the Darwin Prospective Melioidosis Study (DPMS). With heavy rains in the wet seasons from 2009-2012 case numbers rose dramatically; 91 cases (11 fatal) in 2009-2010; 64 cases (9 fatal) in 2010-2011; and 97 cases (10 fatal) in 2011-2012. In addition following very heavy rains early in 2011 there were an unprecedented 6 cases in Central Australia which were considered acquired in Central Australia rather than in the Top End. Previously cases of melioidosis in central Australia were mostly in people who acquired infection in the Top End. *B. pseudomallei* has been recovered from various environmental locations in Central Australia.

With a much drier year in 2012-2013 there was a decrease in melioidosis in the Top End with 36 cases (2 fatal), but cases have risen again with the heavy rains since October 2013.

Over 80% of cases in the Top End occur during the wet season (1 November – 30 April).

Pathogenesis

Serological surveys suggest that most infections are asymptomatic, with rates of seropositivity by indirect haemagglutination assay (IHA) of over 50% in parts of northeast Thailand.[6] In contrast, in the Top End of the Northern Territory, IHA seropositivity (titre >1:20) in long term Darwin residents is <5% but in remote communities in Arnhem Land it can be as high as 20% (unpublished data).

The clinical presentations of melioidosis and outcomes are thought to be determined by a combination of route of infection, infecting dose of bacteria, putative *B. pseudomallei* strain differences in virulence and most importantly host risk factors for disease.

Diabetes is the most important risk factor for melioidosis, followed by **hazardous alcohol use, chronic renal disease, and chronic lung disease.**[7, 8] Over recent years in Darwin it has become clear that **malignancy and immunosuppression**, especially cancer chemotherapy and dexamethasone use with radiotherapy, are also important risk factors. Cardiac failure is also a likely independent risk factor for melioidosis.

Although animal studies support there being differential virulence between strains of *B. pseudomallei*, the specific virulence factors responsible for clinical disease and severe infection remain surprisingly poorly elucidated.[9]

The vast majority of melioidosis cases are from infection during the current or recent wet season, with an incubation period of 1-21 days (mean, 9 days) in those presenting with acute disease (85% of all cases). A more chronic course following infection (chronic melioidosis, defined as symptoms being present for >2 months) occurs in 11% of all cases.[10] Latent infection with subsequent activation is well recognised in melioidosis, with the longest documented period of latency being an extraordinary 62 years,[11] but in the DPMS this is considered very uncommon and accounts for under 4% of all cases.

Clinical features

Around half of melioidosis cases present with pneumonia, which can be part of a fatal septicaemia, a less severe unilateral infection indistinguishable from other community-acquired pneumonias or a chronic illness mimicking tuberculosis.[12, 13] Other presentations range from skin lesions without systemic illness,[14] to overwhelming sepsis with abscesses disseminated in multiple internal organs.[10] Genitourinary disease with prostatic abscesses is especially common in the Top End.[15] Bone, joint and neurological infections are all well documented.[16] Blood cultures are positive in over 50% of all patients. Patients with chronic melioidosis present with either pneumonia or non-healing skin sores.

Diagnosis

The likelihood of diagnosing melioidosis is maximized if the diagnosis is considered in at-risk subjects and appropriate clinical samples from a variety of sites are sent to the microbiology laboratory for microscopy and culture.

Culture is the mainstay of diagnosis. Diagnosis of melioidosis (i.e. active disease) is NOT made on the basis of a positive serology (IHA) result, although melioidosis serology should be ordered if melioidosis is suspected. Serologic testing alone is not a reliable method of diagnosis and culture confirmation should always be vigorously sought in patients with suspected melioidosis.

All patients with suspected melioidosis should have the following samples, if available, taken for culture:

- Blood cultures
- Sputum
- Urine
- Swab of an ulcer or skin lesion; placed into Ashdown's selective medium (purple bottle) to enhance recovery of the organism
- Abscess fluid or pus
- Throat swab; placed into Ashdown's selective medium
- Rectal swab; placed into Ashdown's selective medium.

Chest X-ray should be performed in all suspected cases. In any confirmed melioidosis case (i.e. culture positive), CT or ultrasound of abdomen and pelvis is required to detect any internal abscesses, irrespective of clinical presentation. In children and females who are not significantly systemically unwell, ultrasound is preferable to minimise radiation exposure. CT is the best imaging to detect prostatic abscesses. CT chest is not routine.

All confirmed cases of melioidosis and any suspected cases without confirmation despite appropriate diagnostic work up (as above) should be referred to the **RDH Infectious Diseases team.**

Treatment

All cases of melioidosis in the Top End are managed and followed up by the RDH Infectious Diseases team.

For **initial intensive therapy:**

- Ceftazidime (wards) 2 g (child: 50 mg/kg up to 2 g) IV, 6-hourly for at least 14 days

OR

- Meropenem (ICU) 1 g (child: 25 mg/kg up to 1 g) IV, 8-hourly for at least 14 days

See Appendix for dosing in renal impairment.

Regular monitoring of urea and electrolytes, creatinine, LFTs, FBE including eosinophil count and CRP are required. If renal impairment develops adjust dosing as per Appendix for dosing in renal impairment.

It is policy in RDH ICU for all patients in ICU/ HDU with melioidosis septic shock to be given granulocyte colony-stimulating factor (G-CSF) 300ug IV daily, unless contraindicated and beginning as soon as the Microbiology Laboratory flags a probable *B. pseudomallei* infection. The main contraindication for commencing G-CSF is an acute coronary event, but abnormal liver function is not considered a contraindication for giving G-CSF in patients with melioidosis at RDH. G-CSF is continued for 10 days or for the duration of ICU/HDU stay depending on clinical response, unless a contraindication develops such as total blood white cell count >50,000 $X10^6$/L.

For neurological melioidosis meropenem is the initial IV therapy and the meropenem dose is doubled to 2 g (child: 50 mg/kg up to 2 g) IV, 8-hourly.

For neurological melioidosis, osteomyelitis and septic arthritis, genitourinary infection including prostatic abscesses, and skin and soft tissue infections, add trimethoprim+sulfamethoxazole from commencement of therapy in the eradication doses as below.

Prolonged IV therapy (4 to 8 weeks or longer) is necessary for complicated pneumonia, deep-seated infection including prostatic abscesses, neurological melioidosis, osteomyelitis and septic arthritis.[17,18]

See Table for duration of initial intensive IV therapy.

Table. Darwin melioidosis treatment duration guideline

Antibiotic Duration-Determining Focus	Minimum intensive phase duration (weeks)[a]	Eradication phase duration (months)
Skin abscess	2	3
Bacteraemia with no focus	2	3
Pneumonia		
without lymphadenopathy[b] or ICU admission	2	3
with either lymphadenopathy[b] or ICU admission	4	3
Deep-seated collection and septic arthritis[c]	4[d]	3
Osteomyelitis	6	6
Central nervous system infection	8	6

a. Use clinical judgement to guide prolongation of intensive phase if improvement is slow or if blood cultures remain positive at 7 days
b. Defined as enlargement of any hilar or mediastinal lymph node to greater than 10mm diameter
c. Defined as abscess anywhere other than skin, lungs, bone, CNS
d. Intensive phase duration is timed from date of most recent drainage of collection (e.g. prostatic abscess) where culture of the drainage specimen grew *B. pseudomallei* or where no specimen was sent for culture; clock is not reset if drainage specimen is culture-negative

Eradication therapy is required after the initial intensive therapy. The doses used in Darwin have recently changed to be consistent with those used in Thailand,[19] use:

- Trimethoprim + sulfamethoxazole child 6+30 mg/kg up to 240+1200 mg; adult 40-60kg, 240+1200mg; >60kg, 320+1600 mg orally, 12-hourly for at least a further 3 months

PLUS

- Folic acid 5 mg (child: 0.1 mg/kg up to 5 mg) orally, daily for at least a further 3 months.

See Table for duration of eradication therapy after initial IV intensive therapy.

See Appendix for dosing in renal impairment.

Appendix. Darwin melioidosis adult treatment dosing in renal impairment (The Zulfikar Jabbar Guideline[20])

	Dose adjustment by CLcr (ml/min) [a]			Dose adjustment for dialysis [b]		
	31-50	**15-30**	**<15**	**HD**	**CAPD**	**CRRT**
Ceftazidime	Up to 60kg 1 g q8h Over 60kg 2 g q8h	Up to 60kg 1g q12h Over 60kg 2g q12h	Up to 60kg 1 g q24h Over 60kg 2 g q24h	as for eGFR <15, dose after dialysis	as for eGFR <15 (if intravenous route inconvenient, can administer intraperitoneally with dwell time of >6 hr and 25% extra dose)	2g q12h
Meropenem	1 g q12h	1 g q12h	1 g q24h	as for eGFR <15, dose after dialysis	as for eGFR <15	1 g q8h
TMP+SMX[c]	Up to 60kg 240+1200 mg q12h Over 60kg 320+1600 mg q12h	Up to 60kg 240+1200 mg q24h Over 60kg 320+1600 mg q24h	Up to 60kg 240+1200 mg q24h Over 60kg 320+1600 mg q24h	as for eGFR <15, dose after dialysis	as for eGFR <15	as for eGFR 15-30

[a] CLcr- Creatinine clearance is calculated by Cockroft-Gault method [140-age (years) x ideal body weight) x 0.85 (female) /0.814 x serum creatinine (micromol/L) x 72)]. Recommend to use ideal body weight for weight based dose calculation

[b] HD- haemodialysis; CAPD- chronic ambulatory peritoneal dialysis; CRRT- continuous renal replacement therapy

[c] TMP+SMX: trimethoprim+sulfamethoxazole. Folic acid 5mg daily is added for the duration of therapy

References

1. Wiersinga WJ, Currie BJ, Peacock SJ. Melioidosis. *N Engl J Med* 2012;367:1030-9.
2. Cheng AC, Currie BJ. Melioidosis: Epidemiology, Pathophysiology, and Management. *Clin Microbiol Rev* 2005;18:383-416.
3. Ralph A, McBride J, Currie BJ. Transmission of *Burkholderia pseudomallei* via breast milk in Northern Australia. *Pediatr Infect Dis J* 2004;23:1169-71.
4. Currie BJ, Dance DA, Cheng AC. The Global Distribution of *Burkholderia pseudomallei* and Melioidosis: An update. *Trans R Soc Trop Med Hyg* 2008;102 Suppl 1:S1-4.

5. Crotty JM, Bromich AF, Quinn JV. Melioidosis In the Northern Territory: A Report of two cases. *Med J Aust* 1963;i:274-5.
6. Wuthiekanun V, Chierakul W, Langa S, et al. Development of antibodies to *Burkholderia pseudomallei* during childhood in Melioidosis-Endemic Northeast Thailand. *Am J Trop Med Hyg* 2006;74:1074-5.
7. Limmathurotsakul D, Chaowagul W, Chierakul W, et al. Risk factors for recurrent melioidosis in Northeast Thailand. *Clin Infect Dis* 43:979-86.
8. Currie BJ, Fisher DA, Howard DM, et al. Endemic Melioidosis In tropical Northern Australia: A 10-year prospective study and review of the literature. *Clin Infect Dis* 2000;31:981-6.
9. Wiersinga WJ, van der Poll T, White NJ, Day NP, Peacock SJ. Melioidosis: Insights into the pathogenicity of *Burkholderia pseudomallei. Nat Rev Microbiol 2006;*4:272-82.
10. Currie BJ, Ward L, Cheng AC. The epidemiology and clinical spectrum of melioidosis: 540 cases from the 20 year Darwin prospective study. *PLoS Negl Trop Dis* 2010;4:e900.
11. Ngauy V, Lemeshev Y, Sadkowski L, Crawford G. Cutaneous Melioidosis In a man who was taken as a prisoner of war by the Japanese during World War II. *J Clin Microbiol* 2005;43:970-2.
12. Chaowagul W, White NJ, Dance DA, et al. Melioidosis: A major cause of community-acquired septicemia in north-eastern Thailand. *J Infect Dis 1989*;159:890-9.
13. Meumann EM, Cheng AC, Ward L, Currie BJ. Clinical features and epidemiology of melioidosis pneumonia: Results from a 21-year study and review of the literature. *Clin Infect Dis 2012;*54:362-9.
14. Gibney KB, Cheng AC, Currie BJ. Cutaneous Melioidosis in the tropical Top End of Australia: A prospective study and review of the literature. *Clin Infect Dis* 2008;47:603-9.
15. Morse LP, Moller CC, Harvey E, et al. Prostatic abscess due to *Burkholderia pseudomallei*: 81 cases from a 19-year prospective melioidosis study. *J Urol* 2009;182:542-7.
16. Morse LP, Smith J, Mehta J, Ward L, Cheng AC, Currie BJ. Osteomyelitis and septic arthritis from infection with *Burkholderia pseudomallei*: A 20-year prospective melioidosis study from Northern Australia. *J Orthopaed* 2013;10:86-91.
17. Pitman M. Melioidosis intensive phase treatment duration and outcome. manuscript in preparation.
18. Sarovich DS, Ward L, Price EP, et al. Recurrent melioidosis in the Darwin prospective melioidosis study: Improving therapies mean relapse cases are now rare. *J Clin Microbiol* 2014;52:650-3.
19. Cheng AC, McBryde ES, Wuthiekanun V, et al. Dosing regimens of cotrimoxazole (Trimethoprim-Sulfamethoxazole) for melioidosis. *Antimicrob Agents Chemoth* 2009;53:4193-9.
20. Jabbar Z, Currie BJ. Melioidosis and the kidney. *Nephrology* 2013;18;169-175.

