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Maternal influenza vaccination: Protecting the mother and the infant

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The Royal Australian and New Zealand College of Obstetricians¹ and Australian Government Department of Health and Ageing² strongly recommend routine vaccination of pregnant women against influenza. The 2012 influenza vaccine is available throughout the Northern Territory (NT) from the end of February and should be administered (free) to all pregnant women, regardless of their month of gestation. A postcard and poster promoting the importance of influenza vaccine in pregnant women is available from regional Centre for Disease Control (CDC) offices throughout the NT. Vaccine can be administered at antenatal clinics, community and remote healthcare centres and by most general practitioners.

Facts about influenza in pregnancy

Maternal protection

Pregnant women with influenza are at increased risk of hospitalisation and death. During the pandemics of 1918-19, 1957-58 and 2009-10 excess numbers of deaths and hospitalisations were reported in pregnant women as well as increased premature deliveries and stillbirths.³⁻⁷ During non pandemic periods pregnant women are also at increased risk of hospitalisation. A Canadian study

over a 13 year period (1990-2002) found that pregnant women without chronic medical conditions were 5 times more likely to be hospitalised while pregnant, compared to the influenza season prior to pregnancy.⁸

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Infant protection

There is increasing evidence that pregnant women who are vaccinated during pregnancy with influenza vaccine protect their infant in the first 6 months of life from influenza and respiratory illness by placental transfer of maternal antibodies.⁹⁻¹¹ Influenza vaccine given to pregnant women has been shown to be 91.5% effective in preventing hospitalisation of infants for influenza in the first 6 months of life.¹⁰ A recent study has also shown that babies born to women who have had the influenza vaccine had a higher mean birth weight.¹²

Maternal antibodies persist for up to 9 months. Infants can receive their own influenza vaccine from 6 months of age.

Maternity and medical staff protection

Healthcare workers may potentially transmit influenza to patients. Maternity staff should be vaccinated in an attempt to decrease the risk of transmission of influenza from themselves to the women and babies in their care.

Safety

Influenza vaccination during pregnancy has been shown to be safe and effective in all trimesters of pregnancy.¹³

Timing of vaccination

Current recommendations are that women can receive influenza vaccine at any trimester in pregnancy.¹⁴

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Royal College Australian and New Zealand College of Obstetricians Statement: Endorses influenza vaccine for pregnant women

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists has released the following statement endorsing annual influenza vaccination for all pregnant women.

The full RANZCOG statement can be found at <http://www.ranzcog.edu.au/component/content/article/269-newstatements-guidelines/744-influenzavaccinationforpregnantwomenc-obs45.html>

Influenza vaccination during pregnancy should be routine: safety is well established and both maternal and infant benefit is now proven with only 5 vaccination doses estimated to prevent one case of serious maternal or infant respiratory illness.¹

Preventing influenza during pregnancy is an essential part of antenatal care because pregnant women are at an increased risk of serious illness due to influenza.² Excess morbidity and mortality for pregnant women infected with influenza compared with non-pregnant women of similar age who are infected with influenza has been noted during pandemics as long ago as 1918³ but drew public and professional attention most recently during 2009.^{4,5}

- The most effective strategy for preventing influenza in pregnant women is annual immunisation. Influenza vaccination is estimated to prevent 1 to 2 hospitalisations per 1000 women vaccinated during the second or third trimester.⁶
- Influenza vaccination is recommended for all pregnant women regardless of gestation.
- Inactivated influenza vaccine is usually available from February each year in the Southern Hemisphere. Live attenuated influenza vaccination has not been licensed in Australia.⁶
- Vaccination early in the season and regardless of gestational age is optimal, but unvaccinated pregnant women should be immunized at any time during influenza season as long as the vaccine supply lasts. Some maternal benefit is might accrue as early as 2 weeks after vaccination with research in pregnant women demonstrating seroconversion by 4 to 6 weeks after vaccination.⁷ Infection in the 3rd trimester of pregnancy appears to be the most dangerous for the pregnant woman.⁵
- No study to date has shown an adverse consequence of inactivated influenza vaccine in pregnant women or their offspring.^{8,9,10}

- Active placental transfer of maternal antibodies makes influenza vaccine during pregnancy a highly effective measure to protect infants from influenza during the first 6 months of life.^{1,11,12}
- The Australian Government Department of Health and Aging strongly recommends vaccination for pregnant women (<http://immunise.health.gov.au>).
- The Royal Australian and New Zealand College of Obstetricians strongly endorses routine vaccination of pregnant women against influenza.
- The Royal Australian and New Zealand College of Obstetricians strongly endorse routine vaccination of obstetric and midwifery staff, both to protect these individuals as well as their families, closes contacts and patients.

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Disclaimer

This College Statement is intended to provide general advice to Practitioners. The statement should never be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of each patient.

The statement has been prepared having regard to general circumstances. It is the responsibility of each Practitioner to have regard to the particular circumstances of each case, and the application of this statement in each case. In particular, clinical management must always be responsive to the needs of the individual patient and the particular circumstances of each case.

This College statement has been prepared having regard to the information available at the time of its preparation, and each Practitioner must have regard to relevant information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that College statements are accurate and current at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become available after the date of the statements.

Recent Pharmaceutical Benefits Advisory Committee recommendations regarding human papillomavirus vaccine (HPV)

Recently the Pharmaceutical Benefits Advisory Committee (PBAC) has recommended the extension of human papillomavirus vaccine (HPV), Gardasil[®] on the National Immunisation Program (NIP) to include ongoing administration to males approximately 12 to 13 years of age in a school-based program. A further recommendation has also included a catch-up for all males in the 2 year groups above the ongoing cohort, delivered over 2 years for Year 9 males, on the basis of acceptable cost-effectiveness compared with female-only vaccination^{Ref}.

The recommendation from the PBAC is subject to approval by the Australian Government.

Reference

Australian Government Department of Health and Ageing 2011, 'November 2011 PBAC Outcomes – Positive Recommendations, <http://www.pbs.gov.au/info/industry/listing/elements/pbac-meetings/pbac-outcomes/2011-11/positive-recommendations>, viewed 22 December 2011

Influenza vaccine 2012

The 2012 influenza vaccine is now available. The 2012 seasonal influenza vaccine is identical to the 2011 and 2010 in composition. However, as the yearly flu vaccine is effective for 12 months (range 9 to 18 months) it is recommended that everyone receive the 2012 vaccine as early as possible.

Under the National Immunisation Program (NIP) influenza vaccine is free for the following groups:

- All non-Indigenous people 65 years and older;
- All Indigenous people 15 years and older;
- All pregnant women – (any trimester);
- All infants/people 6 months to 64 years with medical conditions* predisposing them to severe influenza, namely:
 - ⇒ cardiac disease;
 - ⇒ chronic respiratory conditions;
 - ⇒ chronic illnesses requiring medical follow-up or hospitalisation in the preceding year;
 - ⇒ chronic neurological conditions;
 - ⇒ people with impaired immunity and
 - ⇒ children aged 6 months to 10 years who receive long term aspirin therapy.

*Refer to the *Australian Immunisation Handbook* (pg 190-192)

Influenza vaccine for children

- CSL Biotherapies' seasonal influenza vaccine *Fluvax*[®] is **NOT** registered for use in children under 5 years.
- There is also a 'precaution' for the use of *Fluvax*[®] in children aged 5 years to < 10 years.
- The recommendation in the NT is to use alternative influenza vaccines for children between 6 months and < 10 years of age such as **Vaxigrip**[®], **Aggripal**[®], **Fluarix**[®] and **Influvac**[®].

Please see www.immunise.health.gov.au for Therapeutics Goods Administration (TGA) advice on use of seasonal influenza vaccines in children.

All healthcare workers are encouraged to be vaccinated against influenza. Personal protective measures such as handwashing and covering the mouth and nose when sneezing and coughing are important but vaccination against influenza is the best way to protect staff and patients.

For more information about influenza and the influenza vaccine please see <http://www.health.nt.gov.au/Flu/> or the Commonwealth website www.immunise.health.gov.au.



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Pneumovax 23[®] Revaccination Guidelines 2012

Summary

The Therapeutic Goods Administration (TGA) and Australian Technical Advisory Group on Immunisation (ATAGI) have released new guidelines for adult vaccination with polysaccharide pneumococcal vaccine Pneumovax 23[®] (23VPPV). This follows the temporary cessation of any second and subsequent doses which occurred in April 2011. The revaccination for Indigenous people remains unchanged from the previous schedule (see Adult Vaccination Schedule). The main change is that non-Indigenous adults 65 years and over, without chronic medical conditions and who do not smoke, require only a single dose of Pneumovax 23[®]. Non-Indigenous people 65 years and over with chronic medical conditions or who are smokers require a second dose of Pneumovax 23[®], 5 years after the first dose.

Background

In March 2011 a cluster of 7 severe local injection site reactions to Pneumovax 23[®] (23vPPV) were reported to the Therapeutic Goods Administration (TGA), this event triggered the recall of the associated batch within several weeks.

In late April 2011 as a result of continuing reports of severe local reactions following administration of the vaccine, the TGA notified vaccine providers to withhold any second and subsequent doses of 23vPPV. During this period, 173 adverse events following immunisation reports were received nationally with only 4 from the Northern Territory (NT).

Pending the results of the investigation, all second and subsequent doses of Pneumovax 23[®] were suspended nationally.

Results of 'The Review'

The TGA has now determined that the adverse events were not a batch-related problem. The TGA considers that the increased numbers of reports of severe reactions were a result of the known high rates of local reactions, including severe injection site reactions, which occur more commonly after a repeat dose of Pneumovax 23[®].

The Review found that Pneumovax 23[®] does provide a modest level of protection against invasive pneumococcal disease especially in

older adults and those without underlying medical conditions and that the benefits of the first and subsequent doses of this vaccine need to be balanced with the risks of severe local reactions.

Local reactions can occur in up to one half of vaccine recipients and systemic reactions in up to one third although the frequency varied among different study populations and with age.

Systemic and local reactions, especially severe injection site reactions were more common following subsequent doses of Pneumovax 23[®]. The interval between doses of vaccine administered suggested that more reactions occurred if the doses were given between 1–4 years apart.

New recommendations

In late December 2011, following this Review, ATAGI issued an update on their recommendations for the revaccination of adults with Pneumovax 23[®].

A dose of 23vPPV should be given to adults at 65 years of age. Every effort should be made to provide a dose to anyone aged >65 years who has not previously received a dose of 23vPPV. **A second dose is no longer recommended for those without chronic medical conditions or those who are not smokers.**

For non-Indigenous adults aged ≥65 years with chronic medical conditions or who are smokers, a **second dose** (a single revaccination) of 23vPPV should be given ≥5 years after the first dose. This is because these groups have an increased risk of invasive pneumococcal disease.

Recommendations for the use of 23vPPV in those <65 years, including for Indigenous adolescents and adults, are unchanged from the 9th edition of the *Australian Immunisation Handbook*.

