Australian trachoma surveillance annual report, 2010

Carleigh S Cowling, Gordana Popovic, Bette C Liu, James S Ward, Tom L Snelling, John M Kaldor, David P Wilson

Abstract

Endemic trachoma continues to exist in remote Aboriginal communities in Australia. The National Trachoma Surveillance and Reporting Unit, established in 2006, is responsible for the collation, analysis and reporting of trachoma prevalence data and the documentation of trachoma control strategies in Australia. Data were collected from Aboriginal communities designated at-risk for endemic trachoma (defined as prevalence of 5% or greater among children) within the Northern Territory, South Australia and Western Australia. This report presents data collected in 2010. Aboriginal children aged 1–14 years were screened using the World Health Organization grading criteria to diagnose and classify individual cases of trachoma. Aboriginal adults aged 40 years or older were screened for trichiasis. Community screening coverage of the designated at-risk communities was 60% in 2010. Screening coverage of the estimated population of children aged 1–14 years and of adults aged 40 years or older in at-risk communities was 11.5% and 5%, respectively. Trachoma prevalence among children aged 1–14 years who were screened was 11%. Of the communities screened, 36% were found to have no cases of active trachoma and 55% were found to have endemic levels of trachoma. Treatment coverage of active cases and their contacts varied between jurisdictions from 64% to 90%. Trichiasis prevalence was 4% within the screened communities. *Commun Dis Intell* 2012;36(3):E242–E250.

Keywords: active trachoma, antibiotic resistance, facial cleanliness, Northern Territory, SAFE control strategy, South Australia, surveillance, control activities, endemic, Western Australia

Introduction

This is the fifth national trachoma surveillance annual report. Trachoma screening and management data for 2010 were provided to the National Trachoma Surveillance and Reporting Unit (NTSRU) by the health authorities in the Northern Territory, South Australia and Western Australia. Data were analysed by region: five in the Northern Territory,six in South Australia and four in Western Australia. Jurisdictional authorities designated 243 remote communities in these regions as being at-risk of endemic trachoma in 2010.

Trachoma is an eye infection caused by the bacterium *Chlamydia trachomatis*. The infection can be transmitted through close facial contact, hand-to-eye contact, via fomites (towels, clothing and bedding) or by flies. Repeated infections with *C. trachomatis*, especially during childhood, may lead to scarring and distortion of the eyelid, which may in turn cause the eyelashes to rub against the cornea; this is known as trichiasis, and can lead to blindness. The Global Elimination of Blinding Trachoma (GET) 2020 initiative, supported by the World Health Organization (WHO) Alliance, aims to eliminate blinding trachoma by the year 2020, via implementation of the S.A.F.E. strategy; the key components of which are (S) surgery (to correct trichiasis), (A) antibiotic treatment, (F) facial cleanliness and (E) environmental improvements. The Australian Government, in accordance with the GET 2020 initiative and through the *Improving Eye and Ear Health Services for Indigenous Australians for Better Education and Employment Outcomes* measure, committed $16 million over a 4-year period from 2009, toward eliminating trachoma in Australia. The funding is for the improvement and expansion of screening and control activities, as well as the establishment of a strong framework for monitoring and evaluation.

Methods

Each jurisdiction undertook trachoma screening and treatment according to their respective state and territory protocols, broadly following Communicable Diseases Network Australia (CDNA) guidelines.[1] At the commencement of the National Trachoma Management Program in 2006, representatives from each jurisdiction identified at-risk communities based on historical data and other knowledge. Since then, some communities have been reclassified. Screening for trachoma focuses on these communities designated at-risk, but a small number of other communities may also be screened each year, generally because of anecdotal information suggesting the presence of cases.