****

Policy and fact sheet update January-June 2014

The Centre for Disease Control (CDC) fact sheets and guidelines are updated on a regular basis. Below are the fact sheets updated over January to June 2014. They can be found on the CDC website at http://health.nt.gov.au/Centre_for_Disease_Control/Publications/CDC_Factsheets/index.aspx

- **Cerebral palsy**
- **Fetal alcohol spectrum disorder**
- **Mosquito borne diseases**
- **Pertussis information for medical practitioners**
- **Hepatitis B**
- **Strongyloidiasis**
- **Measles information for general practitioners**
- **Trichomoniasis**
- **Yersiniosis**
- **Clinic 34 free confidential sexual health service**

TB in Katherine Region 2011-2013

Vicki Gaffney, CDC Katherine with Charles Douglas and Vicki Krause, CDC, Darwin

Abstract

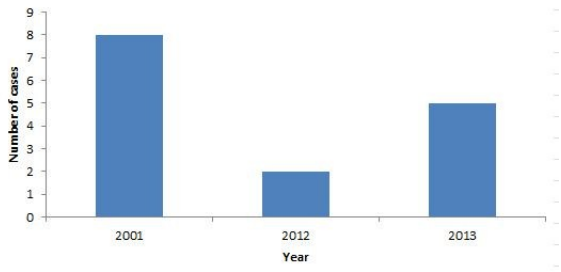
The Katherine region has historically had high rates of tuberculosis (TB). This article examines 15 TB cases in the Katherine region between 2011 and 2013 and suggests that the majority of cases are reactivation in previously infected individuals. Each case generates a significant number of contacts who need to be traced and investigated and when indicated communities screened. TB is still being diagnosed in Aboriginal communities. A high index of suspicion and early detection are important to ensure timely treatment and to reduce transmission.

Key words: tuberculosis (TB); Katherine; contact tracing; community screening

Introduction

The Katherine region has historically had a high incidence of tuberculosis (TB). The region stretches from the border with Western Australia in the west to the Queensland border in the east and from Pine Creek in the north to Larrimah in the south, an area of 400,000 square kilometres with a population of approximately 15,000. There are 21 Aboriginal communities in the region, most served by Aboriginal Controlled Health Services; 9 in the east served by Sunrise Health Service, 8 in the west served by Katherine West Health Board and 3 in the Katherine town served by Wurli Wurlinjang. The Northern Territory Department of Health serves 1 community to the north.

Figure 1. TB cases in the Katherine region 2011-2013

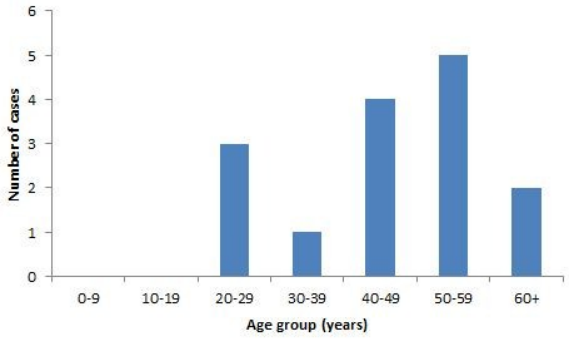


TB cases and TB control management in Katherine region 2011-2013

There have been 15 cases of TB notified in the Katherine region (where a Katherine community/town is listed as primary residence at time of diagnosis) in the years 2011-2013 (Figure 1); 13 were Aboriginal, 1 Australian-born in the cattle industry and 1 overseas-born from a high TB-burden country. Of these cases 7 were from Katherine town area, including the 1 overseas-born case who was diagnosed and initiated treatment overseas but received and completed directly observed therapy (DOT) TB treatment from Katherine CDC. The other 8 cases were from the 6 different communities from the east side of the region.

There were 10 males and 5 females among the cases, with a mean age of 42 years (ages ranging from 23-63 years) with most in the 40-59 year age groups (Figure 2).

Figure 2. TB cases in the Katherine region by age group



Of the 15 cases 10 were specifically named contacts of distant past TB cases. Given the known relatively high prevalence in these communities over the past years, 3 of the remaining 5 adult cases were likely to also represent reactivation rather than recent transmission.

Mycobacterium tuberculosis was the causative agent in 14 of 15 cases and the remaining case, a former cattle worker who had not worked with cattle for 25 years, grew *M. bovis.* Table 1 shows the cases by site of disease.

Table 1. TB cases by site of disease

Site	Number of Cases
Pulmonary	11*
Pleural	1
Nodal	1
Pericardial	1
Miliary	1

*includes 1 *Mycobacterium bovis*

All 15 cases were commenced on treatment via DOT and 10 have completed treatment; 3 are currently on treatment (1 had defaulted on treatment but has recommenced and is near completion) and 2 died prior to completion of treatment (1 from military TB and 1 from other causes).

Contact tracing

There were 228 contacts identified from these 15 cases. The number of contacts per case ranged from 2 (in the case diagnosed overseas) to 46 contacts. Of the 228 contacts, 47 (21%) had previous positive Mantoux tests, indicating past TB contact and infection. Of the remaining 181 who had never been Mantoux tested or had previous Mantoux negative tests 153 (67% of the 228) were Mantoux tested and the remaining 28 were not tested (12% of total) and had no other form of screening.

Of the 153 Mantoux tests conducted as part of the contact screening, 33 (21%) were new conversions (to Mantoux positive) on the 1st (with a known past negative) or 2nd Mantoux test. Mantoux tests were not able to be done on 28 of the contacts identified for testing as they were not in the communities on any of the days visited or were not found by local health staff. (see Table 2). Of those with a known past positive Mantoux, 45 of 47 had a screening chest X-ray done as per protocol. These 2 missed chest X-rays, together with the 28 missed Mantoux tests account for 13% (30 of 228) of contacts not achieving initial TB contact screening. Additionally all of the 33 new Mantoux test conversion contacts had a chest X-ray. Of note chest X-rays are obtained by a combination of patients travelling into town (sometimes up to 5 hours) or obtaining X-rays in the community via visiting trained health staff with mobile radiographic equipment. Table 3 shows the chest X-rays done and latent TB infection (LTBI) treatment commenced on 24 of the 33 new Mantoux conversion cases. While 5 LTBI patients have defaulted treatment, 7 are currently on treatment and 12 contacts have fully completed treatment.

Table 2. Mantoux test results of TB contacts in Katherine region 2011-2013

Mantoux test results	Number
Total contacts	228
Past positive Mantoux test	47
Mantoux tests given	153
New Mantoux conversions	33
Mantoux test negative	120
Mantoux test not done	28

Table 3. Chest X-rays taken and LTBI treatment for contacts in Katherine region 2011-2013

Chest X-rays on new Mantoux conversions	33
Chest X-rays on past positive Mantoux cases	45
LTBI treatment commenced	24
LTBI treatment completed	12
Currently on LTBI treatment	7
Defaulted from treatment	5

There was 1 new TB case found through the contact tracing process. This contact had a record of testing Mantoux positive in the past but treatment for LTBI had not been recommended at that time due to other factors. On review the contact reported no TB symptoms; however had a chest X-ray that was abnormal and sputum samples were collected. This contact was found to be +1 AFB smear positive and was culture positive for *M. tuberculosis.*

Community screening

As this new TB case was from the same community as the index case, the criterion for doing a community screen was met (2 or more active TB cases from 1 community) and therefore a TB community screen was planned per the *Guidelines for the control of tuberculosis in the Northern Territory*.[1] The population in the

main community was unstable, so as per the *Guidelines*[1] all children 10 years of age or younger were given a Mantoux test. This resulted in 17 children being screened and all were found to be Mantoux negative with no signs or symptoms of TB. To raise awareness about TB for the adults of the community educational evening TB sessions were given and adults were encouraged to come to the clinic and be screened. This process resulted in some adult community members being classified as contacts of the index case (included in the Table 2 tally) and 12 other adults having a chest X-ray and a brief clinical review. TB was ruled out in all of these adults. There were 2 adults found to have past positive Mantoux tests who were diagnosed with LTBI and started on LTBI treatment. Of these, 1 completed LTBI treatment and 1 defaulted treatment and was put on chest X-ray follow up. There were 13 adults placed on follow up with chest X-ray and clinical review for 2.5 years.

In a 2nd smaller satellite community associated with the main community it was possible to screen the whole community. A community list was obtained and histories were checked to identify previous positive Mantoux results. In this community, 46 Mantoux tests were performed on 1 day and of these 40 (86%) were read. Of these 40 Mantoux tests 4 were found to be positive. After review, 4 were offered LTBI treatment; 1 accepted and completed treatment, the other 3 elected to have chest X-ray follow up. There were 10 adults with past positive Mantoux tests who received chest X-rays and clinical reviews. No further cases of TB were found.

An interesting addendum to this 2011-2013 Katherine case series is that another adult male Aboriginal TB case notified in 2011 had an East Arnhem (northeast NT) region community as his primary place of residence and a community from the Katherine region as a secondary residence. In a mobile society people can travel through regions and stay for a time, sometimes in town camp settings and be at risk of coming into contact with TB cases. There were 74 East Arnhem region contacts identified from this case (not reported here) and no Katherine region identified contacts. The molecular typing of the *M. tuberculosis* from this case matched those from the Katherine region cases.

Discussion

TB continues to be a disease of concern particularly in the Aboriginal population in the Katherine region. There remains some stigma associated with the disease and there was concern by some cases in small communities who felt they would be identified as the person with TB when contact tracing was undertaken. Confidentiality is a priority and maintained by staff. Stigma is addressed in part by education and awareness-raising that TB is a curable and preventable disease.

Review of these 15 adult cases suggests that the majority result from reactivation from infection acquired several years previously in this region of known high TB prevalence. An ongoing high index of suspicion is required among clinicians for patients in this region who present with symptoms or signs that could be TB. Appropriate investigations and referrals need to be undertaken in a timely manner. Contact tracing needs to be carried out thoroughly and, where appropriate, community screening undertaken.

The experience in the Katherine region highlights the amount of work generated by each case of TB. The mobile population, crowded living conditions with extended family and social networks result in a large number of contacts being identified. In turn each contact requires assessment that includes a clinical review and, where indicated, a Mantoux test and a chest X-ray. A community screen will also sometimes be indicated. Distance and competing priorities make all of these activities challenging for CDC and community health staff, community members and patients alike.

For those requiring treatment for TB or LTBI, the assistance of the remote community health centre staff is invaluable in ensuring treatment is completed and that patient monitoring (e.g. weighing and obtaining blood specimens as required) is carried out. Building good relationships with staff is essential. Completion of TB treatment with full compliance is almost always achieved because of the emphasis on treatment and on the ability to provide DOT for the patients. Full compliance or completion, however is less common among those on LTBI treatment which, with the exception of LTBI treatment for children, is not usually via DOT.

Arranging for timely chest X-ray follow up can also be problematic. Establishing in more detail the factors that are barriers to completing LTBI treatment or chest X-ray follow up would be useful areas of investigation.

Conclusion

TB is still being diagnosed in Aboriginal communities as outlined in this paper. A high index of suspicion and early detection are fundamentally important to ensure timely treatment and to reduce transmission.

Each case generates a large number of contacts, but efforts to identify, screen and manage them appropriately, including appropriate treatment of LTBI are required to break the cycle of reactivation and ongoing spread of the disease. This presents challenges in rural and remote Australia.

Reference

1. CDC Guidelines for the Control of Tuberculosis in the Northern Territory. 8th edition. 2008.

****

Public Health Association Australia (PHAA) 14th National Immunisation Conference, June 17-19, Melbourne

Heather Cook, CDC, Darwin

Over 550 Australian and international immunisation and other public health practitioners gathered in Melbourne recently for the Public Health Association Australia (PHAA) 14th National Immunisation Conference. The Northern Territory (NT) Centre for Disease Control (CDC) was represented from Darwin by Dr Vicki Krause who presented a Plenary Session 'Report Card' on invasive pneumococcal disease (IPD) in Australia; Heather Cook who presented on 20 years of IPD and its control in the Indigenous population in the NT; and by Rebecca Curr who attended from Alice Springs CDC Immunisation Section. Several past NT CDC staff members were also in attendance and it was interesting to catch up with news on their recent activities.

The theme of the conference was 'Maintaining Excellence in Immunistion: Consolidating Gains, Identifying Gaps' and in keeping with this theme many oral and poster presentations covered aspects of vaccine safety, monitoring and ways of improving timeliness and vaccine coverage.

Day 1 Plenary featured the very topical disease 'measles' with a review of the USA experience and highlighted the need for sustained high population measles vaccination coverage. It was acknowledged that because of the high infectivity rate of the measles virus, the monitoring and surveillance that occurs during an outbreak is the most effective way of identifying deficits across *all* vaccine preventable disease programs. The outstanding success of a recently introduced Group A meningococcal conjugate vaccine in Africa, from considering it should happen to getting it done, was presented by the Director of the partnership program between PATH, WHO and the Serum Institute of India. The day concluded with a comprehensive summary oration of the global polio eradication effort.

Day 2 Plenary included discussions on strategies for controlling pertussis that included vaccinating pregnant women to prevent disease in infants, which is an outbreak strategy currently in use in the United Kingdom. To date the program has been well received with good coverage of pregnant women and no safety concerns identified. Direct impact on rates of pertussis in young infants has been demonstrated. Studies regarding a potential blunting of the immune response in infants of mothers vaccinated in pregnancy are inconclusive and no vaccine failures have occurred in those infants whose mothers received the vaccine.

Pertussis outbreak management has been less successful in New Zealand with poor timeliness of childhood pertussis vaccination identified as a

risk factor in infant disease epidemiology. Protection of infants via cocooning is recommended in New Zealand but not funded and although pertussis vaccination in pregnancy has been funded since January 2013 there is poor uptake, most likely due to a lack of awareness and engagement with providers and recipients.