The NT CARPA and Adult Vaccination Schedules have been changed again to reflect these recommendations and are available at http://health.nt.gov.au/Centre_for_Disease_Control/Immunisation/NT_Immunisation_Schedules/index.aspx

For further information about the ATAGI and TGA recommendations please see www.immunise.health.gov.au



Adult and Special Groups Vaccination Schedule

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January 2012

Disease	Who is eligible	Vaccine
Influenza	All Indigenous people 15 years and over	Fluvax®
	All people 65 years and over	Vaxigrip®
	All pregnant women (Any trimester)	
	People (over 6 months of age) with medical conditions predisposing them to severe influenza*	Fluvax® (10 years and over) Vaxigrip® (3 - <10 years) Vaxigrip Junior® (6 - 35 months)
Pneumococcal disease	Indigenous people 15 years and over	Pneumovax 23®
	Non-Indigenous people 65 years and over	<i>For revaccination guidelines see table below</i>
Pertussis	13 years (or Year 8)	Boostrix®
	Parents and carers of infants under the age of 7 months†	Boostrix®
Tetanus and diphtheria	All people at 50 years	ADT® Booster‡

* Cardiac disease, chronic respiratory conditions, chronic illnesses requiring medical follow-up or hospitalisation in the preceding year, chronic neurological conditions; people with impaired immunity and children aged 6 months to 10 years who receive long term aspirin therapy.

† All new mothers as soon as possible after delivery (vaccine is not given to women during pregnancy). All fathers and carers in the same household of an infant under the age of 7 months (the vaccine can be given to this group from the time the expectant mother has reached 28 weeks of pregnancy).

‡ All 50 year olds who have not received a tetanus containing vaccine in the previous 10 years should receive an ADT®Booster. Boostrix® may be given in this age group but it should be provider or self funded.

Revaccination guidelines for Pneumovax23®

Dose 1 First Adult dose	Dose 2 First revaccination	Dose 3 Second revaccination	Funded?
Indigenous ≥ 15 years and < 50 years of age	5 years after dose 1	5 years after dose 2 or at 50 years of age whichever is later	Yes
Indigenous ≥ 50 years of age	5 years after dose 1	Not required	Yes
Non-Indigenous ≥ 65 years with no chronic medical conditions* or who are non smokers	Not required	Not required	Yes
Non-Indigenous ≥ 65 years with chronic medical conditions* or who are tobacco smokers	5 years after dose 1	Not required	Yes
Non-Indigenous < 65 years with chronic medical conditions* or who are tobacco smokers	5 years after dose 1	5 years after dose 2 or at 65 years of age whichever is later	Self funded
Asplenic individuals either functional (including sickle cell disease) or anatomical	5 years after dose 1	Either 5 years after dose 2 or at 50 years (if Indigenous) or at 65 years of age (if non Indigenous) whichever is later	Discuss with GP or CDC

* HIV infection before the development of AIDS, acute nephrotic syndrome, multiple myeloma, lymphoma, Hodgkin's disease, organ transplantation, chronic cardiac, renal or pulmonary disease, diabetes and alcohol related problems.

Refer to the 9th edition of "The Australian Immunisation Handbook" pg 75 – 102, for the guidelines for people with special vaccine requirements

For more information visit www.immunise.health.gov.au or contact your nearest Centre for Disease Control (CDC)

Darwin - 8922 8044 • Katherine - 8973 9049 • Barkly - 8962 4259

Alice Springs - 8951 6907 • East Arnhem - 8987 0357

Acute post-streptococcal glomerulonephritis community screen of large Top End community 21-29 February

Lesley Scott, CDC

Abstract

Acute post-streptococcal glomerulonephritis (APSGN) cases following infection with group A streptococcus (GAS) occur sporadically in the Northern Territory. There is an average of 26 cases per year (range 4-102). Outbreaks occur approximately every 5 years in Indigenous communities.

This report documents the public health response to the notification of 2 cases and 1 suspected case of APSGN in a Top End Arnhem land community.

Keywords: Acute post-streptococcal glomerulonephritis; APSGN; group A streptococcus; GAS; outbreaks; communities

Background

There were 2 cases of suspected acute post-streptococcal glomerulonephritis (APSGN) notified to Centre for Disease Control (CDC) in January/February 2012. These cases occurred in a Top End Arnhem Land community within a 5 day period and were not assessed to have any association with each other.

Both children were admitted to Royal Darwin Hospital and subsequent laboratory testing confirmed their diagnosis (see Figure: Case definition for APSGN). They recovered and were discharged back to the community.

A third case was suspected but did not meet the case definition for notification.

Household screening according to the *Northern Territory Guidelines for Acute Post-streptococcal Glomerulonephritis*¹ was completed for the 3 households of the cases/suspected case by the community health clinic but did not identify any further cases within the households.

As there were 2 cases without an epidemiological link, community screening in line with the *NT Guidelines*¹, was implemented to identify and prevent further cases.

Planning for a community screen of children aged 1 to <17 years (for scabies, skin sores and

oedema) was commenced with 2 health clinic staff: an RN and medical officer for the community.

Historical data suggests that when 4 or more cases/suspect cases of APSGN occur anywhere in the NT in a 2 week period APSGN disease is more likely to be occurring Territory-wide.

With 2 confirmed cases and 1 suspected case from this community and another sporadic case in the Top End, the NT reached threshold for issuing an NT-wide alert.

The alert asked NT staff to check the following in any children presenting with puffy faces, sores or dark coloured urine;

- weight (look for sudden increase)
- BP (look for increase)
- urine (look for blood and protein)
- oedema, (puffy face and puffy eyes and swelling elsewhere).

Methods

Household screening

Household members were screened by health clinic staff for scabies, skin sores, oedema, haematuria and hypertension. Benzathine penicillin (LA Bicillin) was to be given to all children aged 1 to <17 years and to others outside this age-range who had skin sores present. Lyclear[®] (permethrin) was given to all those screened who had scabies. Any person with haematuria, hypertension or oedema was referred to the clinic for further assessment.

Community screening

The community screening team intended to go from house-to-house in the community with additional screening done opportunistically in the clinic. Planning for the community screen identified a number of resources required to complete the task.

Resources required were:

- Additional health staff from outside the clinic and clinic staff dedicated to the screen – enough to have 4 teams working across the community.

- Community workers able to give information to parents in local language and identify and locate children.
- Transport to move around the community.
- A list of children in the community aged 1 to <17 years downloaded from the Primary Care Information System (PCIS), including date of birth.
- Community maps.
- Benzathine penicillin (LA Bicillin) in quantities sufficient for 25% of the target group.
- Lyclear[®] (permethrin).
- Resuscitation equipment for each team.
- Education for the community especially in the 3 main language groups.
- Laptop computers and modems to enable data entry into PCIS in the field.
- Accommodation for visiting staff.

The timeframe for the screen was to be 21-24 February with 2 of the CDC team to assist on Monday 20 February in preparation and briefing. Depending on the progress of the screen a second team was tentatively planned for the following week.

Communication

There were 2 teleconferences held between the visiting team and Clinic Manager to plan the visit and allocate tasks. A telephone call was made by CDC RN and team leader for the screen to the General Manager Top End Remote Health and the Area Services Manager, Top End Remote Health with regard to the plan for the screen and whether the offer by 2 staff members from the *One Disease at a Time Program* could be utilised. It was left to the Remote Manager whether to utilise these 2 and it was decided this would be appropriate if the screen went into a second week. One of the discussion points during this conversation was 'ownership' of the public health response. To a certain extent initially there was a perception by the remote team that this was a CDC program and should be implemented by CDC. Further discussion moved this to being a recognised public health response that was required by the community to prevent further cases of APSGN. CDC staff emphasized that CDC was able to offer additional staff and expertise to help coordinate the program. It was recognised that it was unlikely to be successful without a strong commitment from the local clinic. The clinic reprioritised their work and fully backed the screen.

Figure. Case definition for APSGN¹

Reporting

Both confirmed cases and probable cases should be notified. Possible cases should be reported to Centre for Disease Control (CDC) but not notified to NTNDS.¹

Confirmed case

A confirmed case requires either:

1. laboratory definitive evidence

OR

2. laboratory suggestive evidence AND clinical evidence.

Probable case

A probable case requires clinical evidence only.

Possible case

A possible case requires laboratory suggestive evidence only.

Laboratory definitive evidence

Renal biopsy suggestive of APSGN.

Laboratory suggestive evidence

1. Haematuria on microscopy (RBC >10/ μ l)²

AND

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

AND

3. Reduced C3 level.

Clinical evidence

At least 2 of the following

- facial oedema
- \geq moderate haematuria on dipstick
- hypertension⁴
- peripheral oedema

Notes

1. Possible (subclinical cases) are often found when screening individuals for APSGN but do not present with more than 1 clinical symptom. They do not have oedema or hypertension but on laboratory investigation are found to have haematuria, evidence of a streptococcal infection and a reduced C3. These cases should also be reported to CDC.
2. If microscopy is not available then moderate haematuria on dipstick fulfils this criteria.
3. If all other criteria have been fulfilled but the only evidence of recent streptococcal infection is isolation of Group C or Group G Streptococci from skin or throat, this could be notified as a confirmed case after discussion with CDC or an infectious disease physician.
4. Hypertension as defined in CARPA Standard Treatment Manual.²

It was not possible to provide any broadcast media in the community as no Broadcasting for Remote Aboriginal Communities Scheme (BRACS) was available. Written translations of a message about the screen into the 3 major languages was requested from the Corporate Communications Unit and the Aboriginal Interpreter Service, however it was not possible for this to be done. Education materials included handwritten posters were put up by the clinic.

Hygiene posters (from the *No Germs on Me. Handwashing Campaign*³) were sourced from the Environmental Health Program and 'sticky hands' and bandanas were brought to the community to give to children who required treatment with penicillin.

Further discussion occurred on Monday, 20 February about how the screen would progress and resources for the screening program were put together. The CDC staff provided a 1 hour education session for the local community workers.

Staff

The team consisted of 4 registered nurses (RNs), and 1 medical student from the CDC, 1 Aboriginal Health Worker (AHW) from Maternal Child and Youth Health, 2 RNs (1 for 2 days and 1 for 4 days) and 1 AHW from the health centre. In addition community workers from the Family as First Teachers (FAFT) Program were made available and on the first day a council staff member was available to drive and give information in the local language (FAFT workers were funded by CDC). There were 4 teams for the first 2 days of the screen then 3 for the next 2 days.

Transport

The health centre provided 2 vehicles, the shire council 1 vehicle and 1 was hired by CDC from the local Aboriginal corporation.

Documentation

A community list of children aged 1 to <17 years was downloaded into an Excel spreadsheet from Primary Care Information System (PCIS) including first name, family name, date of birth, age, sex, client identifier (HRN) and (usual) local health centre. Additional fields for collection of data for the screen were added. These were scabies, skin

sores, oedema, Lyclear[®] (permethrin), LA Bicillin (benzathine penicillin), including dose and site and referral to medical officer.

The laptop computers were made available by the CDC staff and set up with modems and Virtual Private Network (VPN) access. Data entry in the field into PCIS service item *Glomerulonephritis screen* for each child screened was planned if possible. If this was problematic then entry into the printed spreadsheets during the screen with data entry either at the end of the day or at the end of the screen if necessary.