The WHO trachoma grading criteria[2] were used to diagnose and classify individual cases of trachoma. The CDNA guidelines recommend treatment strategies according to the active trachoma prevalence within the community. For each jurisdiction, screening within at-risk communities used a sampling method whereby all children attending school during the screening period were examined. Data collection forms were developed by the National

Trachoma Surveillance Reference Group based on the CDNA guidelines. Jurisdictions agreed that data would be collected on the forms, entered into a database and forwarded to the NTSRU for checking and analysis. Only community-level information was provided to the NTSRU and included:

- the number of children aged 1–14 years with clean faces* (defined as the absence of dirt, dust and crusting on cheeks and forehead) and the number screened;
- the number of children aged 1–14 years with trachoma* and the number screened;
- the number of treatment episodes of active trachoma, their household contacts and community members;
- the number of adults with trichiasis and the number screened, as well as the number undergoing trichiasis surgery; and
- community level implementation of WHO SAFE strategies.

Northern Territory

Trachoma screening and management in the Northern Territory is undertaken through collaboration between the Centre for Disease Control (CDC) and the Child Health Program in the Northern Territory Department of Health and Families. Trachoma screening is incorporated into the Healthy School Age Kids (HSAK)[3] annual check and is conducted either by local primary health care units or by Aboriginal community controlled health services (ACCHS). Following screening, treatment is generally delivered by the CDC and public health units.

In 2010, systematic trichiasis screening of adults did not occur, but some adult screening took place during community visits by optometrists or ophthalmologists from the Regional Eye Health Service based in Alice Springs.

South Australia

In 2010, Country Health South Australia was responsible for trachoma screening and management, and activities such as conducting visits, were undertaken by the Eye Health and Chronic Disease Specialist Support Program (EH&CDSSP), Aboriginal Health Council of South Australia. Regular visits to South Australian Aboriginal communities were made by visiting optometrists, ophthalmologists and the project coordinator of EH&CDSSP. These visits incorporated trachoma screening and management. Trichiasis screening was undertaken opportunistically for adults who consulted with the EH&CDSSP team.

* Previous reports have reported on children aged 1-9 years; however, in 2010 one jurisdiction only reported aggregated data for children in the age range 1-14 years.

Western Australia

Trachoma screening and management is the responsibility of population health units (PHUs) in Western Australia in the Kimberley, Goldfields, Pilbara and Mid West Health Regions. In collaboration with local primary health care units, PHUs screen all communities in each region within a 2-week period, usually in late August or early September. Treatment is delivered at the time of screening. Trichiasis screening was performed in conjunction with the delivery of annual seasonal influenza vaccinations.

Data analysis

For the purpose of the National Trachoma Management Program, a community is defined as a specific location where people reside and where there is at least one school. Community coverage is defined as the proportion of at-risk communities that are screened for trachoma. Individual screening coverage is the proportion of children in the target age group in a community who were actually screened.

As in previous reports, population data were based on the 2006 census conducted by the Australian Bureau of Statistics (ABS).[4] The census counts for communities were projected forward for subsequent years using the ABS median series projected increase (1.6%, 1.8% and 2.1% in the Northern Territory, Western Australia and South Australia, respectively). The prevalence of active trachoma was calculated using the total number of children screened as the denominator.

Trachoma data were collated in the 0–4, 5–9 and 10–15 year age groups. Comparisons with earlier time points were limited to the 5–9 year age group due to the consistently greater screening coverage across all jurisdictions in this group. Data from 2006 were excluded from the assessment of time trends as the collection methods in that year differed from the methods subsequently adopted. Statistical significance in prevalence trend rates for communities that screened consistently from 2007 was tested with the chi-square test for trend.

For treatment coverage, adherence to the CDNA guidelines was assessed as being the proportion of active cases and contacts requiring treatment who were treated within 2 weeks of the screening of the index case. The data provided did not include information on treatment of active cases outside the 2-week period after screening. The proportion of contacts treated, regardless of when their treatment took place, was also estimated.

Due to differences in the interpretation of the treatment guidelines, if the prevalence of trachoma reached the level at which mass community treat-

ment was indicated, two methods were used to estimate the number of individuals requiring treatment in that community.