Australia is investigating a number of pertussis control strategies including neonatal vaccination. Further research into vaccination in pregnancy was identified as a requirement, particularly around consumer perception and acceptability and the potential for blunting of the immune response in infants.

Day 3 Plenary saw 'Report Cards' on measles in the Western Pacific; and IPD, rotavirus and Human Papillomavirus (HPV) in Australia presented. While the elimination of measles within the Western Pacific remains a goal by 2020 there are challenges within several countries including Australia. Australia needs to play its role by maintaining good quality surveillance and achieve higher level all-of-population measles immunity.

The significant gains in IPD control in certain sectors in Australia were highlighted and the excellent surveillance structures in place to monitor IPD disease trends were reported. Rotavirus hospitalisations have declined nationally although an outbreak in older children occurred in NSW and reductions in Indigenous children have been less remarkable than in the non-Indigenous population.

Similarly the Australian HPV vaccine program is showing positive results with published studies reporting a decrease in both circulating vaccine types and genital warts with evidence of herd effect. The NT remote region can boast the highest coverage rates in the country for dose 1 and 2 however; overall, national vaccine coverage can be improved, particularly for dose 3.

The numerous concurrent sessions and high standard of poster presentations over the 3 days displayed a wealth of knowledge and experience on specific vaccine implementation programs and disease epidemiology with the theme of overall vaccine safety, monitoring and reporting featuring highly.

The final day tradition of 'conference resolutions' continued and these will be available on the PHAA website at a later date.

See over page for other pre and post -conference presentation web links.

****

Equity for the elderly

Rebecca Curr, CDC, Alice Springs

Following the recent 14th National Immunisation Conference I attended the *Equity in disease prevention: vaccines for the elderly* post conference workshop facilitated by the National Health Medical Research Council (NHMRC). The focus of the workshop centred on vaccines for the elderly. The workshop covered the latest scientific updates in elderly vaccination and also discussed ethical and value based issues which impact on the success of immunisation programs. It was highlighted that we have a paediatric focus towards vaccines in our society but adults comprise most of the population. The discussion emphasised that it makes economic sense to keep seniors healthy and that immunisation is a positive part of ageing, e.g. 10% elderly admitted to hospital have a respiratory tract infection which may have been vaccine preventable.

Discussions included the challenges of vaccinating the elderly, noting that elderly adults:

- Are highly mobile
- Are difficult to target
- May have multiple providers, and
- Have healthcare practitioners that are less certain of their vaccination history and without a centralised vaccination register in most states this leads to both over and under-vaccination.

The question was posed "Is it appropriate to compare vaccines in the elderly to vaccines in infants?" Professor Raina McIntyre put forward that in public health a worthy preventative strategy is something that has an efficacy of above 25%. It was suggested that even though the vaccine response wanes faster in the elderly, does it matter if a vaccine is efficacious for only 10 years if the person has about 10 years of life left?

Pertussis and pneumococcal outbreaks were discussed in the nursing home setting noting that many of these deaths could be avoided if people were vaccinated. Of particular interest was the presentation about the zoster vaccine, which after an initial supply issue has recently become available again. The vaccine costs around $250 and although reported to be only about 50% effective it is highly recommended as it prevents post herpetic neuralgia which can last for many years and be very debilitating. A case study was presented by Dr David Gronow, Director of Multidisciplinary Pain Services, Westmead Hospital on the management of an elderly patient with shingles. This recount of a patient's experience with shingles was extremely confronting and yet potentially preventable.

Overall the day was very positive about initiatives for healthy ageing and the prevention of diseases in the elderly. More and more vaccines are becoming available for adults. Our ageing population needs to be healthy and vaccination is often overlooked in this group as a preventive measure and needs our attention.

See below for workshop web link.

****

Public Health Association Australia (PHAA)
14th National Immunisation Conference
useful web links

Pre-conference seminar presentations

Pre-conference presentations are available: Getting the jabs done: Practical solutions to issues confronting the implementation of immunisation programs at http://webcast.gigtv.com.au/Mediasite/Catalog/Full/ebd394f24b90456d942b2e210df64d3021

Plenary presentations

Several plenary presentations are available now at phaa.net.au/14thNationalImmunisationConference.php

Conference abstract book

The conference abstract book is available for purchase at a cost of $20. Email publications@phaa.net.au for further information.

Post conference workshop presentations

Workshop presentations are available: Equity in disease prevention - vaccines for the elderly at http://www.creimmunisation.com.au/news/workshop-presentations-are-available-equity-disease-prevention-vaccines-elderly

Update from RHDAustralia

Emmanuelle Clarke and Claire Boardman, RHDAustralia, Darwin

RHDAustralia*, along with the World Heart Federation (WHF)† and RhEACH‡ hosted the *Third Global Rheumatic Heart Disease Forum* during the World Congress of Cardiology 2014, in Melbourne in May, attracting 150 rheumatic heart disease (RHD) advocates and experts from around the world.

The Forum aimed to establish a time-bound and outcome-focused roadmap to achieve the WHF's 5 targets to control and improve outcomes for people with RHD and reviewed global initiatives to identify future priorities in the effort to ultimately eradicate RHD.

Professor Bart Currie, Director of RHDAustralia, said that in Australia we have established RHD control programs but there are still challenges to reduce the burden of the disease.

Professor Currie said, 'In Australia, limited knowledge of acute rheumatic fever (ARF) and RHD by health staff, patients and communities can lead to misdiagnosis. RHDAustralia developed a national guideline, e-learning modules and community awareness resources to increase awareness of ARF and RHD'.

A panel discussion with Australia's Chief Medical Officer, Professor Chris Baggoley, the World Heart Federation's President, Srinath Reddy, Fiji's Minister for Health, Dr Neil Sharma, New Zealand's Chief Advisor for Health, Chrissie Pickin, Cure Kids Chief Executive Officer, Vicki Lee, Paediatric Cardiologist from Zambia, Dr John Musuku, World Heart Federation's RHD expert Professor Bongani Mayosi and Telethon Child Health Research Institute and RHD expert Professor Jonathan Carapetis raised some insightful points. Professor Jonathan Carapetis asked Dr Pickin what it had taken for the New Zealand Government to be the world leader in the fight against RHD.

Dr Pickin said, "Political will and money. In 2 years we went from $12 million to $65 million. We also needed partnerships and stakeholders".

Dr Pickin's advice was to "plan and be clear about what you want to do."

Dr Sharma said he had become an RHD advocate when a young mother died in front of him and her child was left an orphan. He said her death was tracked back to RHD that was not managed properly.

The WHF will release a report on the Forum in the coming months.

For more information visit www.rhdaustralia.org.au, or email Emmanuelle Clarke Senior Communications Officer RHDAustralia at emmanuelle.clarke@menzies.edu.au

Rheumatic heart disease seminar in Darwin 12 August

A free seminar will be in Darwin on Tuesday, 12 August at 5.30pm. The seminar will provide information on the prevention, control and management of acute rheumatic fever (ARF) and rheumatic heart disease (RHD) in Australian Aboriginal and Torres Strait Islander people.

It is hosted by RHDAustralia in conjunction with NT Cardiac Services, the Australasian Maternity Outcomes Surveillance System (AMOSS) RHD in pregnancy study and NT Rheumatic Heart Disease Control Program.

*__RHDAustralia:__ An Australian government funded organisation that works with Rheumatic Heart Disease (RHD) control programs and other partners throughout Australia to reduce death and disability from RHD among Aboriginal and Torres Strait Islander people.

†__World Heart Federation (WHF)__ is a nongovernmental organization based in Geneva, Switzerland dedicated to the prevention and control of heart disease and heart foundations from over 100 countries covering the regions of Asia-Pacific, Europe, East Mediterranean, the Americas and Africa.

‡__RhEACH__: The *Rheumatic heart disease. evidence. advocacy. communication. hope.* (RhEACH) program is a global collaboration which aims to identify, describe and disseminate solutions for acute rheumatic fever (ARF) and rheumatic heart disease (RHD).

The presentations will provide insights from a patient, clinical and scientific research perspective and speakers include Professor Sue Kruske (Professor, Maternal and Child Health, University of Queensland), Dr Marcus Ilton (Cardiologist, NT Cardiac), Dr Keith Edwards (Community Paediatrician, NT Rheumatic Heart Disease Control Program), and Dr Steven Tong (Research Fellow, Menzies School of Health Research).

Register to attend:
https://www.eventbrite.com.au/e/rheumatic-heart-disease-seminar-darwin-tickets-12202470919

For more information visit:
http://www.rhdaustralia.org.au/news-events/latest-events/rhdaustralia-seminar-darwin-12-august-2014
or email emmanuelle.clarke@menzies.edu.au.

RHDAustralia's E-Learning modules

RHDAustralia's E-Learning modules provide the health workforce with a basic understanding of best-practice approaches to the prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease. For more information visit the website: http://www.rhdaustralia.org.au/professional-development.

Download *The Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (2nd edition)* here:
http://www.rhdaustralia.org.au/resources/arf-rhd-guideline

****

A short stint in Utopia – March 2014

Charles Douglas and Gabrielle Watt, CDC, Darwin

"*If you follow the power lines, you probably won't get lost*".

Words of wisdom from a local as the trachoma team heads out to find 1 of the many outstations of Utopia, approximately 200km north-east of Alice Springs.

Like many remote communities in Central Australia, the community of Utopia has hyper-endemic trachoma. Over 20% of the 5-9 year olds screened for active trachoma in 2012 were found to have active infection, placing them at risk of blindness later in life. The Northern Territory (NT) Trachoma Program, utilising

Figure. Thirsty horses wander up for a drink from the outstation bore

funding provided by the Australian Government, continues to work consistently and conscientiously towards elimination of trachoma. The team effort is working. In 2009, the overall prevalence of active trachoma in 5-9 year old Indigenous children in remote communities in the NT was 12%. By 2012, this rate had plummeted to 4%. However, there are still many communities, including Utopia, where trachoma remains hyper-endemic. Most of the communities in the NT with trachoma are inland, in the desert areas. Overcrowding, water shortages and poor living conditions all contribute to presence of trachoma in these communities.

The NT Trachoma Program is comprised of many partners, including the NT Department of Health (DoH), Aboriginal Medical Services, the Fred Hollows Foundation and the Indigenous Eye Health Unit at the University of Melbourne. Together, a comprehensive strategy is delivered to eliminate trachoma, incorporating both clinical activities and addressing the hygiene and environmental factors that contribute to the spread of the disease.

In Utopia, the NT DoH Centre for Disease Control (CDC) team is delivering 1 of the clinical aspects of the program – community-wide treatment for active infection. Evidence suggests that in communities with hyper-endemic trachoma, 5 rounds of 6 monthly administration of azithromycin (an antibiotic) to every member of the community can have a significant effect in reducing active trachoma infection. There are 16 outstations in Utopia, spread out over 80kms of dirt road. To maximise coverage the 'team' (2 nurses, 1 doctor and a medical student) disperse into 3 vehicles and drive off in opposite directions, searching for the outstations sketched on a mud-map drawn up by some kind soul years ago.

Each outstation belongs to 1 or 2 family groups. Residents welcome the team, keen to know more about trachoma, and equally eager to take the medication offered when it is understood that it may prevent the children from going blind as adults in later life. The health team from the local clinic visits each outstation at least weekly, and when able, assists the trachoma team with dispensing the azithromycin. It's hot and the flies are maddening. Curious donkeys scratch against the team cars and thirsty horses wander up for a drink from the outstation bores.

The team stays in Utopia for 2 weeks and during this time administers azithromycin to everyone in each of the outstations who wishes to take it.

The widely dispersed population makes Utopia unique among the Central Australian communities and offers challenges to reaching the population, but it is only 1 of many communities that still have endemic trachoma. During this year the team of 3 public health nurses will coordinate, support and, in most cases, be the active implementers of mass drug administrations in 17 communities in Central Australia. Efforts over previous years have demonstrably reduced the prevalence of trachoma in the NT, however in order to sustain this progress and eventually eliminate trachoma improved hygiene and living environments must also be achieved.

Clean faces on children are required to prevent transmission. Environments that support good hygiene – non-crowded houses, good plumbing and fly control are instrumental to preventing the spread of trachoma. Over the coming years we hope that visits to communities such as Utopia will be recording and celebrating achievements in all these areas and the need for drug administration will be markedly reduced.