It was noted that this item in PCIS includes the fields:

- Contact with case – yes/no
- Scabies – yes/no
- Skin sores – yes/no
- Benzathine penicillin given – yes/no

The PCIS *Glomerulonephritis screen* item does not have the capacity to record whether oedema was present.

Recording of penicillin doses and permethrin dispensed was to be recorded separately on PCIS as a medication event.

Other requirements

It was identified that a map showing buildings and lot numbers was required. The map was accessed from the Department of Lands and Planning, Serviced Land Availability Program (SLAP).⁴

Following discussion with CDC staff, clinic staff ordered 400 doses of benzathine penicillin and permethrin and extra supplies of hand and body wash.

An *Oxy-Viva* was required for each mobile team giving intramuscular penicillin in the community in case of anaphylaxis. There were 2 *Oxy-Vivas* supplied by the clinic and 2 sent by barge from CDC. Adrenaline and information sheets on adrenaline doses were included in each kit.

Results

Household screening

A total of 33 household contacts were identified

in the 2 households. Household 1 had 16 contacts (Table 1) and Household 2 had 17 contacts identified (Table 2).

Table 1. Household 1 contact tracing results

Findings/actions	Contacts
Scabies present	7
Skin sores present	7
Oedema present	0
Haematuria	6
Hypertension	0
Aged 1 to <17 years	8
Aged 1 to <17 years given LAB*	4
Total LAB*	6

* LAB = LA Bicillin = benzathine penicillin

Table 2. Household 2 contact tracing results

Findings/actions	Contacts
Aged 1 to <17 years	10
Scabies present	1
Skin sores present	3
Oedema present	0
Haematuria	8
Hypertension	0
Aged 1 to <17 years given LAB*	9
Total LAB*	9

* LAB = LA Bicillin = benzathine penicillin

Community screening

A total of 1105 children were identified from PCIS with this community clinic as their primary health service provider.

Screening was conducted from house-to-house with each team using the downloaded list of children and conducting the screening and treatment at the household. Clinic staff would screen children opportunistically in the clinic.

During the first day entry into PCIS was done in the field at the time the children were screened by 3 of the 4 teams (the fourth team did not have a computer).

Data entry was difficult as the computer screens were difficult to read in the conditions (often too

sunny) and 1 computer had a battery-life of approximately 2 hours only. It was useful to be able to lookup children to aid in identifying them by checking mothers' names. It was not possible to download mothers' names on the spreadsheet with routine reports available on PCIS. The team that was documenting on paper saw almost twice as many children that first day.

To be most efficient it was decided that the data would be entered at the end of the day if possible or as soon as possible after the screen to allow staff working in the clinic to know whether children had been screened and to determine coverage to date.

Entry of the data each evening was achieved on most days.

By the end of the first week 519 children had been screened. The total number of children likely to be present in the community (i.e. the denominator) was not known to the team at the time. Extension of the screen into a second week to achieve the coverage of 85% (the % regarded as adequate to prevent further cases) was being considered if the coverage was low. In addition to screening more children in the second week the plan was to identify children on the list that were resident in other communities.

After revision of the list utilising the AHW from the health centre, it was determined that approximately 391 children were living in other communities, leaving a target population of 714 in this community. The coverage at the end of the first week was therefore 72% (519/714).

A CDC RN and medical student returned, working with the AHW, and an additional 31 children were screened during the second week of screening. One advantage of this work was to reallocate children who were not living in the community to the appropriate health service. More accurate planning for other health activities (e.g. trachoma screening) affecting this group of children will be possible.

A total of 581 of the 714 (81.4%) (Table 3) children were screened according to the data extract from PCIS. The health clinic staff had screened 108 children before and after the visiting team screening dates (61 children

including some household contacts by 20 February and 47 after 29 February).

There were 13 of the 33 household contacts entered on PCIS under the *Glomerulonephritis screen* service item and have been excluded from the community screen results. An additional 15 children were entered on PCIS as contacts of cases that were not on the household contact lists. For the purposes of this report these were considered to be part of the community screen rather than house hold contacts.

There were no children screened who were found to have oedema and therefore no referrals were made to a medical officer.

There have been no further cases of APSGN from this community (as at 1 April) since this screening.

Considerations for future screens

The use of the 'sticky hands' and bandanas as incentives for children receiving intramuscular penicillin worked well and further thought about stickers, temporary tattoos or other incentives that could be used in the future deserves consideration.

Acknowledgements

The success of this screening would not have been possible without the combined effort of all staff from the health centre, workers from the Family as First Teachers (FAFT) Program, the shire council, Maternal Child and Youth Health and Centre for Disease Control Trachoma and Rheumatic Heart Disease Programs, Medical students Kim Manning (CDC) and Kate Scott (Royal Darwin Hospital Paediatric Unit) and CDC staff with professional and financial support from CDC Directorate.

Table 3. Community screening results

	Yes	No	Not recorded
Total number of children present aged 1 to <17 years	714	-	-
Total children screened	581	-	-
Proportion of the target group screened	81.4%	-	-
Scabies present	128	464	4
Skin sores present	214	381	1
Benzathine penicillin given	199	393	5
Oedema present*	0	-	-
Referral to medical officer*	0	-	-

*These items are not included on the PCIS *Glomerulonephritis screen* service item.

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NT supports world push to 'Stop TB'

Media Release 23 March 2012

The Northern Territory (NT) Centre for Disease Control continues to play an important role in the global campaign to eradicate tuberculosis (TB) by focusing on the detection and treatment of the disease in its earliest stages.

While local infection rates are low in comparison to other places, the Territory has a role to play in the effort to arrest the spread of TB, and ultimately eliminate the disease.

World Tuberculosis Day (March 24)*, marked a worldwide focus on the health of children this year.

Australia records over 1200 cases each year, with 39 cases detected in the NT last year. As part of the global effort, the NT has an active program of screening refugees, support and education for patients and their families who have TB, tracing contacts, conducting high quality laboratory work for detection and observing cases as they are treated.

TB is spread when someone carrying the germs coughs, sneezes or speaks and infects people close-by. TB is often linked to chronic disease which lowers people's resistance and to overcrowded housing where it spreads more easily.

In the Territory over the last 3 years 55 % of the cases were in people who had been born outside of Australia and 33 % were in the Aboriginal population.

The effort to cut the number of cases is greatly enhanced by identifying the disease early and

treating it quickly. TB can sometimes masquerade as other disease and so the diagnosis is not always straight-forward.

Challenges still remain, as TB cases can develop many years after someone has been in contact with a TB-infected person. Also, there are strains that are drug resistant.

While an effective vaccine may still be years away, almost all people who get TB can be cured with the treatments that are now available.

A concerted world effort is the best way to beat this disease and the NT is certainly playing its part to make TB one for the history books and not for the present.

*World Tuberculosis Day is held on the anniversary of Dr Robert Koch's discovery in 1882 of the cause of TB, *Mycobacterium tuberculosis*.

For more information on the treatment of TB go to : www.health.nt.gov.au/Centre_for_Disease_Control/Publications/CDC_Factsheets/

Or contact your local CDC.

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

Centre for Disease Control (CDC) Website News

- The *Melioidosis, Mosquito-borne diseases, Ross River virus CDC fact sheets* are now available in Arabic, Bahasa, Dari, Farsi and Kurdish at health.nt.gov.au/Centre_for_Disease_Control/Publications/CDC_Factsheets/
- Updated **Pneumococcal** and **Dengue Fever CDC fact sheets** are also available on the CDC website.

Current knowledge about HTLV-1 in Central Australia: Proceedings from the first workshop on HTLV-1 in Central Australia

Claire L. Gordon and Saliya Hewagama - Infectious Disease Physicians

Human T-lymphotropic virus 1 (HTLV-1) is a RNA retrovirus which predominantly infects CD4+ T lymphocytes and establishes lifelong infection. HTLV-1 is prevalent particularly in Africa, South America, the Caribbean, Western Pacific, Japan and in Central Australia¹, with estimates as high as 13.9% in some areas of Central Australia.² The current prevalence estimate is 3.5% in the Alice Springs area but testing is largely limited to only adults with conditions known to be associated with HTLV-1. Nearly all of the notifications of HTLV-1 in the Territory were from Indigenous patients and predominantly from the Western Desert and Anangu Pitjantjatjara Yankunytjatjara (APY) lands.³ However, renal dialysis patients are routinely tested for blood-borne viruses and 31% of dialysis patients in the Alice Springs area tested in 2011 were seropositive for HTLV-1.⁴

HTLV-1 associated diseases can be broadly categorised into malignant, inflammatory and infective conditions. Malignant diseases include the rapidly fatal acute T-cell leukaemia/lymphoma, chronic T-cell leukaemia/lymphoma, and cutaneous T-cell lymphoma, all of which have been documented in central Australia.⁵ Inflammatory syndromes include HTLV-1 associated myelopathy (HAM; also known as tropical spastic paralysis), uveitis, arthropathy, Sjogren's syndrome, polymyositis and thyroiditis.¹ Overseas studies estimate that approximately 10% of people with HTLV-1 will develop an associated malignant or inflammatory condition during their lifetime¹; but perhaps because these conditions often develop in the 5th decade of life, or later, the major impact of HTLV-1 in Central Australia is not seen. Locally the disease manifestations are more likely to be infective and this risk is harder to quantify. Infective conditions associated with HTLV-1 include more severe presentations of strongyloidiasis, crusted scabies, bronchiectasis and infective dermatitis.^{1,6,7} HTLV-1 has also been associated with tuberculosis and leprosy.¹

The most important route of HTLV-1 transmission is through breastfeeding. Intrauterine and peripartum transmission of HTLV-1 occurs in less than 5% of children of

infected mothers, however, the risk increases to 20% with prolonged breastfeeding beyond 6 months of age.⁸ Studies have demonstrated that the risk of transmission can be reduced by up to 80% if breastfeeding is ceased at 6 months of age.^{9,10} A maternal HTLV-1 pro-viral load would help quantify the risk of transmission¹¹, however, HTLV-1 pro-viral load is not currently readily available in Australia. There was hesitation from the representatives from both the paediatric and obstetric staff in Central Australia to weaning breastfeeding at 6 months as it was felt it would not be feasible or culturally acceptable and may potentially be unsafe given the nutritional and anti-infective benefits of breastfeeding beyond 6 months of age. Logistical requirements and additional resources in education and the implementation of early weaning need to be considered prior to recommending breastfeeding cessation at any point in HTLV-1 positive mothers.¹²

HTLV-1 is also transmitted via sexual intercourse and blood exposure such as transfusion and sharing needles or needle stick injuries. Sexual transmission occurs at a rate of 0.9 per 100 person-years with greater efficiency of transmission from men to women.¹³ Sexual transmission can be prevented by use of condoms. HTLV-1 infection from blood transfusion has been well described prior to the introduction of routine screening of blood donations however, possibly only one case of infection following occupational blood exposure has been reported.¹⁴ Needle-stick injuries from a HTLV-1 source should be discussed with an Infectious Diseases Physician to determine if post-exposure prophylaxis is required. Recipients should have HTLV-1 serology performed at 0, 3 and 6 months post-exposure.¹⁵

The response to HTLV-1 is an issue that requires ongoing consideration. Follow up workshops for feedback and continued planning for HTLV-1 control are proposed. The forum highlighted several gaps in knowledge around this topic and include:

- the need for better estimates of local seroprevalence;

- better understanding of the potential clinical associations of HTLV-1, particularly infective;
- the risk/benefit of continuing breast-feeding beyond 6 months; and
- the awareness/acceptance Indigenous people have of this infection and any potential future interventions.