- Method 1 (targeted treatment) was based on the number of cases of trachoma detected through screening plus the number of contacts reported as requiring treatment. If mass treatment was required but the number of contacts requiring treatment was not reported then it was estimated as being the number of children in the community aged 6 months to 14 years plus the number of household contacts of active cases.
- Method 2 (whole community treatment) was based on the assumption that when mass treatment was required, all members of the community should be treated.

Results

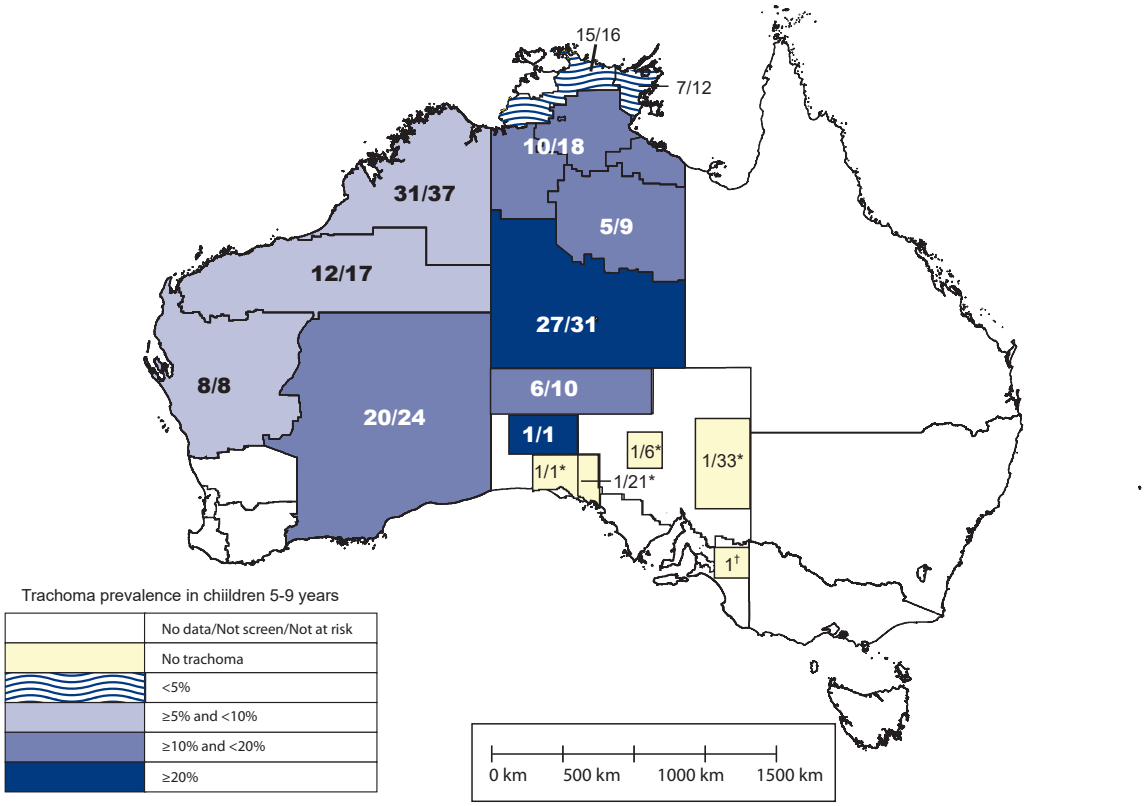
Screening coverage

Overall, 150 (63%) of 240 at-risk communities were screened for trachoma during the year 2010 (Table 1 and Figure 1). Within these communities, 6,762 (11.5%) of the estimated 58,429 resident children aged 1–14 years at risk of trachoma were screened. The proportion of children aged 1–14 years in at-risk communities who were screened was 45% for the Northern Territory, 37% for Western Australia and 3% for South Australia (Table 1). Compared with previous years, both the number of at-risk communities screened in the Northern Territory and Western Australia, and the proportion of children screened within these communities increased in 2010 (Figure 2). Screening coverage was greatest in the 5–9 year age group, at an average of 57% of children in at-risk communities (Table 1).