****

One Disease: Tackling scabies and crusted scabies across the Top End

Rohan Langstaff, Alex Kopczynski, Faye Alvoen, Wayalwanga Marika, Ritjilili Ganambarr, Bandiyal Maymuru, Leonie Wald, Jenny Jenkins, Jules Galliers, Chris Saroukos, Shelley Thompson, Tim Foster, Michele Bray, Duneeshya Gunasekara, Sarah Vick and Sam Prince, One Disease team

One Disease is a non-profit organisation that aims to eliminate crusted scabies and scabies as a health issue in Australia. Scabies is a highly contagious skin disease, which has reached endemic proportions in many remote Aboriginal communities.[1] In some Top End communities 7 out of 10 children acquire scabies at least once in their first year of life.[2-4] Scabies may underlie up to 70% of *Streptococcus pyogenes* (group A streptococcus; GAS) skin infections,[5] which in turn can trigger acute conditions such as post-streptococcal glomerulonephritis and acute rheumatic fever and ultimately long-term chronic kidney disease and rheumatic heart disease.[6,7] In the past, mass administration of permethrin has been successful in reducing scabies,[5,8] but these results have not successfully been scaled or sustained in the long term.[9,10] The reasons for this are complex and community specific, but the presence of individuals with unmanaged crusted scabies is a major contributor.[11,12]

When a person contracts scabies, the body usually mounts an immune response that limits the number of scabies mites to 10-15.[1,13] People who develop crusted scabies (also known as Norwegian scabies) lack an effective immune response to the mite and develop a hyperinfestation with thousands to millions of mites on the body.[13] Most patients have a known immune suppression, however, some Indigenous Australians with no known immune suppression develop crusted scabies.[1,14,15] In the Northern Territory (NT) prior to the development of the *NT Scabies and crusted scabies guidelines* in the 1990s crusted scabies had a 5 year mortality rate of up to 50%.[15]

Starting in late 2011 in East Arnhem Land, *One Disease* has brought a renewed focus to crusted scabies. As part of the *East Arnhem Healthy Skin Program*, a joint initiative with Miwatj Health Aboriginal Corporation and NT Department of Health, *One Disease* trialled a new approach which manages crusted scabies as a chronic condition. This includes regular use of benzyl benzoate as a prophylactic to kill any mites reinfecting patients (as suggested by Currie et al 2004[14]), moisturisers to keep the skin hydrated and regular skin checks. A review of hospital and clinic data found this regimen led to a significant reduction of recurrences of hyperinfestation among individuals, and scabies episodes among their close contacts.[12] The upcoming *6th Edition of the CARPA Standard Treatment Manual* has been updated to reflect this change in practice.

Following on from the work undertaken in East Arnhem, *One Disease* is now expanding its operations to the rest of the Top End. As of April 2014 *One Disease* has an office in Darwin with 4 team members. The 3 key priorities of the Darwin team for 2014 are to:

1. Identify all cases of crusted scabies and initiate preventative care plans in partnership with clinics across the Top End
2. Launch a community-led Healthy Skin Program in Maningrida in partnership with Malabam Health Board and Maningrida Health Centre, and
3. Support community-based organisations, clinics, health services, schools and other groups to run initiatives aimed at reducing scabies and skin sore rates.

Broadly, and with some community differentiation, *One Disease* can offer support to Top End communities across the following areas:

- Health professional education around the identification/diagnosis and management of scabies and crusted scabies.
- Supporting communities and health services to manage crusted and problematic scabies utilising self-management principals.
- Community-based workforce development to carry out scabies surveillance and treatment.
- Mass treatment events with permethrin (Lyclear).
- Community-wide screening and targeted treatment of children.

- Collaboration with various existing stakeholders to prevent duplication and enhance sustainability in order to achieve the above goals.

In total it is anticipated that there will be 40-70 cases of crusted scabies in the Top End. It is likely that most, if not all, major communities will have at least 1 case. *One Disease* have 2 team members carrying out a systematic process to identify every case of crusted scabies across the Top End and support the implementation of the updated *CARPA protocols*. They will be able to offer support to health centres in accurately diagnosing crusted scabies patients, providing education to patients, organising the initial acute treatment, developing chronic condition management plans and providing in services to health centres.

Depending on the success of this next phase and funding availability *One Disease* aims to have a presence across the whole of the NT within the next 18-24 months.

Further information about *One Disease* can be found at www.1disease.org or questions can be directed to Rohan Langstaff (NT Program Manager) 0433 194 552.

References

1. McCarthy JS, Kemp DJ, Walton SF, Currie BJ. Scabies: more than just an irritation. *Postgrad Med J*. 2004;80:382-387.
2. Clucas DB, Carville KS, Connors C, Currie BJ, Carapetis JR, Andrews RM, Disease burden and health-care clinic attendences for young children in remote Aboriginal communities of northern Australia. *Bulletin of the World Health Organisation*. 2008 April;86(4):275-281.
3. McMeniman E, Holden L, Kearns T, Clucas DB, Carapetis JR, Currie BJ, Connors C, Andrews RM. Skin disease in the first two years of life in Aboriginal Children in East Arnhem Land. *Australian J Dermatol*. 2011;52:270-273.
4. Kearns T, Clucas D, Connors C, Currie BJ, Carapetis JR, Andrews RM. Clinic Attendances during the First 12 Months of Life for Aboriginal Children in Five Remote Communities of Northern Australia. *PLoS One*. 2013;8(3).
5. Carapetis JR, Connors C, Yarmirr D, Krause V, Currie BJ. Success of a scabies control program in an Australian aboriginal community. *Pediatr Infect Dis J*. 1997 May;16(5):494-9.
6. Hoy WE, White AV, Dowling A, Sharma SK, Bloomfield H, Tipiloura BT, Swanson CE, Mathews JD, McCredie DA. Post-streptococcal glomerulonephritis is a strong risk factor for chronic kidney disease in later life. *Kidney Int*. 2012 May;8(10):1026-32.
7. Currie BJ, Carapetis JR. Skin infections and infestations in Aboriginal communities in northern Australia. *Australian J Dermatol*. 2000 Aug;41(3):139-43.
8. Wong LC, Amega B, Connors C, Barker R, Dulla ME, Ninnal A, Kolumboort L, Cumaiyi MM, Currie BJ. Outcome of an interventional program for scabies in an Indigenous community. *Med J Aust*. 2001 Oct1;175(7):367-70.
9. Andrews RM, Kearns T, Connors C, Parker C, Carville K, Currie BJ, Carapetis JR. A Regional Initiative to Reduce Skin Infections amongst Aboriginal Children Living in Remote Communities of the Northern Territory, Australia. *PLoS Negl Trop Dis*. 2009;3(11).
10. Centre for Disease Control, Department of Health, Northern Territory. Healthy Skin Program Guidelines for Community Control of Scabies, Skin Sores and Crusted Scabies in the Northern Territory. 2010.
11. Kearns T. Scabies and strongyloidiasis prevalence before and after a mass drug administration in a remote Aboriginal community in the Northern Territory. [PhD thesis] Darwin NT: Charles Darwin University. 2013.
12. Lokuge B, Kopczynski A, Woltmann A, Alvoen F, Connors C, Guyula T, Mulholland E, Cran S, Foster T, Lokuge K, Burke T, Prince S. Crusted scabies in remote Australia, a new way forward: lessons and outcomes from the East Arnhem Scabies Control Program. *MJA*. 2014 June 16;200(11):644-648.
13. Walton SF, Currie BJ.Problems in Diganosing Scabies, a Global Disease in Human and Animal Populations. *Clinical Microbilogy Reviews* 2007 April;20(2):268-297.
14. Currie BJ, Harumal P, McKinnon M, Walton SF. First Documentation of In Vivo and In Vitro Ivermectin Resistance in *Sarcoptes scabiei*. *Clin Infect Dis*. 2004 Jul 1;39(1).
15. Roberts LJ, Huffam SE, Walton SF, Currie BJ. Crusted scabies: clinical and immunological findings in seventy-eight patients and a review of the literature. *J Infect*. 2005 Jun;50(5):375-81.

****

The Adolescent Sexuality Education Project- Community driven approach to improve sexual and reproductive health outcome of all Aboriginal young people across the NT-a further update.

Edwin Lubari[1], Jessica Light[1], Tatenda Muridzi[1], Nathan Ryder[1] Emma Fajardo[2] and Paul Bilal[2]

[1]CDC, Darwin and [2]CDC, Alice Springs

Abstract

Young people age 10-14 years in the Northern Territory (NT), particularly young Aboriginal people experience the highest level of sexually transmitted infections and teenage pregnancies in Australia. Historically sexuality education has not been consistently delivered in the NT, and when delivered it was done in an ad-hoc manner. The Adolescent Sexuality Education Project (ASEP) embraced a community development approach to build the capacity of local people to deliver sexuality education in remote communities across the NT. Communities were consulted, local community based educators identified, and the education resources adapted to suit local needs. This has resulted in the establishment of a consistent and culturally appropriate sexuality education program across the NT. The challenges for the future of sexuality education in the NT include a lack of long-term funding and difficulties reaching young people who are not attending schools.

Key words: community development; educator; sexuality education; young people sexually transmitted infection; capacity building; Northern Territory; consultation

Introduction

The Northern Territory (NT) has the highest rates of sexually transmitted infection (STI) notifications in Australia, with young people comprising the majority of notifications.[1] Nationally, Aboriginal teenagers experience a fertility rate 6 times higher than non-Aboriginal teenagers.[2]

The Adolescent Sexuality Education Project (ASEP) is collaboration between the NT Department of Health (DoH) and the Department of Education (DoE) in association with the Central Australian Aboriginal Congress (CAAC). The ASEP was originally a component of the National Partnership Agreement on Aboriginal Early Childhood Development funded for 5 years by the Office of Aboriginal and Torres Strait Islander Health which concluded in June 2014. ASEP currently has funding for a further year via an Aboriginal Teenage Sexual Health and Parenting Project Agreement with the Australian Government. The goal of the overall project is to improve the sexual health and reproductive health of young Aboriginal people age 10-14 years across the NT. This is to be accomplished through the provision of consistent evidence based sexual and reproductive health education to young people and in particular Aboriginal 10-14 year olds in schools and community settings across the NT through capacity building and resourcing. This article provides a further update on the project, building on the preliminary results published in the first article.[3]

The ASEP undertook a needs analysis in 2010 to determine the availability of adolescent school based and community based sexuality education in the NT, the consistency and quality of resources used and community priorities.[4] The needs analysis found sexuality education was delivered in an ad-hoc manner. The Young Women Community Health Education Program (YWCHEP) program developed by CAAC emerged as the most holistic culturally appropriate sexuality education resource. In partnership with CAAC ASEP funded and developed a male resource called Young Males Community Health Education Program (YMCHEP). The 2 resources (YWCHEP and YMCHEP) form the basis for the ASEP program, with 2 days training sessions provided within communities in the use of the packages. These resources have been reviewed annually against the UNESCO international best practice guidelines and Healthy Teen Network Tool for Assessing Characteristics of Effective Sex and STD/HIV Education Programs, by CAAC for

cultural appropriateness.[5,6] The resources have also been mapped against the NT health and physical education curriculum framework.[7] The needs analysis recommended a community development approach in the design and implementation of ASEP, that sexuality education be incorporated into the school curriculum, and that a whole-of-community approach be undertaken to embed sexuality education into the community setting in a culturally appropriate and sustainable manner.

The ASEP program commenced with community consultations. Consultation were conducted through formal and informal meetings such as presentation and discussion on board meetings, parent's education session, bush camps and 1 on 1 meetings with community elders. Potential prospective community based educators, appropriate training venues and key stakeholders were identified through this process, including assessment of cultural appropriateness of the resources. This approach was underpinned by the community development approach.[8,9]

Outcomes

The project was initiated late 2009 and became fully operational mid-2012. The establishment phase of the project involved conducting need analysis, recruitment and development of the male educational resource and piloting the resources and training model. Between August 2011 and July 2014 the ASEP consulted a total of 1187 people across the NT of which 60% (712) identified as Aboriginal. Of the people consulted; 38% were male, 62% were female (Figure 1). The consultation resulted into training been delivered in 28 remote

Figure 1. Number of people consulted 2011-2014 by region

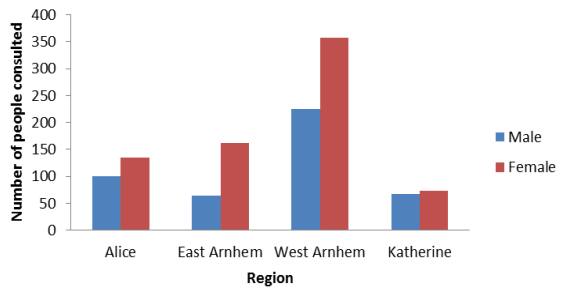
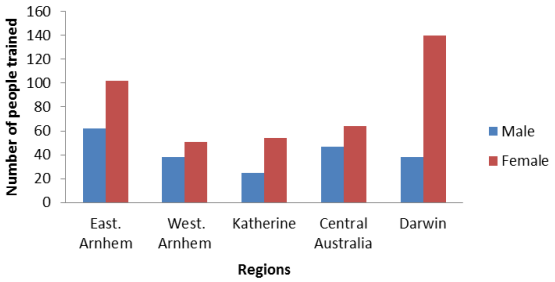


Figure 2. Number of people trained across NT 2011- 2014



communities. A total of 677 people were trained to the deliver the YWCHEP or YMCHEP, and were known as Community Based Educators (CBE) (Figure 2). Of the trained CBEs, 224 (33%) were male and 453 (67%) were female. 34% (233) of the trained CBE identified as Aboriginal, 24% (102) non-Aboriginal and 42% (135) unknown (Figure 3). 57% (16) of the trained communities have implemented or are implementing the program in school setting, 29% (8) out of school setting and 14% (4) are not implementing due to staff turnover including CBE's (Figure 4).

As the program become operational in East Arnhem initially and recently in the other regions there is a large disparity in the number of people consulted and trained across the regions (Figures 1 and 3).

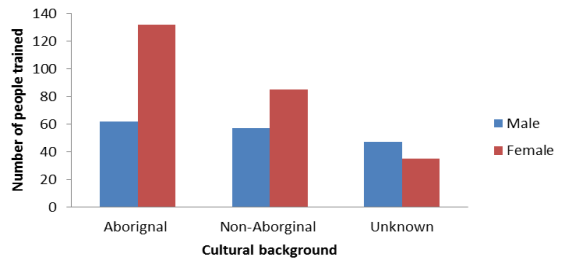
The majority of the education delivery to young people occurs in the school setting. In some sites this occurs both in school and outside of school. In others this occurs only in 1 setting, either in school or outside of school. The outside of school education mainly occurred through youth groups or centres and youth camps.