Concerted efforts need to be made to fill these evidence gaps as disease control measures are considered.

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Northern Territory
Centre for Disease Control
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Dengue mosquito incursion into Tennant Creek 2011

Peter Whelan, William Pettit and Vicki Krause
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Abstract

*This article reviews the past establishment of the dengue mosquito *Aedes aegypti* in the Northern Territory, provides an update on the current elimination program in place in Tennant Creek and explores local and national implications of the incursion.*

Key words: dengue; mosquito; eradication

Background

The dengue mosquito *Aedes aegypti* was present in the Northern Territory (NT) from early settlement up until the 1950's and was responsible for large outbreaks of dengue fever.¹ Dengue, a viral disease of humans, is an appreciable and increasing public health problem in tropical regions, with many thousands of cases and many deaths in countries

to the north of Australia.² Dengue is not endemic in Australia, although the principal vector of this disease, the dengue mosquito *Ae. aegypti*, is established in north and western Queensland, where importation of the virus in infected travelers from overseas leads to regular outbreaks of dengue disease from Townsville to Cape York.³

Ae. aegypti was previously widely established in the NT where it was recorded from many towns in the northern half of the NT, including Darwin, Pine Creek, Katherine, Mataranka and Larrimah, with the most southern extension at Anthony's Lagoon and Newcastle Waters and it was never recorded in Tennant Creek.^{4,5} There was a decrease in distribution after 1946, with a probable absence from Darwin in 1953¹, but it remained established in some locations until at least 1956.^{4,6}

Figure. Tennant Creek round 1, Week 2 team



Peter Whelan, Nina Kurucz, Michael Bethune, Ryan McLean, Anne Neubauer and Huy Nguyen

Ae. aegypti disappeared in the NT some time between 1956 and 1974, with the date of disappearance unable to be verified as there were very few mosquito surveys in the intervening years. The decline and disappearance is thought to be due to the result of widespread reticulation of water during and soon after World War 2 and the coincidental removal of rainwater tanks.^{1,4,6}

Medical Entomology (ME) of the NT Department Health (DoH) has a surveillance program to detect the possible importation or establishment of exotic mosquitoes in the NT, particularly the *Aedes* vectors of dengue.⁷ In 1974 regular mosquito larval surveys, human biting collections, and light trapping were started in Darwin by ME. These surveys and collections were extended and intensified over the following years to include ovi-traps (special egg traps) around overseas arrival seaports and airports, regular CO2 baited light-trapping (EVS traps) in principal towns and widespread larval surveys of most towns and communities.⁷ While many exotic mosquito importations were recorded from port areas around Darwin, all these importations were subject to elimination measures and none became established until 2004.^{8,9,10}

In 2004 an incursion of *Ae. aegypti* was detected in Tennant Creek and although it was well established was subsequently eliminated after an intensive campaign,^{11,12,13,7,5} DNA analysis of these mosquitoes indicated the incursion was imported from North Queensland, probably as eggs in dry receptacles from Cairns by vehicle transport.¹⁴

In October 2006 another incursion and establishment of *Ae. aegypti* was detected on Groote Eylandt by the ovitrap surveillance method. The subsequent elimination of this species from Groote Eylandt was declared in April 2008.⁵ It has not been subsequently detected on Groote Eylandt or established elsewhere in the NT.

The NT remains very receptive to receptacle breeding mosquitoes. There are relatively high populations of receptacle breeding species such as *Aedes notoscriptus* and *Aedes tremulus* detected by regular adult mosquito trapping in various towns and communities in the NT.¹⁵

Ovitrap results from residential and industrial areas in the major towns indicate year round breeding, with seasonal peaks in the wet season.¹⁵ Receptacle surveys of various towns and communities indicate a relatively high number of receptacles per property that can breed endemic mosquitoes.¹⁵

The recent detection

The dengue mosquito was discovered again in Tennant Creek in 2011. It was first detected in an ovitrap. A preliminary larval and adult survey in late October 2011 followed early wet season rains and found the mosquito widely established in the town. It was possibly imported from north Queensland as adults in vehicles such as coach buses, or in receptacles as drought resistant eggs. Specimens have been sent for DNA analysis to see if a possible origin can be determined.

The elimination program

ME started a coordinated and intensive program to eliminate this incursion as soon as it was clear an establishment was present. The program plan includes a media program to encourage public cooperation and a property by property survey and treatment of all receptacles. The proposed 18-month program will involve 2 components, with 1 centered on Tennant Creek town, with the other focused on nearby towns and communities to determine if this mosquito has spread.

The program in Tennant Creek will involve both dry and wet season property by property larval surveys, and applying the pyrethroid residual insecticide alpha-cypermethrin, liquid chlorine or pellets of a mosquito hormone insecticide, methoprene, to all appropriate receptacles in all 1100 odd properties. Additionally a barrier spray of alpha-cypermethrin will be applied to appropriate areas around premises to provide residual control of adult mosquitoes. Piles of internally sprayed tyres with water and pellets of methoprene have been established near the transport hubs of all bus and road transport companies to lure, trap and kill any adults about to harbour or lay eggs. Other treatments will concentrate on roadside drains and rehabilitation of the municipal dump in cooperation with the local Barkly Shire council. Elimination will rely on treatment of all receptacles capable of holding water and clean up programs with the

residents and the local Shire participation. Surveys will need to be negative for a complete wet season after the last detection for elimination to be declared successful.

The cycle of survey and treatment of all properties will need to be repeated every 6 to 8 weeks in the wet season, with some relaxation of inspections in Tennant Creek over the dry season from May to November. A team of at least 6 new full time staff will be required to do the surveys and treatments, adult trapping, larval and adult identifications, data recording, organisation, logistics, project management, field supervision, analysis, communications, rectifications, procurement and other town and community surveys and treatments. Project staff will be supported by ME staff. The evaluation of the ongoing progress of the elimination project will be evaluated by larval survey results and adult traps.

Progress to date

The initial surveys and treatments have been carried out by ME staff from Darwin, with assistance from Environmental Health staff, other CDC staff and volunteers from DOH and other government organisations. Local based project staff are being recruited. The potential threat of this incursion and the national implications have been highlighted.

The Department is seeking the cooperation of residents to help stop the spread of these mosquitoes. A post office box drop has been carried out to alert residents of the measures they can take to assist the program. The local newspaper has run stories and there have been full-page ads in the paper illustrating potential breeding places and measures that can be taken by residents. Posters have been put up at public points.

The first complete round of property inspections and treatment was started on 23 November 2011 and completed on the week ending 10 February 2012. In this round there were 1070 properties inspected in Tennant Creek, with 146 properties positive for *Ae. aegypti* and 195 receptacles positive, representing 13.6 % properties positive for the mosquito (Table). The number of properties positive for *Ae. aegypti* per week declined from a high of 45 in week 4 to 1 in week 9. The number of positive receptacles

declined from 64 in week 4 to 1 in week 9. This is an apparent rapid decline in infestation. However, due to the below average rain in Tennant Creek in January and February, many potential receptacles were dry and this rate of detection represents a probable under estimate of properties initially infested. During some weeks in January after rain, the rate of detection of positive properties was up to 20%. Despite this aspect there was undoubtedly a real and very appreciable reduction in the number of receptacles with larvae and possibly with eggs. By the end of Round 1 a very large majority of the receptacles in Tennant Creek had residual insecticide applied to them and will not be able to successfully produce larvae or adult mosquitoes when rain reoccurs.

Dengue mosquito positive receptacles have included tyres, pot plant drip trays, bird baths, drums, frog breeding drums, disused fish ponds, poorly maintained swimming or wading pools and spas, take away meal containers, canoes and boats, sheets of plastic and canvas, old machinery, car bodies, discarded construction materials, animal water receptacles, garden items such as wheel barrows and watering cans, mower catchers, rainwater tanks and buckets used for striking plant cuttings. There have been a few properties where owners have been reluctant for project staff to inspect or treat and a very few where residents have been non cooperative. Each of these problem properties will eventually be required to be inspected to confirm all breeding places have been eliminated. In the last week of Round 1, in the middle of a dry period, there was still 1 receptacle positive in 1 property in the last of the properties to be inspected, illustrating that a single property can continue to supply dengue mosquitoes for nearby properties and thus reinforcing the need for every property to be inspected and free of this mosquito.

Round 2 has now begun, and by the end of week 3 of this round on 24 February, 534 properties had been reinspected and retreated. On day 1 during week 4 of Round 2 starting on 27 February, there were 2 properties detected with *Ae. aegypti* larvae, while all other properties had water in receptacles with no larvae. These positive detections were in receptacles used for pet water, where treatments were non insecticidal, with either chlorine or methoprene pellets applications, which are usually short term

treatments. These detections followed rain the previous week and demonstrates that the program will take a number of rounds to achieve elimination while all the negative receptacles so far in Round 2 demonstrates our treatments to date are generally working very well.

Discussion

The rapid reduction of properties infested is urgently required in order to prevent the spread of this species to other towns in the NT and beyond. If it spreads north, it could become established in Darwin urban and rural properties and other higher rainfall towns, where it would be extremely hard to control or eliminate. This could lead to the re-establishment of dengue endemicity in the NT and periodic outbreaks of dengue.

The elimination of *Ae. aegypti* is a national public health matter and has been recognised as such by the expert committee of the National Arbovirus and Malaria Advisory Committee (NAMAC) advising the Commonwealth Department of Health. The infestation is likely to be the result of the mosquito being transferred from one jurisdiction to another. It also has the potential to spread to other jurisdictions such as Western Australia, where environmental conditions and history suggest spread is likely. This will be a serious threat to NT public health, but also to national public health. It will be extremely detrimental to the Queensland public health effort to control periodic dengue outbreaks, as the interstate spread of dengue cases will open another front in their dengue battle and threaten the current strategy to contain dengue outbreaks from overseas case importations.

Large outbreaks of dengue in northern Australia would have a negative impact on both national and international tourism and workforce mobility, with potentially serious impacts on industry.

The continued widespread occurrence of *Ae. aegypti* in coastal and western Queensland, means that the NT will be continually vulnerable to the transport of this species by vessels or roads to towns and communities not covered by overseas arrival port surveillance. This latest

incursion is another reminder of this vulnerability and strengthens the case for a reduction in the footprint of this species in north and western Queensland.

There have been very few reported successful attempts to eradicate established populations of *Ae. aegypti* in any area of the world.^{16,2} One of these was the highly successful, vertically structured paramilitary eradication campaign directed by the Pan American Sanitary Board from 1946 to 1970¹⁷ which resulted in the elimination of *Ae. aegypti* from a number of countries in South America. However in the years after this elimination there was a relaxation of survey and control and many of these countries have been re-infested and are now facing very large dengue outbreaks.