Clean face prevalence

In 2010, the prevalence of clean faces in screened populations was 80% overall, and among children aged 1–14 years it was 80% in the Northern Territory, 45% in South Australia and 81% in Western Australia (Table 1).

Figure 1: Number of at-risk communities screened and trachoma prevalence,* 2010



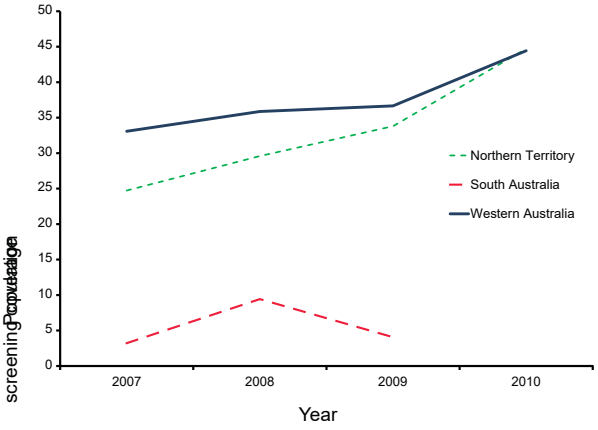
The numerator and denominator associated with each region refer to the number of communities screened and the number of at-risk communities within each region, respectively.

Colours denote the level of trachoma prevalence among children aged 5–9 years within the region.

* Prevalence is reported for children aged 5–9 years except in South Australia where data were only provided for the age grouping 1–14 years.

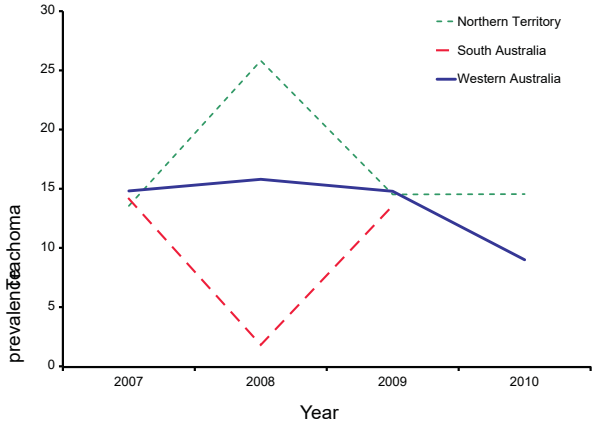
† Less than 10 children screened and number of communities at risk not known.

Figure 2: Population screening coverage* of children aged 5–9 years, 2007 to 2010, by year and jurisdiction



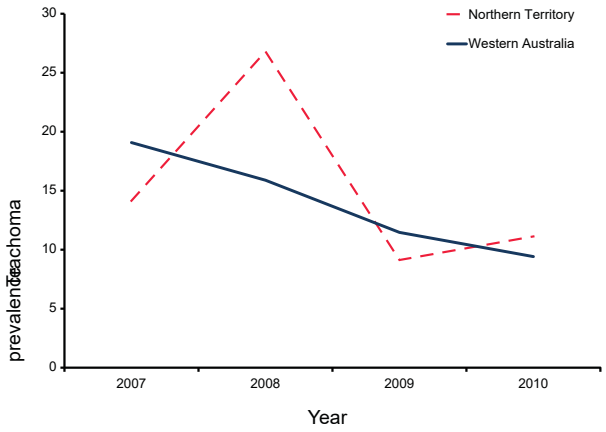
* Calculated as the number of children screened (in at-risk and not at-risk communities) in region containing at least one community at-risk divided by the estimated population of region.