Discussion

There is significant evidence that effective behavioural programs that are holistic and delivered sequentially over a period of time can influence sexual behavior.[5,6,10]

Over the past 3 years the ASEP project consulted broadly with Aboriginal communities including schools, primary health care centres, youth services and elders. The outcome has been that the majority of trained CBEs are Aboriginal.

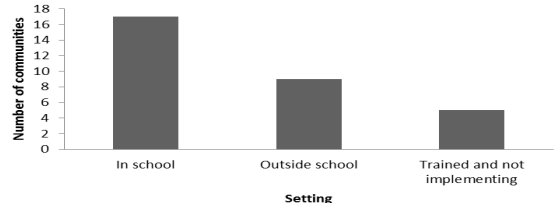
Figure 3. People trained by cultural background 2011-2014



Though Aboriginal women were trained at twice the rate of Aboriginal men, there has been an increase in Aboriginal men's participation over the past 4 years of the project which has been felt to be due in part on the growing awareness of the program across communities.

Schools have been the primary setting for program implementation due to the ability to access groups of young people in 1 location and link to the health curriculum. Some schools have indicated competing priorities and a lack of staff as a barrier to program implementation. This has impacted on the projects' ability to fully achieve its goal particularly in small communities with limited services capable of working beside teachers. ASEP will continue to work with the Department of Education to increase the program implementation by developing strategies to assist smaller schools and ensure the ongoing promotion of the program. While schools were the primary target, as not all young people attend schools, the need for alternative settings is recognised. Following the training 100% of the participants reported they intended to implement the program in their communities and perceived the program as essential for their young people reflecting the strength of the project in motivating local people. The evaluation indicated that the majority of trained CBE would benefit from ongoing support. This included: additional resources, session planning, co-facilitation and re-training.

Figure 4. Communities implementing the program 2013-2014



Conclusion

The ASEP project has been successful in delivering training that has increased the capacity of local communities to deliver evidence based sexuality education. Success of the project is attributed to the meaningfully community consultation that values the local knowledge, resources and allows for development of localised program. The project has established consistency in sexuality education across NT, by providing NT wide training and post training implementation support. Though preliminary results showed the potential of the project, realisation of the full potential of the project and sustaining current gains will require an ongoing investment.

Acknowledgements

We would like to thank the following people who have had significant input into the ASEP: Jocelyn Perry, Michael Borenstein, Jamie Broadfoot, Vicki Krause, Steven Skov, Nathan Ryder, Jiunn-Yih Su, Jan Holt, Lida Curran, Joel Curtain, Michael O'Halloran, Debi Bodden, Kyle Osborne, Greta Enbom, Blake Edwards, Raenae Reeves, Jordan Braver. Katherine Moriarty, Donna Lemon, Wayne Campbell, Fiona Haddon, Sheralee Fitz, Natalee Norsworthy, Warwick Beever and Isabella Tusa. The ASEP also acknowledge and thank those communities who have generously embraced the project and all stakeholders that worked in partnership with the ASEP.

Reference

1. Sexual Health and Blood Born Virus Unit, Surveillance Update, Northern Territory Department of Health. 2013;14 (1). Available from URL: http://www.health.nt.gov.au/Centre_for_Disease_Control/Publications/Sexual_Health_Surveillance_Updates/index.aspx
2. ABS. Aboriginal and Torres Strait Islander births and fertility. Available from URL:*http://www.abs.gov.au/ausstats/abs@.nsf/Products/3301.0~2012~Main+Features~Abor*

iginal+and+Torres+Strait+Islander+births+and+fertility?OpenDocument) [Online].

3. Borenstein M, Curran L, Fajardo E, Lubari E and Murid T. The Adolescent Sexuality Education Project – A NT innovation designed to improve the sexual health of young Aboriginal people. *NT Dis Control Bull*. 2013; 20 (2):12-15.
4. Landman J. Needs Analysis: Indigenous Adolescent Sexuality Education Project, Sexual Health and Blood Born Virus Unit, Northern Territory Department of Health and Families. 2010 ;(unpublished).
5. UNESCO. International Guidelines on Sexuality Education: An evidence informed approach to effective sex, relationships and HIV/STI education. 2009. Available from URL: http://unesdoc.unesco.org/images/0018/001832/183281e.pdf
6. Kirby D, Rolleri L, Wilson. Tool to access the characteristics of Effective Sex and STD/HIV Education Programs, Washington. DC: Health Teen Network. 2007. Available from URL: http://www.healthyteennetwork.org/vertical/sites/%7BB4D0CC76-CF78-4784-BA7C-5D0436F6040C%7D/uploads/%7BAC34F932-ACF3-4AF7-AAC3-4C12A676B6E7%7D.PDF
7. Department of Education, Northern Territory Curriculum framework, Northern Territory Government (DoE). 2012. Available from URL: http://www.education.nt.gov.au/teachers-educators/curriculum-ntbos/ntcf
8. Abiona IA, Bello WN. Grassroots Participation in Decision-Making Process and Development Programmes as Correlate of Sustainability of Community Development Programmes in Nigeria. *Journal of Sustainable Development*. 2013;6(3):47-57.
9. Talbot L, Verrinder G. Promoting Health, The Primary Health Care Approach. Australia: Elsevier; 2006.
10. Dooris M. Holistic and sustainable health improvement: the contribution of the settings-based approach to health promotion. *Perspect Public Health*. 2009; 129(1):29-36.

****

Register now

1-3 September 2014

Centre for Disease Control Conference

Museum and Art Gallery of the Northern Territory

This is a free event
Program and registration now available

Contact Roberta Smith via email for more information
roberta.smith@nt.gov.au

The annual 3 day Centre for Disease Control (CDC) Conference will be held in Darwin from 01 to 03 September 2014.

Topics covered

Day 1: Surveillance, Rheumatic Heart Diseases, Injury Prevention, Alcohol & Other Drugs and Medical Entomology
Day 2: Measles, TB, Immunisation, Prison Health, Trachoma and the CDC Quiz.
Day 3: Sexual Health and Blood Borne Virus, Trachoma and Scabies.

New Executive Director Northern Territory AIDS and Hepatitis Council (NTAHC)

Ms. Kim Gates has been selected and appointed to the position of Executive Director with the Northern Territory AIDS and Hepatitis Council (NTAHC). Kim is originally from Western Australia (WA) were she worked in the WA public service in the areas of housing and education before moving into the not-for-profit alcohol and other drug sector. She moved to Darwin in December 2000 to take up a position at the Council for Aboriginal Alcohol Program Services (CAAPS). After 8 years as the Chief Executive Officer of CAAPS Kim was recruited as the Deputy Director at the Office of Aboriginal and Torres Strait Islander Health (OATSIH) in the then Department of Health and Ageing. Kim has also worked for the Northern Territory Government for short periods of time in the Department of Health and the Department of Justice.

Kim has served in the position of Deputy Director with NTAHC since November 2012, prior to her appointment as Executive Director. Kim holds a Masters in Indigenous Health and a Graduate Diploma in Indigenous Health from Sydney University and a Certificate 4 in Workplace Training and Assessment.

****

AIDS Candlelight Memorial

Northern Territory AIDS & Hepatitis Council (NTHAC) hosted a Candlelight Memorial in Darwin on 16 May and Alice Springs on 18 May which featured a complimentary screening of '*Friends of Dorothy*' narrated by award-winning artist and film maker William Yang.

The screening was introduced by Her Honour the Honourable Sally Thomas AC, Administrator of the NT and Patron of NTAHC. William recorded a video introduction especially for the Darwin and Alice Springs audiences to start the evening.

The film is based on his acclaimed book and live performance of the same name. The autobiographical film featured more than 650 of William's photographs exploring the development of the Sydney gay and lesbian communities from the 60's to the present, with a particular focus on HIV/AIDS during the 80's and 90's. It was both a trip down memory lane for some and a history lesson for others.

Coinciding with the Asia Pacific Outgames' Closing Ceremony in Darwin, local, national and international guests were moved by William's faithful chronicle of a significant period in Sydney. The Alice Springs screening was shown to a capacity audience, with people needing to be turned away.

Conversations about alcohol and pregnancy: Prevention of FASD

Emily O'Kearney, CDC, Darwin

Introduction

On 20 May 2014 Menzies School of Public Health Research hosted the event *Conversations about alcohol and pregnancy: Prevention of FASD*. Recently, the Northern Territory (NT) Legislative Assembly had formed a Select Committee on Action to Prevent Fetal Alcohol Spectrum Disorder (FASD). The Committee was to inquire into and report on:

- The prevalence in the NT of FASD
- The nature of the injuries and effects of FASD on its sufferers
- Actions the Government can take to reduce FASD based on evidence and consultation.

The event was timely with the formation of this committee.

Contents of the seminar

Canadian Nancy Poole, Director of Research and Knowledge Translation for the British Columbia Centre of Excellence for Women's Health in Vancouver, presented on the 4 levels of prevention. These were:

- Level 1: broad awareness building and health promotion efforts to encourage information seeking, influence awareness levels and inform which services are available.
- Level 2: the discussion of alcohol use and related risks with all women of childbearing age and their support networks. This involves identifying women who are drinking and who may become pregnant and preparing health professionals to discuss alcohol and pregnancy with them. Also to train health professionals in providing brief interventions, increasing alcohol literacy with screening and providing clear messages to these women. This needs to be done being honest about the limits of evidence and recognising there is no known amount of alcohol that does not cause damage to a fetus and the safest option is to consume no alcohol.
- Level 3: specialised, holistic support of pregnant women with alcohol and other health/social problems. This includes a holistic approach with housing, antenatal care and drug and alcohol support.
- Level 4: postpartum support for new mothers and support for child assessment and development. This level works to decrease risk of another child being born with FASD to the mother and to ensure ongoing support for mothers to reduce substance abuse after giving birth.

Anne Russell, founder of the Russell Family Fetal Alcohol Disorders Association (rffada), presented her experience as the mother of 2 children with FASD and the reasons why she came to establish the rffada.

A question and answer panel followed. Panel members included Nancy Poole, Anne Russell, Dr Keith Edwards (community paediatrician), Nikki Petrou (lawyer at Top End Women's Legal Service) with Heather D'Antoine (associate Director, Aboriginal Programs, Menzies School of Health Research) as chair. Some of the discussions in the question and answer panel revolved around:

- FASD is difficult to diagnose and most features are not specific to FASD.
- It is possible to treat some of the symptoms without a diagnosis of FASD, but individual funding is not provided without a diagnosis.
- Many children with presumed FASD need assistance with education are without funding support.
- Discussions around alcohol can be included in antenatal care for all women.
- Pregnant women who drink may be victims of violence.
- Symbols on alcohol beverages are still optional for alcohol companies.
- Community engagement is important and different strategies will be needed for different communities. Understanding the needs of each community is important.
- Women find it easier to quit or decrease alcohol intake if their partner also quits or decreases alcohol intake, therefore, programs can involve partners.

Conclusion

The NT Select Committee on Action to Prevent FASD held hearings on 29 May 2014 and is to report in the NT parliamentary Legislative Assembly sittings in October.

Canada has provided examples of options to address FASD and to work towards preventing the disability using the 4 Levels of prevention, as reported here.

****

Summary of Kirby report on the STRIVE stakeholder workshop

Linda Garton, CDC, Darwin

Background

Coordinators of the STRIVE Project held a Stakeholder Workshop in Alice Springs on 15 April 2014 to disseminate preliminary analysis findings of the trial. The aims of the National Health and Medical Research Council (NHMRC) funded STRIVE project were to investigate whether a sexual health quality improvement program (SHQIP) could lead to substantial improvement in the uptake of testing and management of curable sexually transmitted infections and whether this results in a decline in community prevalence. The trial focussed on chlamydia, gonorrhoea and trichomonas which are at very high levels among young people living remotely across Northern Australia. Participating health services in the NT, WA and QLD were randomly selected to receive the SHQIP in Round 1, 2 or 3. The trial, is currently in its third year, therefore, all health services are now receiving the SHQIP.

Results presented to stakeholders at the workshop were preliminary findings in STI testing and results for chlamydia, gonorrhoea and trichomonas infections. Laboratory data from pathology service providers were used for the analysis. Data were stratified by number of STI tests; number of positive chlamydia and/or gonorrhoea and/or trichomonas tests; age group and sex and by the 'Year' health services received the SHQIP (e.g. Round 1, 2 or 3). Results are described in Year 1, 2 and 3 (3 year trial).

Results

There was an increase in chlamydia testing by 37%, across all participating health services, between Years 1 and 3, with Round 2 health services showing the biggest increase in number of tests. The highest number of tests occurred in those aged 20-24 years and females were twice as likely to be tested compared to males across all age groups. There was only a small decline in overall STI prevalence over the 3 year period.

Coordinators of the trial stated further analysis would be conducted on completion of the trial to assess the impact of the SHQIP on increasing testing activity and whether this results in a reduction of prevalence overtime.

Discussion

Early evidence of increased STI testing activity was seen as encouraging but it was recognised that a sustained long term continuous quality improvement approach in program delivery was needed to see a reduction in community prevalence over time. There was broad consensus that the systematic cyclical approach to sexual health quality improvement, implemented by the STRIVE trial had served to put sexual health back on the agenda for primary health care services. The STRIVE SHQIP model will be integrated into the NT Sexual Health and Blood Borne Virus Program to instigate sustainability of processes implemented throughout the trial.

****

Northern Territory Government

Centre for Disease Control

July 2014

Shingles (Herpes zoster)

What is shingles?