The progress in achieving near complete coverage of every property in Tennant Creek before further wet season rains is very encouraging. It is probable that the population of this mosquito is quite low in Tennant Creek at present. The current risk of dengue transmission in Tennant Creek is now extremely remote. It would require someone with overseas acquired dengue fever going there and being bitten by one of these mosquitoes. This infected mosquito would then have to live at least 8-12 days to bite another person to transmit the dengue virus. With the amount of residual insecticide barrier spraying in many properties, this survival now becomes a very low probability. However complete elimination will require many more rounds of property surveys and treatment and then repeated surveys until we can be sure this mosquito has been eliminated.

The NT exotic vector program is an example of one of the very few successful programs in the world able to detect and maintain an *Ae. aegypti* free status in a demonstrated vulnerable and receptive geographic area for over 35 years. The NT program has demonstrated that elimination can be sustained over the long term and is an effective approach.

Acknowledgments

An enormous thank you to the following staff and volunteers who volunteered to help in difficult and trying conditions for long hours, and were extremely professional and

Table. Round 1: Summary of property surveys and insecticide treatments

week # (as per program chart)	Date range start	Date range end	Properties +ve for <i>Ae. aegypti</i>	Receptacles +ve for <i>Ae. aegypti</i>	# property entries during week	% properties +ve
1	23/11/2011	26/11/2011	4	4	30	13.3
2	5/12/2011	9/12/2011	24	30	149	16.1
3	12/12/2011	16/12/2011	31	40	149	20.8
4	19/12/2011	23/12/2011	45	64	295	15.3
5	9/01/2012	13/01/2012	23	33	161	14.3
6	16/01/2012	20/01/2012	13	17	139	9.4
7	23/01/2012	27/01/2012	-	-	-	-
8	30/01/2012	3/02/2012	5	6	102	4.9
9	6/02/2012	10/02/2012	1	1	45	2.2
Totals			146	195	1070	13.6

hardworking, while being courteous and cooperative with each other and the public. These people were vital in ensuring such a rapid decline in mosquito numbers, and have probably prevented the spread of this mosquito to other towns.

Staff involved in order of deployment over the 11 weeks to 2/3/2012. Numbers after names are numbers of weeks deployed.

Nina Kurucz x 4 (ME), Huy Nguyen x 5 (ME), Ben Maunder x 5 (ME), Peter Whelan x 3 (ME), Anne Neubauer (EHO Darwin), Michael Bethune x 2 (EHO Darwin), Ryan Mclean x 3 (EHO ASp), Allan Warchot x 4 (ME), Matt Brearily (NCCTRC), Ted Murphy (NCCTRC), Charles Pitia (NCCTRC), Mahesh Menon (CDC Darwin), Noeleen OShea (CDC Darwin), Christopher Blow x 3 (EHO Darwin), Brendon Sherrat (EHO Darwin), Jane Carter x 4 (ME), Chris Nagy (CDC Darwin), Inda Acharya (NCCTRC), Vicki Gaffney (CDC Kath), Karla James (EHO Kath), Gemma Farmer (CDC Darwin), Sharon Murray (CDC Darwin), Melinda Leach (NCCTRC), Jamie Akers (NCCTRC), Joshua Farrell x 2 (VOL), Jaana Wenham (ME), Bill Pettit x 4 (ME), Arron Clifford (EHO ASp), Chris Heather (CDC

Darwin), James Gazzard (RDH), Kylene Prince (CDC Alice Springs), Mark Russell (CDC ASp), Chris Hogarth (VOL).

Abbreviations

(ME) Medical Entomology Darwin, (NCCTRC) National Critical Care Trauma Response Centre Darwin, (EHO) Environmental Health Officer, (CDC) Centre for Disease Control, (RDH) Royal Darwin Hospital, (VOL) Volunteer.

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***an ASID Workshop on Emerging Issues in Animal and Human Infections in Australia
With support from the AVA***

The Australasian Society for Infectious Diseases, with support from the Australian Veterinary Association, is holding a 2 day meeting **Friday-Saturday July 27/28 2012**. The venue is the **Eastern Avenue Complex** at the **University of Sydney**.

Guidance on use of rainwater tanks in the Northern Territory

Peter Whelan, CDC, Darwin, Peter Rogers and Karen Beirne, Environmental Health, Darwin

Rainwater tanks

In Australia, fresh water is a valuable and limited resource. Rainwater can provide a renewable supply of natural, soft, clear and odourless water that we can use for a range of purposes including drinking, washing, bathing, laundry and gardening. In some places it may be the main source of household water and in others it can supplement mains water supplies.

Note: You must find out local water authority requirements before interconnecting tanks with mains water supplies and determine if water from rainwater tanks in that area is suitable for drinking.

Water quality

The microbiological quality of rainwater collected in domestic tanks may be lower than that of many mains water supplies. However, if systems are properly and fully screened, have first flush diverters, are not in fallout areas from industrial processes and are well maintained, the risk from harmful chemicals or organisms being present is low.

Rainwater in tanks generally contains few chemicals. However, there may be risk of rainwater pollution by airborne contaminants in major urban centres, industrial areas or in ash fallout areas.

There can be faecal contamination by flying foxes (fruit bats), possums and fruit eating birds if there are fruit trees or palms near to a roof. Overhanging trees can add leaves and trap organic materials in roof gutters that can lead to high organic levels in the tank. Some plants (iron woods *Erythrophleum chlorostachys*, Oleander etc) have toxic chemicals in their leaves or fruit.

Note: You should not collect rainwater for human consumption (drinking and food preparation) in areas affected by heavy traffic, industry, incinerators and/or smelters.

Fluoride

Rainwater does not contain fluoride. If rainwater is your major source of water for drinking and food preparation, you should seek advice from your local dentist, school or community dental service or from the Australian Dental Association about alternative sources of fluoride.

Safety

Rainwater is generally safe to drink providing it is clear, has little taste or smell, and is from a well maintained system. If you are very young or very old or immuno-compromised (a cancer patient, diabetic, have had organ transplants or are HIV positive) you should consider disinfecting the water before drinking or cooking with it. You can do this by boiling the water.

Protecting water quality

Making sure water quality is good depends on correct design and installation, followed by sensible maintenance of your rainwater tank and catchment area. Collecting rainwater involves low maintenance, not no maintenance.

The tank

Tanks are available in a range of materials (galvanised steel, concrete, fibreglass and plastic). All can be suitable, providing the tank has been made specifically for collecting rainwater. You may have to wash or flush some types of new tanks before use. The manufacturer should be able to tell you if this is necessary.

The tank should be of a design suitable for the Northern Territory (NT).

When installed, your tank should be covered and every access point, except the inlet and overflow should be sealed (unless in use). The inlet should incorporate a stainless steel mesh cover and strainer to keep out foreign matter and to stop mosquitoes and other insects getting into the tank. The overflow should be covered with a similar insect-proof screen.

The catchment

House and shed roofs are usually used as catchment areas. Rainwater can be collected from most types of roof, providing they have not been painted with lead-based paint or coated with bitumen-based material. Check that there is no corroded material in the catchment area on equipment such as hot water or solar systems. Some types of new tiles and freshly applied acrylic paints may affect the colour or taste of rainwater so you may need to discard the first few run off episodes.

Avoid using pesticide-treated timbers and lead flashing in roof catchments. Also, do not collect rainwater from parts of roofs incorporating flues from wood burners.

Overflows or discharge pipes from roof-mounted evaporative air conditioners or hot water systems should not be allowed to discharge onto the roof catchment area.

First flush devices

First flush devices stop the first portion of roof run-off being collected and will reduce the amount of dust, bird droppings and organic material from leaves that can collect on roofs or gutters from being washed into tanks. It is recommended that you use such devices.

Maintenance

Keep roof catchments and gutters clean and clear of leaves and debris. Remove overhanging branches. Regularly inspect gutters and clean if necessary. Consider using gutter guards.

You should clean insect-proof screens regularly. Do not allow tanks and gutters to become breeding sites for mosquitoes. A tell tale sign for blocked gutters and potential mosquito breeding is a constant drip in the down pipe. Mosquitoes that breed in blocked gutters or rainwater tanks include the receptacle mosquitoes (*Aedes notoscriptus* and *Aedes tremulus*). The dengue mosquito *Aedes aegypti*, a mosquito usually absent from the NT, can breed in non-draining or blocked roof gutters and unsealed rainwater tanks.

If you detect mosquitoes in a tank, locate and seal or screen the entry point. A specific mosquito control insecticide (methoprene) can be added as a charcoal briquette in a piece of panty hose with a float for retrieval for 3 month maximum control as a temporary control measure. There are other surface floating products that can prevent mosquito breeding, so check with the local health authority or the Medical Entomology section. As a last resort, for most types of tanks, you can add 10 mls of domestic kerosene to 1 ml of clove oil to the top of the water every month to stop mosquitoes from breeding.

Note: *Kerosene is not suitable for use with some tank materials, for example, Aquaplate R.*

Check tanks for sludge accumulation at least every 2-3 years. If sludge is covering the bottom of the tank, siphon it out or completely empty the tank. Professional tank cleaners operate in many areas.

Disinfection

Regular disinfection should not be necessary. If you suspect that water in the tank is contaminated with organic material, you can chlorinate rainwater by adding 40 ml of liquid sodium hypochlorite or 7g of granular calcium hypochlorite per 1000L of water (approximately 5mg/L chlorine) until you remove the contamination source.

For further information refer to NT Department of Health resource: [Environmental Health Fact Sheet No. 400: Disinfection of water tanks.](#)

Size of tanks

The size of tank you need to provide the total supply of household water will depend on a number of factors, including the amount and pattern of rainfall, roof area and water usage. The most important issue will be continuity of supply.

If your tank is to provide an alternative supply to mains water, the size of the tank is not a critical issue and will often depend on your needs (drinking and food preparation, bathing, laundry) balanced against cost.

Regulations

Before you purchase or install a rainwater tank, find out the health, building or planning regulations about rainwater tanks in your area.

In the NT there is legislation that states all rainwater tanks must be sealed and mosquito proof so that they can not breed mosquitoes (NT Public and Environmental Health Act, Mosquito Regulations).

For further information refer to NT Department of Health resource: [Environmental Health Fact Sheet No. 404: Requirements for the use of rainwater tanks.](#)

Advice

You can obtain more details from the Medical Entomology unit or your local Environmental Health Officer.

Medical Entomology

CDC NT Department of Health

Telephone: 08 8922 8901

Email: peter.whelan@nt.gov.au

Internet: www.health.gov.au/Medical_Entomology/

Environmental Health

Phone: 1800 095 646 or your local office.

Email envirohealth@nt.gov.au

Internet: www.health.nt.gov.au/Environmental_Health/

Hope for hepatitis sufferers

The Australian Therapeutic Goods Administration (TGA) has approved VICTRELIS[®] for the treatment of chronic hepatitis C, genotype 1, the most common form of the condition affecting 55% of all sufferers. The approval of VICTRELIS[®] provides another option in the treatment of hepatitis C, a condition that has been without another treatment option in more than 10 years.