Figure 3: Trachoma prevalence in screened* children aged 5–9 years, 2007 to 2010, by year and jurisdiction



* Includes children in communities screened but not at risk.

Figure 4: Trachoma prevalence in communities consistently screened* 2007 to 2010, by year and jurisdiction



* Prevalence is for children aged 5–9 years in communities where more than 10 children were screened.

Trachoma prevalence

The prevalence of trachoma among children aged 1–14 years in at-risk communities who were screened was 11% (Table 1). In scre ened communities, 36% (52/146) had no trachoma detected, while 44% (64/146) had a prevalence of trachoma greater than 10% (Table 2). The prevalence of trachoma was 17% in South Australia, 12% in the Northern Territory and 9% in Western Australia (Table 1). In 2010 there was no significant change in the prevalence of trachoma among children aged 5–9 years screened in the Northern Territory (Figure 3), nor among the 1–14 year age group screened in South Australia, compared with the previous year. A significant decrease in trachoma prevalence was detected among communities screened every year from 2007 to 2010 in Western Australia (trend, $P<0.001$) (Figures 3 and 4). Data to examine time trends in trachoma prevalence were not available for South Australia. Five communities defined as potentially at-risk, but not designated at-risk, were screened for trachoma in 2010: one in the Northern Territory, one in South Australia, and three in Western Australia. Trachoma was found in all three of the Western Australian communities but not in the other two potentially at-risk communities.

Treatment coverage

In the Northern Territory and Western Australia, cases requiring treatment were detected in 98 (73%) of the 135 communities that were screened. In 91 communities, both trachoma cases and their contacts were treated. Treatment coverage of cases and contacts was 64% in the Northern Territory, 90% in Western Australia and 70% across both jurisdictions combined. Data on treatment coverage were not available for South Australia (Table 3).

Trichiasis

A total of 1,036 adults (8.3%) of an estimated at-risk population of 12,557 were reported to have been screened across the Northern Territory, South Australia and Western Australia (Table 4). Nine cases of trichiasis were reported in the Northern Territory, 13 cases in South Australia and none in Western Australia, giving an overall prevalence among adults screened of 2%. No data were available regarding the extent of surgery for trichiasis in 2010.

Table 1: Trachoma screening coverage and prevalence and clean face prevalence, 2010, by state or territory

	Northern Territory				South Australia				Western Australia				Total			
Number of communities at risk	86				71				83				240			
Number of communities screened (% of all communities)	64 (74%)				11 (15%)				75 (90%)				150 (63%)			
Age group (years)	**1–4**	**5–9**	**10–14**	**1–14**	**1–4**	**5–9**	**10–14**	**1–14**	**1–4**	**5–9**	**10–14**	**1–14**	**1–4**	**5–9**	**10–14**	**1–14**
Estimated number of Aboriginal children at risk	2,843	3,705	3,395	9,943	818	1,029	1,125	2,972	1,724	2,300	1,980	6,004	5,384	7,034	6,500	18,918
Children examined for clean face	344	2,468	1,639	4,451	N/A	N/A	N/A	86	205	1570	501	2,276	N/A	N/A	N/A	6,813
Children with clean face	224	1,836	1,483	3,543	N/A	N/A	N/A	39	132	1241	461	1,834	N/A	N/A	N/A	5,416
Clean face prevalence	65%	74%	90%	80%	N/A	N/A	N/A	45%	64%	79%	92%	81%	N/A	N/A	N/A	79%
Children examined for trachoma	345	2,468	1,628	4,441	N/A	N/A	N/A	95	202	1,545	503	2,250	N/A	N/A	N/A	6,786
Trachoma screening coverage	12%	67%	48%	45%	N/A	N/A	N/A	3%	12%	67%	25%	37%	N/A	N/A	N/A	36%
Children with active trachoma	42	359	125	526	N/A	N/A	N/A	16	25	151	32	208	N/A	N/A	N/A	750
Active trachoma prevalence	12%	15%	8%	12%	N/A	N/A	N/A	17%	12%	10%	6%	9%	N/A	N/A	N/A	11%
Trachoma prevalence 1–9 years	14%				N/A				10%				13%*			
Trachoma prevalence 1–9 years (weighted by population)*	14%				N/A				11%				13%*			

* Calculated as the proportions of children with active trachoma in age groups 1-4 and 5-9 years, weighted by the estimated population sizes of each age group. This was undertaken in order to account for uneven coverage with respect to age groups.