Herpes zoster or shingles is a localised, painful rash caused by reactivation of the varicella zoster virus (VZV) which also causes chickenpox. You can only develop shingles if you have already had chickenpox.Shingles occurs in 10-20% of individuals, usually many years after the initial chickenpox illness and is more common in people who are over 50 years of age or who have poor immune systems.

How is it spread?

Shingles is not spread from person to person. However, the blister fluid from the shingles rash is infectious and contact with the blister fluid can cause chickenpox in a person who has not previously had chickenpox. Shingles is less contagious than chickenpox and the risk of a person with shingles spreading the virus is low if the rash is covered.

What are the symptoms?

Shingles usually presents as a blistering (vesicular) rash which is often painful and lasts for up to 2 weeks. The rash occurs in skin supplied by the affected nerve, is usually on 1 side of the body and is often on the trunk or neck and sometimes affects the eyes. Often in the 48-72 hours before the rash appears people complain of itching or tingling or severe pain in the area of the affected nerve. Headache, lethargy and photophobia (intolerance of light) may also occur.

How serious is shingles?

The most common complication of shingles is chronic nerve pain (post-herpetic neuralgia or PHN) that may last for several months to several years in the affected area. This occurs in 25-50% of shingles cases and is more common in people over 50 years of age. The pain is often difficult to control.

Other complications include:

- Scarring
- Secondary bacterial skin infection
- Nerve complications such as nerve palsies
- Pneumonia
- Eye damage where the ophthalmic nerve has been affected.

People who are immune-compromised are more likely to develop shingles and may develop more widespread lesions.

What is the infectious period?

Infection from blister fluid is possible until the lesions are dry and crusted over (5 – 7 days from the when the rash appears).

What is the treatment?

Anti-viral treatment can be used for shingles to reduce the severity and duration of pain and promote early healing. Anti-viral treatment is most effective if started within 3 days of the onset of rash. Discuss the use of antiviral treatment and pain management with your doctor as required.

How can shingles be prevented?

There is now a vaccine available that can reduce the risk of developing shingles and the long-term pain from PHN. The shingles vaccine is a live attenuated vaccine recommended as a single dose for all persons ≥60 years of age. The vaccine can also be given to persons 50-59 years of age however it is not known how long the protection will last and if a booster dose will be required. The vaccine is not registered for use in persons <50 years of age.

The vaccine should not be given to persons who are severely immunocompromised or those who have previously received a chickenpox vaccine. It is not necessary

CENTRE FOR DISEASE CONTROL

to have a blood test to check for previous chickenpox disease and the vaccine can be given on the same day as other vaccines.

People who wish to be vaccinated should talk to their doctor for a prescription; the vaccine will need to be purchased privately.

Side effects of the vaccine

Mild reactions at the injection site, such as pain, swelling and redness, are likely to occur in approximately 50% of vaccine recipients. Other side-effects that may occur include headache and fatigue.

People who are vaccinated and develop shingles should still present to their health practitioner for diagnosis and timely prescription of treatment, such as antiviral medication, which is best commenced within 3 days of rash onset.

Related fact sheet - Chickenpox. http://www.health.nt.gov.au/library/scripts/objectifyMedia.aspx?file=pdf/25/52.pdf&siteID=1&str_title=Chickenpox.pdf

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

Alice Springs	8951 7540
Darwin	8922 8044
Katherine	8973 9049
Nhulunbuy	8987 0357
Tennant Creek	8962 4259

or

www.nt.gov.au/health/cdc

Disease Control fact sheets are available from your nearest CDC or from our website at www.nt.gov.au/health/cdc/cdc.shtml

Congratulations Lesley Scott
2014 Nursing and Midwifery Awards
Award Winner—Innovation, Research and Education

Congratulations to CDC's Lesley Scott on being awarded the 2014 Nursing and Midwifery Award for Innovation, Research and Education.

The following is an extract from the Awards ceremony and additional words that contributed to this honour and award.

Lesley is hard to equal in her breadth of knowledge and her wide-ranging capabilities that have led to her outstanding contributions in education, research and innovation and her original approaches to health practices. Lesley first came to work in the NT Department of Health in 1985 and has continued within the Communicable Disease team for 29 years. She has been fundamental to establishing public health initiatives that have been successfully implemented and expertly maintained and systematised. She has expertly researched background material for disease control policies and guidelines and programs which include preparation for publications and coordination of information for easy access by health care professionals and for the CDC website. Outstanding in this area would be her contributions to leprosy, tuberculosis, malaria, acute post streptococcal glomerulonephritis, hepatitis B, seasonal influenza and pandemic influenza guidelines. Lesley has prepared education text and on-line materials and education programs relating to communicable diseases for participants across the range of health professions, for police, quarantine workers, power and water staff, teachers, child care and aged care workers and members of the public. She has been an expert consultant to other nurses and medical trainees in implementing public health responses both to the individual and in outbreak settings.

Along the way Lesley has set an example for the value of education in completing certificates in Midwifery, Infectious Diseases (from the former Fairfield Infectious Diseases Hospital), Health Promotion and About Giving Vaccines, as well as obtaining an Associate Diploma in Adult Education and a Masters of Public Health and Tropical Medicine.

Lesley is generous in her teaching, a master at developing innovative and sustainable solutions in CDC and beyond …and she also just gets in there and does the work as exemplified in the recent measles outbreak and in the past in the SARs and the pandemic responses… and more. Her extensive knowledge and experience combined with her organisational skills and efficiency have made Lesley an outstanding and our award winning public health nurse.

CDC colleagues at the 2014 Nursing and Midwifery Awards Darwin celebrations: Heather Cook, Chris Nagy (nominated for Lifetime achievement), Lesley Scott, Belinda Farmer, Vicki Krause, Gabrielle Watt (nominated for Primary Health Care).

Abstracts from peer reviewed published articles related to the Northern Territory

Decreasing prevalence of *Trichuris trichiura* (whipworm) in the Northern Territory from 2002 to 2012

A Crowe, P Smith, L Ward, BJ Currie and R Baird

MJA 2014; 200: 286-289, doi: 10.5694/ mja13.100141

Objective: To observe the prevalence, disease associations, and temporal trends in *Trichuris trichiura* (whipworm) infection in the Northern Territory (NT) between 2002 and 2012.

Design, participants and setting: Retrospective observational analysis of consecutive microbiologically confirmed cases of *T. trichiura* infection among members of the NT population from whom a faecal sample was obtained for testing by NT Government health care facilities between 1 January 2002 and 31 December 2012.

Main outcome measures: Annual prevalence of *T. trichiura* infection; age, sex, Indigenous status and place of residence of infected patients; percentage of infected patients with anaemia (haemoglobin level, ≤ 110 g/L) and eosinophilia (eosinophil count, ≥ 0.5 × 10^9/L).

Results: 417 episodes of *T. trichiura* infection were identified over the 11 years from 63 668 faecal samples. The median age of patients was 8 years (interquartile range [IQR], 3–36 years). Patients were predominantly Indigenous (95.3%; $P = 0.001$) and from 3 main geographical areas (Victoria Daly, East Arnhem Land and West Arnhem Land). Infections were associated with anaemia (40.2%) and eosinophilia (51.6%). There was a downward trend in the prevalence of *T. trichiura* infection diagnosed at NT Government health care facilities, from 123.1 cases (95% CI, 94.8–151.3 cases) per 100 000 Indigenous population in 2002 to 35.8 cases (95% CI, 21.8–49.9 cases) per 100 000 Indigenous population in 2011.

Conclusions: *T. trichiura* is the most frequently identified soil-transmitted helminth infecting patients in NT Government health care facilities. Cases are identified predominantly in Indigenous patients in remote communities. We have observed a declining prevalence of whipworm infection in the NT.

****

Trends in HIV, hepatitis B and hepatitis C prevalence among Australian prisoners - 2004, 2007, 2010

JM Reekie, MH Levy, AH Richards, CJ Wake, DA Siddall, HM Beasley, S Kumar and TG Butler

MJA 2014; 200: 277-280, doi: 10.5694/ mja13.11062

Objective: To report the prevalence of markers for HIV infection, hepatitis B and hepatitis C among Australian prison entrants.

Design: Cross-sectional survey conducted over 2-week periods in 2004, 2007 and 2010.

Setting: Reception prisons in New South Wales, Queensland, Tasmania and Western Australia.

Participants: Individuals entering prison from the community during the survey periods.

Main outcome measure: Prevalence of anti-HIV antibody (anti-HIV), hepatitis B surface antigen (HBsAg), anti-hepatitis B core antibody (anti-HBc) and anti-hepatitis C virus antibody (anti-HCV).

Results: The study included 1742 prison entrants: 588 (33.8%) in 2004, 536 (30.8%) in 2007 and 618 (35.5%) in 2010. The age-standardised prevalence estimates for anti-HIV, HBsAg and anti-HBc were 0.4%, 2.3% and 21.7% respectively, and remained stable over the three survey periods. The age-standardised prevalence estimate for anti-HCV was 29.0%; it decreased over time (33.3% in 2004 v 23.2% in 2010; $P = 0.001$), and this coincided with a decrease in prison entrants reporting injecting

drug use (58.3% [343/588] in 2004 v 45.3% [280/618] in 2010; $P < 0.001$). Among injecting drug users, the prevalence of anti-HCV was 57.2% and did not change significantly over time. Of those who were anti-HCV positive, 33.7% (140/415) were unaware of their infection status, and 74.3% (185/249) of those who tested positive for anti-HBc reported that they had never had hepatitis B.

Conclusions: HIV prevalence is low in the Australian prisoner population but transmission remains a risk. Despite a decrease in the proportion of prison entrants reporting injecting drug use, prevalence of hepatitis B and hepatitis C has remained high. Treatment and prevention initiatives should be prioritised for this population.

****

Use of Royal Darwin Hospital emergency department by immigration detainees in 2011

AK Deans, CJ Boerma, J Fordyce, M De Souza, DJ Palmer and JS Davis

MJA 2013; 199: 776-778, doi: 10.5694/ mja13.10447

Objective: To describe the number and nature of emergency department (ED) attendances by immigration detainees in Darwin, in the Northern Territory, over a 12-month period.

Design and setting: Retrospective observational study of immigration detainees attending the Royal Darwin Hospital ED during the 2011 calendar year.

Main outcome measures: Number of ED attendances and primary diagnoses.

Results: In 2011, there were 770 ED attendances by 518 individual detainees at Royal Darwin Hospital. Those who attended the ED had a mean (SD) age of 27.6 (12.2) years, and 112 of them (21.6%) were children. Most (413, 79.7%) were male, and Iran and Afghanistan were the two most common countries of birth. We estimate that 50.1% (95% CI, 47.0%–53.2%) of immigration detainees in Darwin (mean, 776 per month; total, 1034), attended the Royal Darwin Hospital ED at least once in 2011. The most common primary diagnosis was psychiatric problems (187 attendances, 24.3%), including self-harm (138 attendances, 17.9%).

Conclusion: In 2011, asylum seekers in immigration detention in Darwin had a high prevalence of unmet health needs and substantial levels of psychiatric morbidity. The primary health care provided to them was inadequate.

****

Dementia prevalence and incidence among the Indigenous and non-Indigenous populations of the Northern Territory

S Q Li, S L Guthridge, PE Aratchige, MP Lowe, Z Wang, Y Zhao and V Krause

MJA 2013; 200: 465-469, doi: 10.5694/ mja13.11052

Objective: To estimate the prevalence and incidence of dementia in Northern Territory Indigenous and non-Indigenous populations.

Design, setting and participants: Four data sources were used to identify clients with a diagnosis of dementia, from 1 January 2008 to 31 December 2011. The data sources included hospital admissions, aged care services, primary care and death registration. A capture–recapture method was used to estimate prevalence and incidence, including both diagnosed and unknown cases.

Main outcome measures: Prevalence and incidence of dementia among the NT Indigenous and non-Indigenous populations.

Results: In 2011, the estimated prevalence in the NT Indigenous population aged 45 years and over was 3.7 per 100, and 1.1 per 100 in the corresponding NT non-Indigenous population. The age-adjusted prevalence for the NT Indigenous population was 6.5 per 100, compared with the NT non-Indigenous prevalence of 2.6 per 100, which was similar to the national rate. The prevalence rate ratios of NT Indigenous to NT non-Indigenous men and women, respectively, were: 6.5 and 5.5 for the 45–64-years age group, 4.0 and 4.1 for those

aged 65–74 years and 2.1 and 1.9 for those aged 75 years and over. The age-adjusted incidence among the NT Indigenous population aged 45 years and over (27.3 per 1000 person-years) was higher than that among the NT non-Indigenous population (10.7 per 1000 person-years).

Conclusion: The NT Indigenous population has a much higher prevalence and incidence of dementia and younger onset of disease compared with their non-Indigenous counterparts. The results highlight the urgent need for interventions to moderate the emerging impact of dementia in the Australian Indigenous population.

****

Trichomonas vaginalis as a cause of perinatal morbidity: A systematic review and meta-analysis

BJ Silver, RJ Guy, JM Kaldor, MS Jamil, AR Rumbold

Sex Transm Dis. 2014 Jun;41(6):369-76.