Chronic hepatitis C is a major public health burden in Australia and affects around 220,000 Australians, with 10,000 new cases reported annually. Without other treatment options and appropriate intervention, estimates of new cases stand at approximately 500,000 by 2020. If left untreated, hepatitis C can cause serious liver disease including cirrhosis, liver cancer and death.

In the last 10 years there has been little development in the availability of treatments for hepatitis C and a significant proportion of patients fail to respond to the current standard of care. VICTRELIS[®] is an approved treatment that works directly on the hepatitis C virus and prevents it from replicating and therefore reproducing.

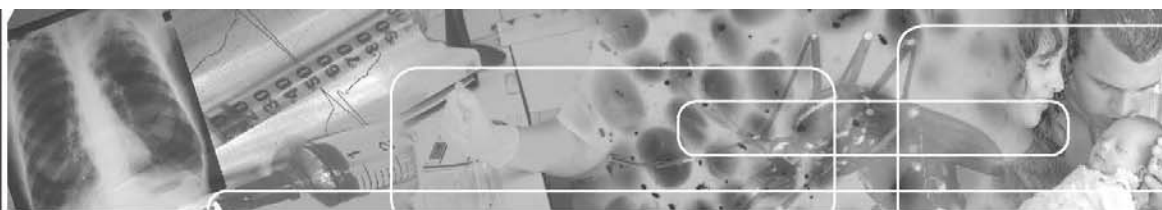
VICTRELIS[®], a direct acting anti-viral agent (DAA), is used in combination with the current standard of care peginterferon alfa and ribavirin. VICTRELIS[®], a protease inhibitor, interferes with an enzyme involved in the replication of the hepatitis C enzyme.

Unfortunately, hepatitis C is a silent disease where there is very little awareness of the condition and patients often present late with severe complications. Hepatitis C is a huge burden for individuals and is still very heavily stigmatised. Having another new treatment option marks progress in the management of patients with this disease.

The product information for VICTRELIS[®] is available on request from the TGA website <https://www.ebs.tga.gov.au>



Northern
Territory
Government



Centre for Disease Control

January 2012

Melioidosis

What is melioidosis?

Melioidosis is a disease caused by bacteria known as *Burkholderia pseudomallei*. The bacteria live below the soil's surface during the dry season but after heavy rainfall are found in surface water and mud and may become airborne.

How is it spread?

The bacteria that causes melioidosis usually enters the body via cuts and sores in the skin or via inhalation of dust or droplets and very rarely by ingestion of contaminated water.

The disease has been found among some domestic and farm animals. Melioidosis does not usually spread from one person to another or from animals to humans.

Where does melioidosis usually occur?

Melioidosis is found in tropical areas throughout the world, particularly in South East Asia and northern Australia.

In Australia cases typically occur in the Top End of the Northern Territory (NT) and in far north Queensland and the Kimberley region of Western Australia. Cases have been found in the NT occasionally as far south as the Tennant Creek region.

What are the symptoms?

The symptoms of melioidosis depend on the site of the infection and this can vary. Often it starts as a chest infection with shortness of breath, productive cough and fever. Other possible presentations include fever with headache and confusion, or

pain and/or difficulty passing urine. People can become ill from 1 to 21 days after being infected and the onset of symptoms may be sudden or gradual. The infection can be fatal and melioidosis requires urgent medical attention and treatment with specific antibiotics.

In some cases the illness may come on much more slowly with weight loss, intermittent fever, chest pain and a cough. Some people may present with skin ulcers, boils or joint or bone infections.


There have also been cases where the disease has caused illness many years after the initial infection. In these cases, the bacteria have been carried by the person and have become active due to a weakening of the immune system.

The diagnosis of melioidosis is made by growing the bacteria with laboratory testing of blood, sputum, urine or a swab from an abscess or non-healing ulcer.

Who is at risk?

People most at risk are those with conditions such as diabetes, heavy alcohol consumption, kidney disease, lung disease, and cancer and those on immunosuppressive therapy including steroids.

Healthy people can also get the disease if they work in muddy soil without good hand and foot protection. Children are at a lower risk for acquiring melioidosis compared with adults. However, it is still possible for children to acquire melioidosis during the wet season, particularly those with chronic diseases or weakened immune systems.


 CENTRE FOR DISEASE CONTROL

What is the treatment?

All patients should be admitted to hospital initially. They are treated with antibiotics, which usually have to be continued for at least 3 months. If treatment is started early, recovery is usually complete. It is important to complete all antibiotics to prevent a relapse.

How can melioidosis be prevented?

There is currently no vaccine against melioidosis. Therefore preventive measures are the key to avoiding infection. People with past melioidosis can be infected again after new exposure

Waterproof shoes or boots will protect your feet when you walk in wet soil where there is pooled water or you work in muddy conditions, for example, when gardening or working in excavations. Open footwear such as sandals are not very good protection. Protective gloves should be worn when handling soil, particularly during the wet season.

Wounds should be promptly and thoroughly washed clean and covered.

If necessary, use pumping equipment to control water ingress when working in excavations.

Due to the potential for aerosolisation (airborne droplets) of *Burkholderia pseudomallei* people with risk factors such as diabetes, heavy alcohol consumption, kidney disease, lung disease and cancer and those on immunosuppressive therapy should stay indoors during periods of heavy wind and rain in the Top End.

Children should avoid playing in muddy areas, wet sandpits or places where water has pooled in grassy areas or where grassed areas are boggy. Sandpits which are dry or dry enough to comfortably play in are also low risk.

These preventative measures are most important if you have any of the following conditions:

- diabetes
- heavy alcohol consumption (>20 standard drinks a week or binge drinking)
- kidney disease
- lung disease
- cancer
- receiving immunosuppressive therapy, including steroids.
- cuts or sores in your skin, particularly on the hands and feet.