Trichomonas vaginalis is the most common curable sexually transmissible infection worldwide, with high rates in women of reproductive age. There have been inconsistent findings about the impact of infection and its treatment in pregnancy. We conducted a meta-analysis to determine the association between *T. vaginalis* and perinatal outcomes. Electronic databases were searched to May 2013. Included studies reported perinatal outcomes in women infected and uninfected with *T. vaginalis*. Meta-analysis calculated a pooled relative risk (RR) and 95% confidence interval (CI) using either a fixed- or random-effects model. Study bias was assessed using funnel plots. Of 178 articles identified, 11 studies met the inclusion criteria. The study populations, outcomes, and quality varied. T. vaginalis in pregnancy was associated with an increased risk of preterm birth (RR, 1.42; 95% CI, 1.15–1.75; 9 studies; n = 81,101; I2 = 62.7%), preterm premature rupture of membranes (RR, 1.41; 95% CI,1.10–1.82; 2 studies; n = 14,843; I2 = 0.0%) and small for gestational age infants (RR, 1.51; 95% CI,1.32–1.73; 2 studies; n = 14,843; I2 = 0.0%). Sensitivity analyses of studies that accounted for coinfection with other sexually transmissible infection found a slightly reduced RR of 1.34 for preterm birth (95% CI, 1.19–1.51; 6 studies; n = 72,077; I2 = 11.2%), and in studies where no treatment was confirmed, the RR was 1.83 (95% CI, 0.98–3.41; 3 studies; n = 1795; I2 = 22.3%). Our review provides strong evidence that *T. vaginalis* in pregnancy is associated with an increased risk of preterm birth. Based on fewer studies, there were also substantial increases in the risk of preterm premature rupture of membranes and small for gestational age infants. Further studies that address the current gaps in evidence on treatment effects in pregnancy are needed.

****

Serotype-specific changes in invasive pneumococcal disease after pneumococcal conjugate vaccine introduction: A pooled analysis of multiple surveillance sites

DR Feikin , EW Kagucia , JD Loo, R Link-Gelles ,MA Puhan ,T Cherian, OS Levine, CG Whitney, KL O'Brien, MR Moore

PloS 2013, 10(9):e DOI: 10.1371/ journal.pmed.1001517

Background: Vaccine-serotype (VT) invasive pneumococcal disease (IPD) rates declined substantially following introduction of 7-valent pneumococcal conjugate vaccine (PCV7) into national immunization programs. Increases in non-vaccine-serotype (NVT) IPD rates occurred in some sites, presumably representing serotype replacement. We used a standardized approach to describe serotype-specific IPD changes among multiple sites after PCV7 introduction.

Methods and Findings: Of 32 IPD surveillance datasets received, we identified 21 eligible databases with rate data ≥2 years before and ≥1 year after PCV7 introduction. Expected annual rates of IPD absent PCV7 introduction were estimated by extrapolation using either Poisson regression modeling of pre-PCV7 rates or averaging pre-PCV7 rates. To estimate whether changes in rates had occurred following PCV7 introduction, we calculated site specific rate ratios by dividing observed by expected IPD rates for each post-PCV7 year. We calculated summary rate ratios (RRs) using random effects meta-analysis. For children <5 years old, overall IPD decreased

by year 1 post-PCV7 (RR 0·55, 95% CI 0 46–0 65) and remained relatively stable through year 7 (RR 0·49, 95% CI 0·35–0·68). Point estimates for VT IPD decreased annually through year 7 (RR 0·03, 95% CI 0·01–0·10), while NVT IPD increased (year 7 RR 2·81, 95% CI 2·12–3·71). Among adults, decreases in overall IPD also occurred but were smaller and more variable by site than among children. At year 7 after introduction, significant reductions were observed (18–49 year-olds [RR 0·52, 95% CI 0·29–0·91], 50–64 year-olds [RR 0·84, 95% CI 0·77–0·93], and ≥65 year-olds [RR 0·74, 95% CI 0·58–0·95]).

Conclusions: Consistent and significant decreases in both overall and VT IPD in children occurred quickly and were sustained for 7 years after PCV7 introduction, supporting use of PCVs. Increases in NVT IPD occurred in most sites, with variable magnitude. These findings may not represent the experience in low-income countries or the effects after introduction of higher valency PCVs. High-quality, population-based surveillance of serotype-specific IPD rates is needed to monitor vaccine impact as more countries, including low-income countries, introduce PCVs and as higher valency PCVs are used.

****

Echocardiographic screening for rheumatic heart disease in high and low risk Australian children

K Roberts, G Maguire, A Brown, D Atkinson, B Reményi, G Wheaton, A Kelly, RK Kumar, JY Su, JR Carapetis

Circulation 2014 May 13;129(19):1953-61. DOI: 10.1161/ CIRCULATIONAHA.113.003495

Background: Echocardiographic screening for rheumatic heart disease (RHD) is becoming more widespread, but screening studies to date have used different echocardiographic definitions. The World Heart Federation has recently published new criteria for the echocardiographic diagnosis of RHD. We aimed to establish the prevalence of RHD in high-risk Indigenous Australian children using these criteria and to compare the findings with a group of Australian children at low risk for RHD.

Methods and results: Portable echocardiography was performed on high-risk Indigenous children aged 5 to15 years living in remote communities of northern Australia. A comparison group of low-risk, non-Indigenous children living in urban centers was also screened. Echocardiograms were reported in a standardized, blinded fashion. Of 3946 high-risk children, 34 met World Heart Federation criteria for definite RHD (prevalence, 8.6 per 1000 [95% confidence interval, 6.0-12.0]) and 66 for borderline RHD (prevalence, 16.7 per 1000 [95% confidence interval, 13.0-21.2]). Of 1053 low-risk children, none met the criteria for definite RHD, and 5 met the criteria for borderline RHD. High-risk children were more likely to have definite or borderline RHD than low-risk children (adjusted odds ratio, 5.7 [95% confidence interval, 2.3-14.1]; P<0.001).

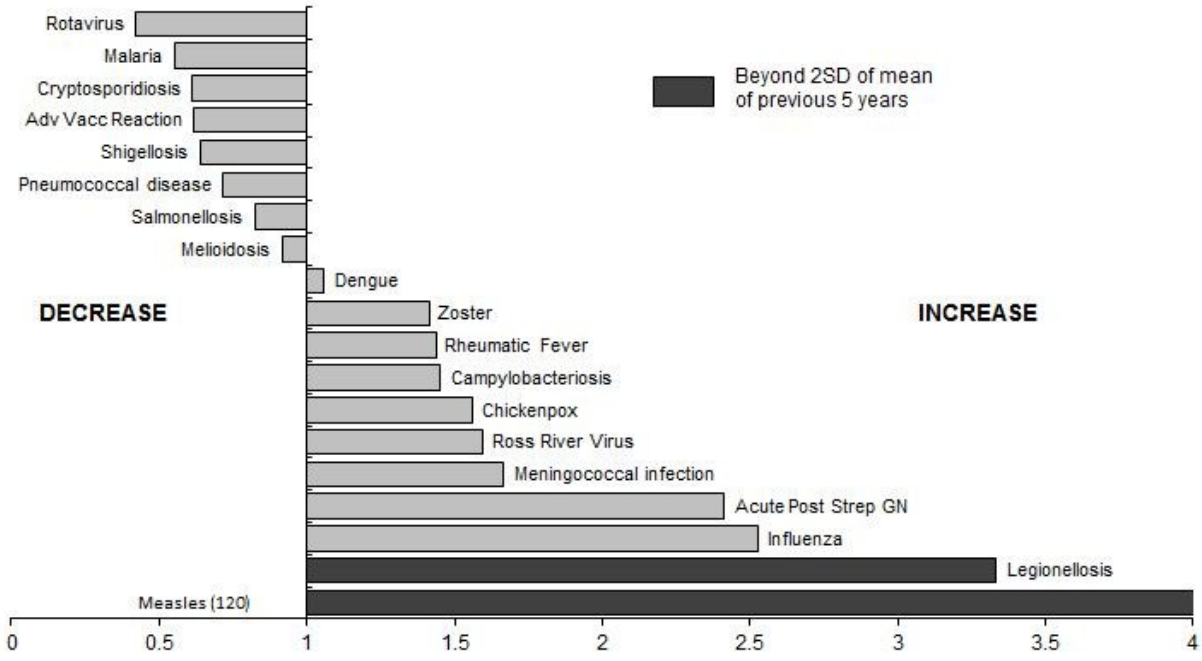
Conclusions: The prevalence of definite RHD in high-risk Indigenous Australian children approximates what we expected in our population, and no definite RHD was identified in the low-risk group. This study suggests that definite RHD, as defined by the World Heart Federation criteria, is likely to represent true disease. Borderline RHD was identified in children at both low and high risk, highlighting the need for longitudinal studies to evaluate the clinical significance of this finding.

****

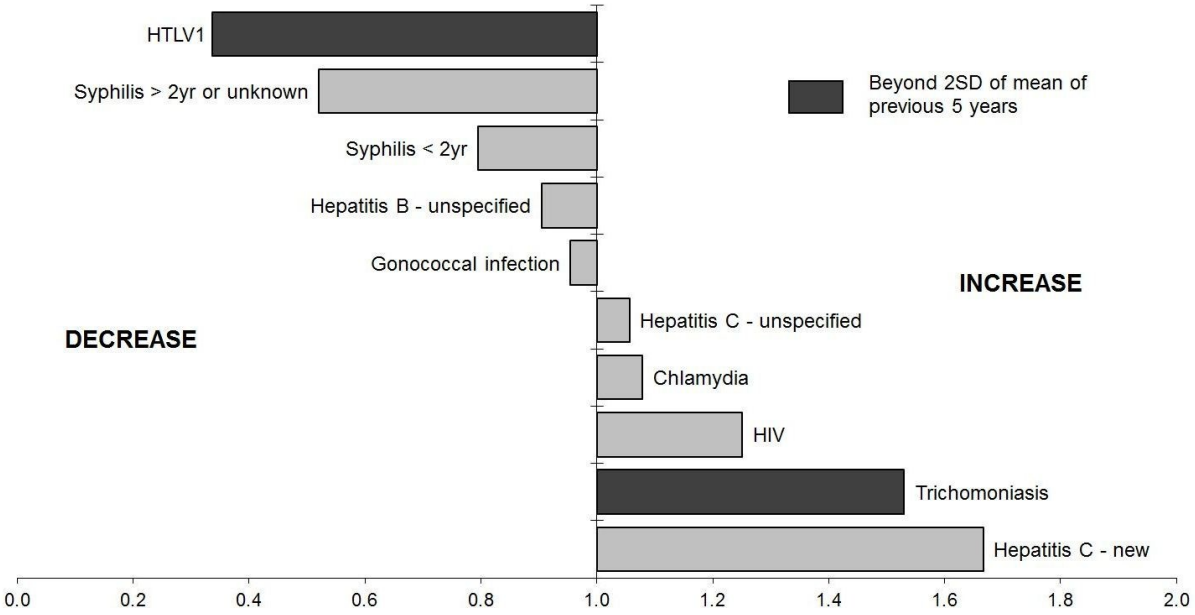
NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS
1 January—31 March 2014 & 2013

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		N T	
	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013
Acute post-strep glomerulonephritis	2	0	0	0	2	1	2	0	8	1	14	2
Adverse vaccine reaction	3	4	0	1	5	9	1	0	1	6	10	20
Amoebiasis	0	0	0	1	0	0	0	0	0	0	0	1
Arbovirus not otherwise specified	0	0	0	0	0	1	0	0	0	0	0	1
Barmah Forest	0	10	0	1	6	112	1	2	0	8	7	133
Campylobacteriosis	27	9	0	1	38	31	2	2	9	5	76	48
Chickenpox	7	4	0	0	14	23	5	11	8	0	34	38
Chlamydia	191	230	21	16	377	363	41	40	98	79	728	728
Chlamydial conjunctivitis	2	0	0	0	2	5	0	0	0	4	4	9
Cryptosporidiosis	11	6	0	3	16	15	4	1	5	5	36	30
Dengue	0	2	0	1	28	15	0	1	1	0	29	19
Food/water borne disease	0	7	0	0	0	0	0	0	0	0	0	7
Gastroenteritis - related cases	4	7	0	0	0	0	0	0	0	0	4	7
Gonococcal conjunctivitis	1	0	0	0	0	0	0	0	1	1	2	1
Gonococcal infection	197	289	11	11	116	148	19	18	114	95	457	561
Group A strep invasive	5	5	1	1	5	8	1	2	5	0	17	16
Hepatitis A	0	0	0	0	1	0	0	0	0	0	1	0
Hepatitis B - chronic	13	13	0	0	4	2	5	15	0	1	22	31
Hepatitis B - new	0	0	0	0	1	0	0	0	0	0	1	0
Hepatitis B - unspecified	4	15	1	1	36	39	1	0	0	3	42	58
Hepatitis C - new	0	0	0	0	1	1	0	0	0	0	1	1
Hepatitis C - unspecified	11	6	1	1	37	47	1	1	2	2	52	57
Hepatitis D	0	1	0	0	0	0	0	0	0	0	0	1
H Influenzae b	1	0	0	0	0	0	0	0	0	0	1	0
H Influenzae non-b	2	1	0	0	2	1	0	0	1	0	5	2
HIV	1	0	0	0	4	1	0	0	0	0	5	1
HTLV1 asymptomatic/unspecified	5	23	0	0	1	0	0	0	0	0	6	23
Influenza	12	2	0	0	182	57	33	64	20	9	247	132
Legionellosis	0	0	0	0	4	0	0	0	0	0	4	0
Leprosy	0	1	0	0	0	0	0	0	0	0	0	1
Leptospirosis	0	0	0	0	0	0	0	0	1	0	1	0
Lymphogranuloma venereum	0	0	0	0	1	0	0	0	0	0	1	0
Listeriosis	0	0	0	0	0	1	0	0	0	0	0	1
Malaria	0	0	0	0	3	7	0	0	0	0	3	7
Measles	1	0	0	0	45	0	0	0	2	0	48	0
Melioidosis	1	0	0	0	24	12	5	2	2	2	32	16
Meningococcal infection	0	0	0	0	2	0	0	0	0	0	2	0
Mumps	1	0	0	0	0	1	0	0	0	0	1	1
Non -B Mycobacteria	0	0	0	0	0	1	0	0	0	0	0	1
Pertussis	4	5	0	0	10	27	2	4	0	2	16	38
Pneumococcal disease	8	8	0	1	3	5	0	1	1	0	12	15
Q Fever	0	0	0	0	0	0	0	0	1	0	1	0
Rheumatic fever	8	3	0	1	9	8	4	1	5	0	26	13
Ross River virus	6	1	4	0	145	65	11	3	21	3	187	72
Rotavirus	4	0	0	0	8	2	2	1	1	0	15	3
Salmonellosis	22	22	5	7	71	66	4	6	12	16	114	117
Shigellosis	5	8	0	10	10	5	3	3	5	5	23	31
Syphilis < 2yr	4	3	0	0	3	1	0	0	0	0	7	4
Syphilis > 2yr or unknown	4	5	0	1	6	10	0	0	0	0	10	16
Trichomoniasis	260	137	57	17	294	226	141	111	135	129	887	620
Tuberculosis	1	4	0	0	2	14	0	0	0	0	3	18
Varicella - unspecified	0	3	0	0	1	2	0	0	0	0	1	5
Yersiniosis	0	0	0	0	2	0	0	0	0	0	2	0
Zoster	10	4	2	1	31	30	9	3	6	8	58	46
Total	**838**	**838**	**103**	**76**	**1552**	**1362**	**297**	**292**	**465**	**384**	**3255**	**2952**

Ratio of the number of notifications in 1st quarter 2014 to the mean Q1 2009-13: selected diseases



Ratio of the number of notifications in 1st quarter 2014 to the mean Q1 2009-13: sexually transmitted diseases



Comments on notifications

Legionellosis

There were 4 cases of legionellosis notified during the first quarter compared to the usual 0-2 cases per quarter. Of these, 3 were due to *L. longbeachae* while there was 1 due to *L. pneumophila.* Case follow-up showed no relatedness among the cases.

Measles

There was a measles outbreak of 48 cases in the first quarter of this year, the largest outbreak in the Northern Territory since 1993. The outbreak was triggered by a NT resident case acquired in Singapore but also featured 5 other imported cases. The epidemic was described in the March 2014 edition of the *Northern Territory Disease Control Bulletin.*

HTLV1

There were only 6 cases of HTLV1 notified in the first quarter compared to a 5 year quarterly mean of 18. With HTLV1 being a chronic infection this change is hard to interpret without knowing how many tests are being done. Notifications may also be tapering because the high risk populations have mostly been tested.

Trichomoniasis

The increase in trichomoniasis notification is most likely due to increased testing, as the testing data for remote Northern Territory districts showed an increased number of tests while the positivity remained at a similar level when compared with the same time in the last 5 years.

****

NT malaria notifications January—March 2014

Elizabeth Stephenson, CDC, Darwin

There were 3 cases of malaria notified in the 1st quarter of 2014. The following table provides details about where the infection was thought to be acquired, the infecting agent, whether chemoprophylaxis was used and where the patient lived.

No. cases	Origin of Infection	Reason Exposed	Agent	Chemoprophylaxis	NT Region
1	Indonesia West Papua	Visiting student	*P. falciparum*	No	Darwin
1	Indonesia West Papua	Visiting student	*P. vivax*	No	Darwin
1	Congo	Expatriate visiting relatives	*P. falciparum*	No	Darwin

Immunisation coverage for children aged 12-<15 months at 31 March 2014

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% Pneumo	% Fully vaccinated
Darwin	271	89.7%	90.0%	89.7%	89.3%	89.3%	88.6%
Winnellie PO Bag	78	92.3%	92.3%	92.3%	92.3%	91.0%	91.0%
Palm/Rural	235	91.5%	91.5%	91.5%	91.5%	91.5%	91.5%
Katherine	80	96.3%	96.3%	95.0%	95.0%	96.3%	95.0%
Barkly	26	96.2%	96.2%	96.2%	96.2%	96.2%	96.2%
Alice Springs	122	93.4%	93.4%	93.4%	93.4%	93.4%	93.4%
Alice Springs PO Bag	61	86.9%	86.9%	86.9%	86.9%	86.9%	85.2%
East Arnhem	42	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%
NT	915	91.4%	91.5%	91.3%	91.1%	91.1%	90.7%
Non-Indigenous (NT)	578	92.2%	92.4%	92.2%	92.0%	91.9%	91.5%
Indigenous (NT)	337	89.9%	89.9%	89.6%	89.6%	89.9%	89.3%
Australia	77702	90.7%	90.6%	90.5%	90.3%	90.3%	89.7%

Immunisation coverage for children aged 24-<27 months at 31 March 2014

Region	Number in District	% DTP	% Polio	% HIB	% Hep B	% MMR	% Fully vaccinated
Darwin	262	93.1%	93.1%	94.3%	93.1%	93.9%	91.6%
Winnellie PO Bag	59	96.6%	96.6%	96.6%	96.6%	96.6%	96.6%
Palm/Rural	206	93.2%	93.2%	93.7%	93.2%	94.2%	92.2%
Katherine	83	96.4%	96.4%	94.0%	96.4%	96.4%	94.0%
Barkly	19	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Alice Springs	120	94.2%	94.2%	90.8%	94.2%	93.3%	89.2%
Alice Springs PO Bag	46	95.7%	95.7%	93.5%	95.7%	95.7%	93.5%
East Arnhem	42	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
NT	837	94.5%	94.5%	94.1%	94.5%	94.9%	92.7%
Non-Indigenous (NT)	539	92.9%	92.9%	92.9%	92.9%	93.1%	90.9%
Indigenous (NT)	298	97.3%	97.3%	96.3%	97.3%	98.0%	96.0%
Australia	74274	95.0%	95.0%	93.7%	94.5%	94.1%	92.3%

Immunisation coverage for children aged 60-<63 months at 31 March 2014

Region	Number in District	% DTP	% Polio	% MMR	% Fully vaccinated
Darwin	230	91.7%	90.9%	90.9%	90.0%
Winnellie PO Bag	71	95.8%	95.8%	95.8%	95.8%
Palm/Rural	222	91.0%	91.0%	91.4%	91.0%
Katherine	82	95.1%	95.1%	95.1%	95.1%
Barkly	12	100.0%	100.0%	100.0%	100.0%
Alice Springs	113	86.7%	86.7%	88.5%	86.7%
Alice Springs PO Bag	35	88.6%	88.6%	88.6%	88.6%
East Arnhem	47	89.4%	89.4%	89.4%	89.4%
NT	812	91.4%	91.1%	91.5%	90.9%
Non-Indigenous (NT)	476	89.7%	89.3%	89.9%	88.9%
Indigenous (NT)	336	93.8%	93.8%	93.8%	93.8%
Australia	77257	92.5%	92.4%	92.4%	92.0%

Immunisation coverage 31 March 2014

Compiled by Charles Strebor, CDC, Darwin

Immunisation coverage rates for NT children by regions based on Medicare address postcode as estimated by the Australian Childhood Immunisation Register are shown on page 36.

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 2014 were born between 1 Sep 2012 and 31 Dec 2012 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. *Please note that definition of fully immunised for this cohort of children now includes 3 doses of pneumococcal vaccine.*

The cohort of children assessed at 24 to <27 months of age on 31 March 2014 were born between 1 Sep 2011 and 31 Dec 2011 inclusive. To be considered fully vaccinated, these children must have received 3 or 4 valid doses of vaccines containing diphtheria, tetanus, pertussis, 3 doses of vaccines containing poliomyelitis antigens, either 3 or 4 doses of PRP-OMP Hib or 4 doses of another Hib vaccine, and 3 doses of hepatitis B vaccine and 1 dose of measles-mumps-rubella (MMR) vaccine. All vaccinations must have been administered by 24 months of age.

The cohort of children assessed at 60 to <63 months of age on 31 March 2014 were born between 1 Sep 2008 and 31 Dec 2008 inclusive. To be considered fully vaccinated, these children must have received 4 or 5 valid doses of vaccines containing diphtheria, tetanus, pertussis antigens, 4 doses of poliomyelitis vaccine and 2 valid doses of MMR vaccine. All vaccinations must have been administered by 60 months (5 years) of age.

Interpretation and comment

The vaccination coverage rates for children in the NT are comparable with the national average for all age cohorts, with NT children being slightly above the national average for the 12 to <15 (NT 90.7%, National 89.7%) and for the 24 to <27 months (NT 92.7%, National 92.3%) cohorts though slightly below the national average for the 60 to <63 months cohort (NT 90.9%, National 92.0%). Indigenous children were less likely (Indigenous 89.3%, Non-Indigenous 91.5%) to be fully immunised than non-Indigenous children in the 12 to <15 month cohort but more likely to fully immunised than non-Indigenous children in the 24 to <27 (Indigenous 96.0 %, Non-Indigenous 90.9%) and the 60 to <63 (Indigenous 93.8%, Non-Indigenous 88.9%) cohorts.

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

****

Disease Control staff updates April-June 2014

Top End

The Top End remote sexual health program welcomes 2 new Aboriginal Health Practitioners into their team, **Clifford Taylor** and **Natalie Newman**.

Kim Jackson, Public Health Nurse, following a stint in Maningrida has returned to work at Clinic 34 in Darwin until September.

Noemi Bala, Administrative Officer commenced in the TB unit in early June. **Janelle Baker**, a greatly appreciated fill-in Administrative Officer in the TB Unit, in Darwin finished on 27 June.

Justine Glover returned to the position of Senior Policy and Coordination Officer in April. Thanks to **Meredith Neilson** who acted in the position and now returns to the position of Injury Prevention Coordinator. **Alex Young** acted in the Injury Prevention Coordinators position for several months and has returned to the Physiotherapy Department.

Gemma Farmer Administrative Officer, Medical Entomology is working 0.5 FTE from May to October 2014 and **Storm Barrett** (previous T1 officer within the Tennant Creek project) will work the other 0.5 FTE some of that time.

Jo Langham has returned to work in Darwin for the NT immunisation register team.

Maria Chandler, Katherine Administrative Officer, has taken long service leave until August 2015.

Dawn Hodgson has resigned as the Administrative Officer in Nhulunbuy CDC to follow her husband to Cardwell. **Nikki Cooper** has joined the team as the new Administration Officer and she will be working part time.

Central Australia

Viviann Casey, Remote Sexual Health Nurse, resigned at the end of May to move back to Adelaide to be closer to her family.

Jordan Braver, Adolescent Sexuality Education Officer, resigned at the end of May to take some time off to travel around the world. **Lida Curran**, Adolescent Sexuality Education Officer, finished with the ASEP team on 28 June 2014.

Jacqui Arnold, Public Health Nurse, has joined the Trachoma Team in Alice Springs. Jacqui has moved from Victoria to join the team.

Leigh-ann Thomas resigned in June as the half-time CDC Tennant Creek receptionist so she can focus more on running her small business, which is the gym in Tennant Creek.

Melissa Van Leeuwen, Public Health Nurse, has joined the Rheumatic Heart Disease Program in June. Melissa has several years of experience in Central Australia, including working at Central Australian Aboriginal Congress, at Alice Springs Hospital, as a Remote Area Nurse and most recently at Ngaanyatjarra Health as the Health Information Nurse.

Other staff news

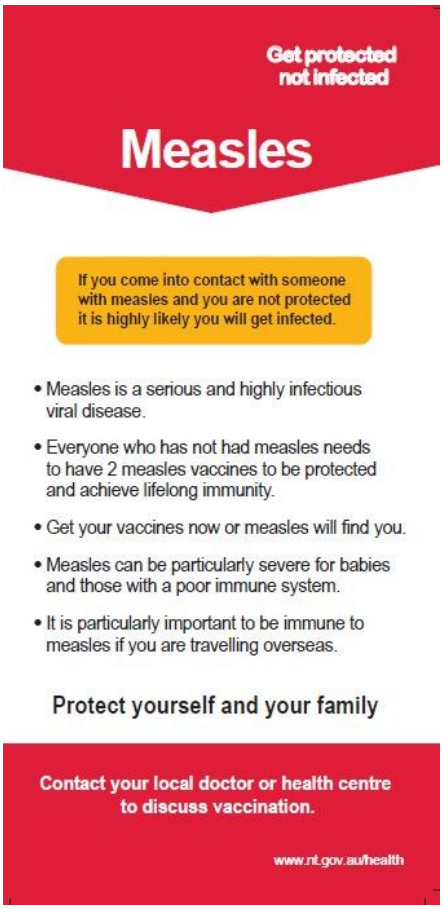
In addition to our congratulations to Lesley Scott for winning the *Nursing and Midwifery Award for Innovation, Research and Education*. (see p29), congratulations also go to the following Centre for Disease Control Public Health Nurses for their nominations in the 2014 *Nursing and Midwifery Awards*.

Chris Nagy: Lifetime Achievement
Rebecca Curr: Primary Health Care
Mark Russel: Primary Health Care
Kate Wales: Primary Health Care
Gabrielle Watt: Primary Health Care.

Rebecca Curr, Mark Russell and Kate Wales from CDC, Alice Springs, all nominees for the 2014 Nursing and Midwifery awards.

****

Congratulations to **Dr Sophie Lines,** CDC GP trainee**,** on being awarded the *Debbie Stach Scholarship for Leadership* and **Dr Natalia Rode,** CDC GP trainee in community paediatrics, on her *Professor Alan Walker Paediatric Scholarship.*

Congratulations to **Katherine Moriarty** who got married in June (after somewhat of a whirlwind romance!) and has taken 12 months leave to join her husband Khari in Vancouver, where he is currently based.

****