For more information contact the CDC in your region

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

or

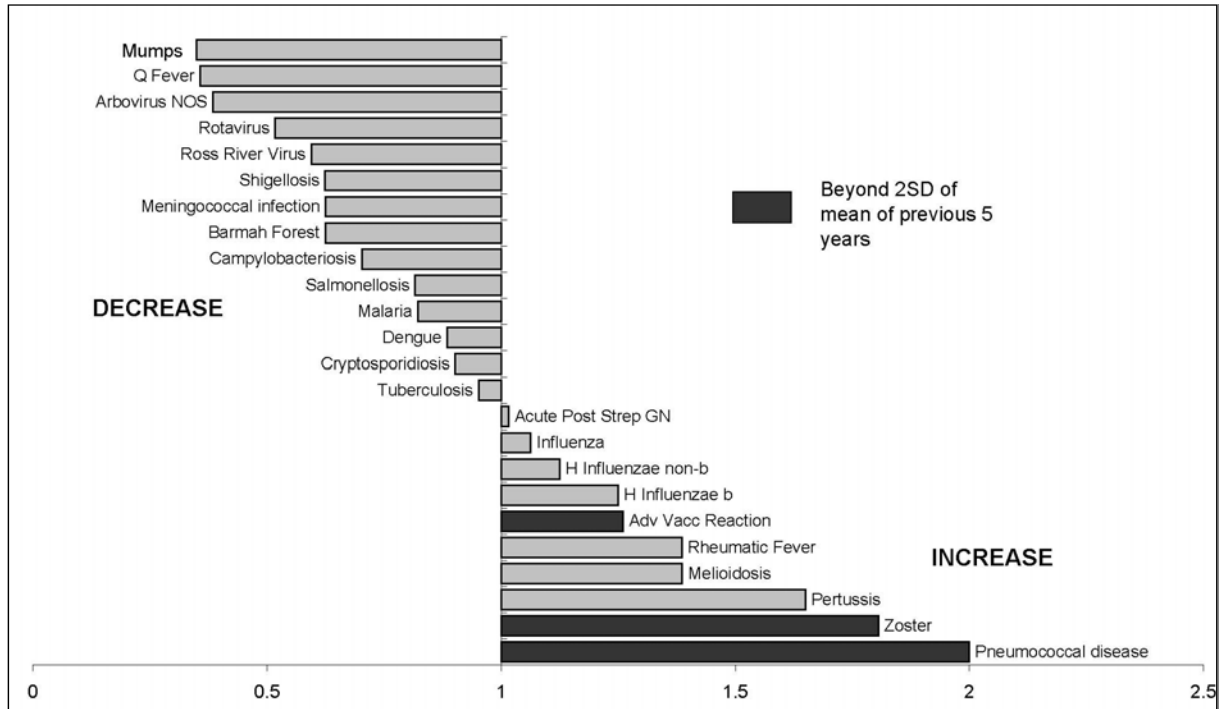
www.nt.gov.au/health/cdc

NT NOTIFICATIONS OF DISEASES BY ONSET DATE & DISTRICTS

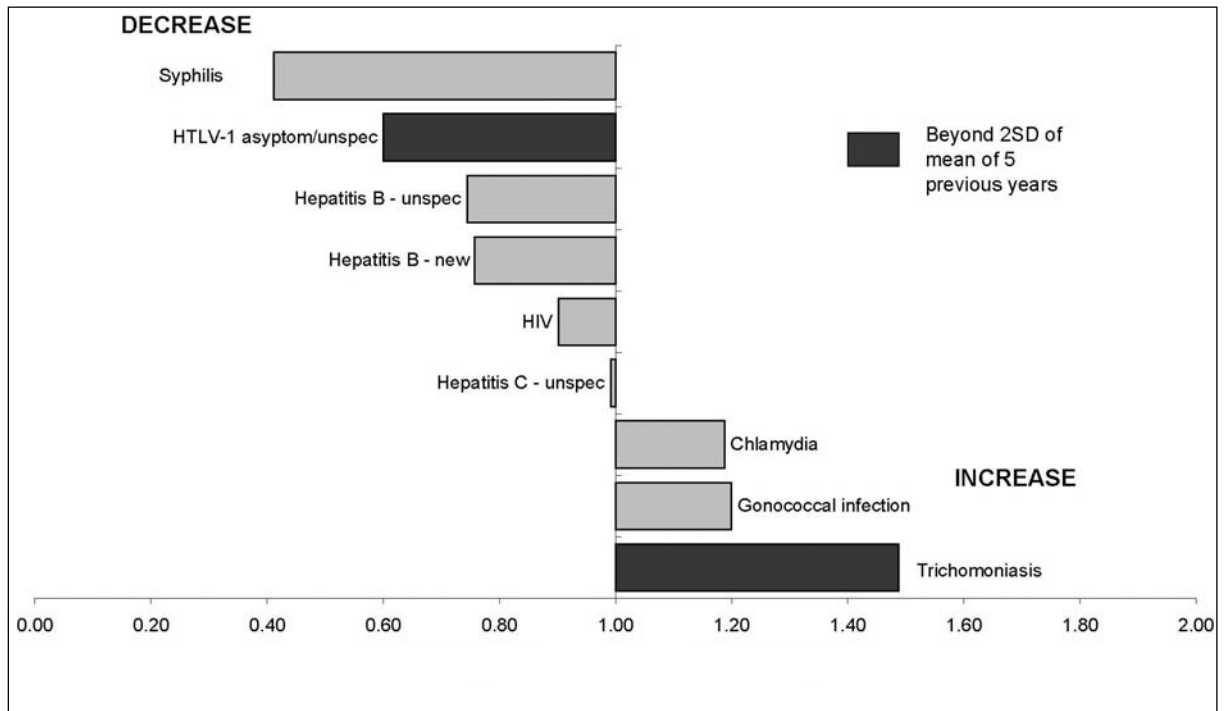
1 January –31 December 2011 & 2010

	Alice Springs		Barkly		Darwin		East Arnhem		Katherine		N T	
	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
Acute poststrep glomerulonephritis	4	4	0	0	4	13	2	3	5	6	15	26
Adverse vaccine reaction	10	15	1	1	37	37	4	2	8	9	60	64
Amoebiasis	0	0	0	0	0	1	0	0	1	0	1	1
Arbovirus - not otherwise specified	1	0	0	0	8	1	1	0	0	0	10	1
Barmah Forest	5	6	1	2	68	48	7	3	6	4	87	63
Brucellosis	0	0	0	0	2	0	0	0	0	0	2	0
Campylobacteriosis	36	32	6	4	109	102	5	7	17	23	173	168
Chickenpox	15	29	4	14	46	66	11	14	10	28	86	151
Chlamydia	858	856	56	42	1270	1272	203	216	305	306	2692	2692
Chlamydial conjunctivitis	12	0	3	1	15	11	0	0	2	0	32	12
Cryptosporidiosis	36	38	2	0	35	34	13	12	14	13	100	97
Dengue	0	1	0	0	55	27	2	1	7	0	64	29
Diphtheria	0	0	0	0	0	1	0	0	0	0	0	1
Food/water borne disease	5	11	1	1	0	0	0	0	0	0	6	12
Gastro - related cases	0	50	0	0	4	0	0	0	1	0	5	50
Gonococcal conjunctivitis	1	1	0	0	0	1	0	0	3	0	4	2
Gonococcal infection	1146	1083	70	74	356	370	123	136	276	349	1971	2012
Gonococcal neonate ophthalmia	0	1	0	0	0	0	0	0	0	0	0	1
Group A streptococcal invasive	0	13	0	6	0	21	0	3	0	1	0	44
Hepatitis A	0	0	0	0	4	3	0	0	0	0	4	3
Hepatitis B - chronic	66	51	8	1	36	36	51	30	27	6	188	124
Hepatitis B - new	0	2	0	0	2	3	1	0	0	0	3	5
Hepatitis B - unspecified	42	70	3	4	91	96	2	1	22	12	160	183
Hepatitis C - new	0	1	0	0	0	1	0	0	0	1	0	3
Hepatitis C - unspecified	39	33	5	0	137	164	2	4	24	10	207	211
H Influenzae b	2	2	0	0	0	0	0	0	0	0	2	2
H Influenzae non-b	7	8	1	0	0	0	1	0	0	0	8	9
HIV	0	0	0	0	7	10	0	1	0	0	7	11
HTLV1 asymptomatic/unspecified	75	50	5	0	2	3	0	0	3	1	85	54
Haemolytic uraemic syndrome	0	0	0	0	0	0	0	0	0	1	0	1
Influenza	11	207	5	11	307	179	158	99	22	141	503	637
Kunjin Virus	0	0	0	1	1	0	0	0	0	0	1	1
Legionellosis	1	1	0	0	2	3	0	1	0	0	3	5
Leprosy	0	0	0	0	1	1	0	1	0	0	1	2
Leptospirosis	1	0	0	0	1	2	0	0	0	0	2	2
Listeriosis	0	1	0	0	0	0	0	0	0	0	0	1
Malaria	0	0	0	0	16	23	1	0	0	1	17	24
Measles	0	1	0	0	2	5	0	0	0	0	2	6
Melioidosis	0	5	1	1	87	41	10	7	8	7	106	61
Meningococcal infection	2	1	0	0	1	2	0	1	0	0	3	4
Mumps	0	0	0	0	0	0	1	0	1	0	2	0
Murray Valley encephalitis	0	1	0	1	0	2	0	0	0	0	0	4
Non TB Mycobacteria	1	0	0	0	4	7	0	0	0	0	5	7
Pertussis	237	32	4	3	85	306	2	5	5	36	333	382
Pneumococcal disease	37	78	3	6	18	31	2	9	5	12	65	136
Q Fever	1	1	0	0	0	0	0	0	0	0	1	1
Rheumatic Fever	12	21	1	0	18	28	11	21	17	14	59	84
Ross River Virus	32	19	3	4	262	133	17	8	28	29	342	193
Rotavirus	150	95	21	6	92	31	23	22	49	22	335	176
Salmonellosis	80	88	13	7	398	237	35	27	78	56	604	415
Shigellosis	28	42	6	6	27	21	9	4	9	8	79	81
STEC/VTEC	0	0	0	0	0	1	0	0	0	0	0	1
Strongyloidiasis dissem	0	0	0	0	0	1	0	0	0	0	0	1
Syphilis < 2y	20	7	5	9	10	5	1	2	9	9	45	32
Syphilis > 2y or unknown	31	16	1	3	40	27	10	3	16	10	98	59
Trichomoniasis	686	972	127	124	646	747	357	425	582	618	2398	2886
Tuberculosis	3	2	1	0	21	31	1	3	7	3	33	39
Typhoid	0	1	0	0	2	2	0	0	0	0	2	3
Typhus	0	0	0	0	1	1	0	0	0	0	1	1
Varicella - unspecified	0	0	0	0	3	3	1	0	0	0	4	3
Vibrio food poisoning	0	0	0	0	2	6	0	0	0	1	2	7
Vibrio invasive	0	0	0	0	0	1	0	0	0	0	0	1
Zoster	30	34	7	4	78	115	11	14	8	24	134	191
Total	3,723	3,982	364	336	4,413	4,313	1,077	1,086	1,575	1,761	11152	11478

Ratio of the number of notifications in 2011 to the mean 2006-2010: selected diseases



Ratio of the number of notifications in 2011 to the mean 2006-2010: sexually transmitted diseases



Comments on notifications p 28

HTLV-1

There were 55 cases of HTLV-1 notified in 2011 compared to the 5 year mean of 92. This is likely to be due to a drop off in the number of tests being performed. It is also possible that with the increase in testing that happened during the previous 5 years the number of undiagnosed cases has decreased – further research is being planned in this area.

Zoster (shingles)

Case numbers of zoster (shingles) for 2011 were 191, the highest recorded since the disease became notifiable in 2005 and 1.8 times the 5 year mean of 106. This is most likely due to increased access to and awareness of the polymerase chain reaction (PCR) testing. Nevertheless, there is a theoretical risk that zoster may increase as a result of decreasing amounts of circulating chickenpox due to the vaccine program. Further study is being undertaken in this area.

Invasive pneumococcal disease

There were 136 cases of invasive pneumococcal disease notified in the 2011, twice the number reported for 2010. Cases due to the serotype 1 outbreak that commenced late in 2010 contributed to 46% of all NT-wide cases in 2011.

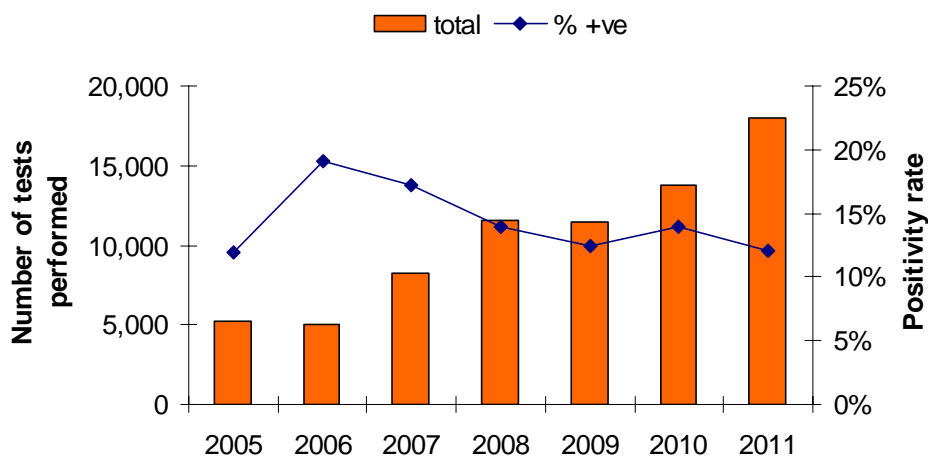
Adverse events following vaccination (AEFI)

There were 64 adverse events following immunisation in 2011 compared with 60 in 2010 and a 5 year mean of 50. In the past 2 years the Therapeutics Goods Administration (TGA), as a result of clusters of adverse events following some vaccines elsewhere, recommended nationally the temporary cessation of subsequent doses of Pneumovax®, the cessation of use of Fluvax® in children < 5years and cautionary use of this vaccine in 5-10 year olds. These events triggered a heightened awareness nationally of and diligence for reporting all adverse events, including minor ones that may have not been reported in the past. All adverse events (both major and minor) reported to CDC have been added to the database in 2010 and 2011 to assist in heralding any further clusters.

Trichomoniasis

Trichomoniasis has replaced chlamydia as the most frequently notified disease in the NT in 2011 for the first time. The most likely reason for this sharp increase was a similarly sharp increase in testing. Testing data collected from the major private pathology laboratory offering the only nucleic acid testing for trichomonas to remote districts showed the number of tests in 2011 increased by 73% over the average number of tests for 2008-2010 (see Figure). The positivity rates remained at approximately the same level.

Figure. Trichomonas testing statistics, WDP data, NT



Immunisation coverage 31 December 2011

Compiled by Charles Strebtor, CDC, Darwin

Immunisation coverage rates for NT children by regions based on Medicare address postcode as estimated by the Australian Childhood Immunisation Register are shown on page 31.

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 December 2011 were born between 1 July 2010 and 30 September 2010 inclusive. To be considered fully vaccinated, these children must have received 3 valid doses of vaccines containing diphtheria, tetanus, pertussis, and poliomyelitis antigens, either 2 doses of PRP-OMP Hib or 3 doses of another Hib vaccine, and 2 doses of hepatitis B vaccine (not including the birth dose) (latest doses due at 6 months of age). All vaccinations must have been administered by 12 months of age.

The cohort of children assessed at 24 to <27 months of age on 31 December 2011 were born between 1 July 2009 and 30 September 2009 inclusive. To be considered fully vaccinated, these children must have received 3 valid doses of vaccines containing diphtheria, tetanus, pertussis, and poliomyelitis antigens, either 3

doses of PRP-OMP Hib or 4 doses of another Hib vaccine, and 2 doses of hepatitis B vaccine (not including the birth dose) and 1 dose of measles, mumps, rubella vaccine (latest doses due at 12 months of age). All vaccinations must have been administered by 24 months of age.

The cohort of children assessed at 60 to <63 months of age on 31 December 2011 were born between 1 July 2006 and 30 September 2006 inclusive. To be considered fully vaccinated, these children must have received 4 valid doses of vaccines containing diphtheria, tetanus, pertussis antigens, 4 doses of poliomyelitis vaccine and 2 valid doses of measles, mumps, rubella vaccine (latest doses due at 4 years of age). All vaccinations must have been administered by 60 months (5 years) of age.

Interpretation

Immunisation coverage in NT children was below the national average for the 12 to <15 and 60 to <63 month cohorts and above the national average for the 24 to <27 months cohort. It is thought that the decline in coverage during this quarter for those in the 12 <15 months cohort is due to administrative delay which have now been resolved.

Immunisation coverage for Indigenous NT children was above the national Indigenous average in the 24 <27 months and 60 <63 months cohorts as well as being above the national average in the 60 to <63 months cohort. This may be related to increased resources that have targeted 4 year olds including a birthday card mail out to children turning 4 years of age in urban Darwin and Alice Springs.

Immunisation coverage for children aged 12-<15 months at 31 December 2011

	Number in District	%DTP	%Polio	%HIB	%Hep B	% Fully vaccinated
Darwin	278	87.1%	87.1%	86.7%	86.3%	86.3%
Winnellie PO Bag	87	92.0%	92.0%	92.0%	93.1%	92.0%
Palmerston/Rural	236	87.7%	87.7%	88.1%	87.7%	87.7%
Katherine	89	89.9%	89.9%	89.9%	89.9%	89.9%
Barkly	23	82.6%	82.6%	82.6%	82.6%	82.6%
Alice Springs	110	84.5%	84.5%	84.5%	84.5%	84.5%
Alice Springs PO Bag	81	87.7%	87.7%	87.7%	87.7%	87.7%
East Arnhem	60	88.3%	88.3%	88.3%	88.3%	88.3%
NT Total	964	87.7%	87.7%	87.7%	87.6%	87.4%
Indigenous	394	83.8%	83.8%	83.8%	84.0%	83.8%
Non-Indigenous	570	90.4%	90.4%	90.4%	90.0%	90.0%
Australia Indigenous	3,600	85.2%	85.2%	85.2%	85.2%	85.1%
Australia Non Indigenous	71,835	92.7%	92.6%	92.5%	92.3%	92.1%
Australia Total	75,435	92.3%	92.3%	92.1%	91.9%	91.8%

Immunisation coverage for children aged 24-<27 months at 31 December 2011

	Number in District	DTP	%Polio	%HIB	%Hep B	%MMR	% Fully vaccinated
Darwin	269	249	92.9%	93.3%	92.6%	92.2%	91.4%
Winnellie PO Bag	89	89	100.0%	100.0%	100.0%	100.0%	100.0%
Palmerston/Rural	195	187	95.9%	96.4%	95.9%	95.4%	94.4%
Katherine	84	80	95.2%	96.4%	95.2%	97.6%	94.0%
Barkly	19	18	94.7%	94.7%	94.7%	94.7%	94.7%
Alice Springs	131	126	96.2%	96.9%	96.2%	96.9%	95.4%
Alice Springs PO Bag	58	58	100.0%	100.0%	100.0%	100.0%	100.0%
East Arnhem	63	60	95.2%	95.2%	95.2%	95.2%	95.2%
NT Total	908	867	95.6%	96.0%	95.5%	95.6%	94.6%
Indigenous	375	365	97.3%	97.6%	97.3%	97.1%	96.3%
Non-Indigenous	533	502	94.4%	94.9%	94.2%	94.6%	93.4%
Australia Indigenous	3,422	3,222	94.2%	94.9%	94.2%	94.4%	92.3%
Australia Non Indigenous	72,713	68,869	94.7%	95.0%	94.3%	93.9%	92.6%
Australia Total	77,043	72,958	94.7%	95.0%	94.3%	93.9%	92.6%

Immunisation coverage for children aged 60-<63 months at 31 December 2011

	Number in District	%DTP	%Polio	%MMR	% Fully vaccinated
Darwin	272	85.7%	85.7%	85.7%	85.7%
Winnellie PO Bag	80	95.0%	95.0%	96.3%	95.0%
Palmerston/Rural	205	85.4%	85.4%	84.9%	84.9%
Katherine	83	85.5%	85.5%	84.3%	84.3%
Barkly	18	88.9%	88.9%	88.9%	88.9%
Alice Springs	106	88.7%	88.7%	88.7%	88.7%
Alice Springs PO Bag	50	96.0%	96.0%	92.0%	92.0%
East Arnhem	37	97.3%	97.3%	97.3%	97.3%
NT Total	851	88.0%	88.0%	87.7%	87.5%
Indigenous	345	91.3%	91.3%	91.0%	90.7%
Non-Indigenous	506	85.8%	85.8%	85.4%	85.4%
Australia Indigenous	3,055	86.9%	86.9%	87.2%	86.5%
Australia Non Indigenous	73,992	90.6%	90.6%	90.4%	90.1%
Australia Total	77,047	90.5%	90.4%	90.3%	89.9%

NT malaria notifications October—December 2011

Beatrice Akello-Zweck, CDC, Darwin

There were 3 notifications of malaria received this quarter. The following table provides details about where the infection was thought to be acquired, the infecting agent and whether chemoprophylaxis was used.

No. cases	Origin of infection	Reason for exposure	Agent	Chemoprophylaxis
1	Indonesia	Student	<i>P. falciparum</i>	No
1	India	Immigration (resident)	<i>P. falciparum</i>	No
1	Iran	Refugee (resident)	<i>P. falciparum</i>	No

World Malaria Day 25 April 2012

Approximately half of the world's population is at risk of malaria, with those living in lower-income countries particularly at risk. Malaria infects more than 500 million people per year and kills more than 1 million. The burden of malaria is heaviest in sub-Saharan Africa but the disease also afflicts Asia, Latin America, the Middle East and even parts of Europe.

The Menzies School of Health Research (MSHR) malaria research program

The MSHR malaria research program, based in Darwin, spans a broad-range of research activities aimed at both prevention and treatment, from epidemiology through to pathophysiology, molecular parasitology, clinical trials, evaluation of the impact and cost-effectiveness of public health interventions. The program works on all 5 species of the *Plasmodium* parasite that cause human malaria, with a particular focus on the 3 that cause most disease and death in the Asia-Pacific region: *falciparum*, *vivax* and *knowlesi* malaria. The program focuses on better understanding *Plasmodium* parasites: the ways in which they become resistant to drugs, how they cause severe disease and death and how our immune system protects against malaria.

Through improved knowledge of these parasites, MSHR is identifying better ways to prevent and treat malaria in different environments, facilitating policy change and monitoring the impact of such change in the health of communities.

Over the last 10 years, MSHR has been working closely with Indonesian partners, policy makers, researchers and health care providers to define the burden of malaria and optimise treatment guidelines in the eastern province of Papua. The studies have confirmed the high levels of drug resistant in *P. vivax* and its association with severe and fatal malaria.

Severe malaria

In 2005 Menzies researchers joined a multicentre trial demonstrating that intravenous artesunate was more effective than quinine (the current treatment advised by World Health Organisation) for severe malaria, reducing mortality by 34%. This trial has defined WHO global policy as well as national policy for the treatment of severe malaria in Indonesia and Australia. Despite this major advance with antiparasitic therapy, mortality from severe malaria remains high. MSHR is undertaking trials of adjunctive L-arginine to increase nitric oxide and improve microvascular function in severe malaria.

Clinical trials in patients with uncomplicated malaria have defined the best treatment for local strains of drug resistant malaria, advocating a uniform policy for all species of malaria. Studies are ongoing to monitor the impact and cost effectiveness of this approach to malaria control.

For more information on the program go to <http://www.menzies.edu.au/research/global-and-tropical-health/malaria>

Centre for Disease Control staff updates

Darwin

Kimberley Caffery, Public Health Nurse, replaces **Noeleen O'Shea** in the illegal fisherperson screening position of the TB Unit. Noeleen returned to New Zealand in December.

Chris Heather, IFD trainee, joined the Darwin TB Unit in January for 6 months in the Medical Registrar rotation. He replaces **Mahesh Menon**, who left the TB Unit in December to continue his training in NSW.

Brendan Johnson, Public Health Nurse, joined the Trachoma Team in Darwin in January and replaces **Nicole Wilson** who has moved to Community Health. **Gabrielle Watts**, Public Health Nurse, joined the Darwin Trachoma Team in February. She has recently worked in the Sudan and originally comes from Victoria.

Stephen Rowles, Sexual Health Physician, has commenced at Clinic 34 Darwin to replace **Nathan Ryder** who is acting Section Head, Sexual Health and Blood Borne Virus Unit while **James Broadfoot** takes 6 months long service leave.

Felicity Trebble, Public Health Nurse, replaces **Gae Allcock** in the Rheumatic Heart Disease Program. Gae has moved to the Maternal Child Health Unit.

Nor Shaharuddin, Public Health Registrar, left the TB Unit in December to return home to continue training in Malaysia.

Rebecca Payne, Sexual Health Nurse, joined Darwin Clinic 34 in January. **Katherine Moriarty** commenced late February as the Blood Borne Virus Policy Officer.

Renee McArthur, AO3, has left Medical Entomology and is now working with the Police. **Debra Liddle, AO5** Medical Entomology, who was a temporary replacement for Raelene Whitters, has resumed a position with Aboriginal Area Protection Authority.

Katherine

Belinda Farmer, Public Health Nurse, has moved from Darwin TB Unit for 2 years to Coordinator position at the Katherine CDC. She will also continue to give support and expertise to the NT-wide and Darwin TB Unit.

Alice Springs

Teem Wing Yip, CDC Co-ordinator, started work as a Remote Medical Officer in Central Australia in February for 6 months to complete her GP training. During that time Darwin Section Heads will regularly visit to support management of the unit.

Rebecca Curr is a Public Health Nurse and Midwife who has recently been working in Darwin. She has returned to Alice Springs to work as the Immunisation Public Health Nurse.

Important notice: Influenza vaccine for children

- CSL Biotherapies' seasonal influenza vaccine *Fluvax*[®] is **NOT** registered for use in children under 5 years.
- There is also a 'precaution' for the use of *Fluvax*[®] in children aged 5 years to < 10 years.
- The recommendation in the NT is to use alternative influenza vaccines for children between 6 months and < 10 years of age, such as **Vaxigrip**[®], **Aggripal**[®], **Fluarix**[®] and **Influvac**[®].

Please see www.immunise.health.gov.au for Therapeutics Goods Administration (TGA) advice on use of seasonal influenza vaccines in children.

All healthcare workers are encouraged to be vaccinated against influenza. Personal protective measures such as handwashing and covering the mouth and nose when sneezing and coughing are important but vaccination against influenza is the best way to protect staff and patients.

For more information about influenza and the influenza vaccine please see <http://www.health.nt.gov.au/Flu/> or the Commonwealth website www.immunise.health.gov.au.

THE NORTHERN TERRITORY DISEASE CONTROL BULLETIN

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