Table 2: Number of communities, children aged 1–14 years, 2010, by trachoma prevalence range

Prevalence	At-risk communities							
	Northern Territory		South Australia		Western Australia		Total	
0%	15	23%	7	64%	30	42%	52	36%
>0% but <5%	9	14%	0	0%	5	7%	14	10%
≥5% but <10%	9	14%	0	0%	7	10%	16	11%
≥10%	31	48%	4	36%	29	41%	64	44%
Total	64		11		71		146	

Table 3: Trachoma treatment coverage 2010, by jurisdiction

	Northern Territory					Australia Western					Total				
Number of communities at risk			86					83					240		
Number of communities requiring treatment			50					48					98		
Age group (years)	**1–4**	**5–9**	**10–14**	**15+**	**All**	**1–4**	**5–9**	**10–14**	**15+**	**All**	**1–4**	**5–9**	**10–14**	**15+**	**All**
Active cases requiring treatment	42	360	125	N/A	527	25	151	32	N/A	208	67	511	157	N/A	735
Active cases who received treatment within 2 weeks	25	145	47		217	24	148	32		204	49	293	79		421
% Active cases received treatment					41%					98%					57%
Estimated contacts requiring treatment					4,257					1,181					5,438
Number of contacts who received treatment	370	505	381	1,595	2,851	97	271	149	537	1,054	467	776	530	2,132	3,905
Estimated overall treatment coverage					67%					89%					72%

N/A Not available

Table 4: Trichiasis screening coverage, prevalence and treatment among adults aged over 40 years, 2010, by jurisdiction

	Northern Territory		Australia South		Australia Western		Total	
	n	%	n	%	n	%	n	%
Estimated adult population of at-risk communities	6,509		2,297		3,751		12,557	
Number of communities at-risk	86		72		86		243	
Number of communities screened for trichiasis	18	21	12	38	14	17	34	17
Adults examined (% estimated adult population of at-risk communities)	221	3	438	19	377	10	1,036	8
Number with trichiasis (% of adults screened)	13	6	9	2	0		22	2
Offered ophthalmic consultation	12		0		0		12	
Surgery in past 12 months	1		0		1		1	

Discussion

The continuing presence of endemic trachoma in Aboriginal communities in Australia in 2010 highlights the need to prioritise its elimination. In 2010, a substantial amount of funding was provided to the jurisdictions by the Australian Government to increase activities to eliminate trachoma. This is reflected by some increase in community and population screening coverage, some reported increases in health promotion resources and programs, and in the number of personnel assigned to targeting trachoma elimination and promotion of hygiene and environmental improvements. It is anticipated that this should lead to a reduction in endemic trachoma in the next few years.

Screening coverage

Coverage can be measured as either the proportion of communities or the proportion of individuals screened. In 2010, community coverage levels were relatively high in the Northern Territory and Western Australia but low in South Australia. Individual screening coverage levels were low across all 3 jurisdictions. Interpretation of the coverage data is influenced by the accuracy of community population size estimates, the school-based approach to screening, and the designation of communities as 'at-risk'. Estimates of population sizes of communities were based on projections from census data. However, the estimates may not accurately reflect population sizes at the time of screening due to the small size of many communities and high mobility of many community members.

Most children were screened through school-based programs; consequently, screening rates were greater in the 5–9 and 10–14 year age groups than in the 1–4 year age group, even though the youngest group is recognised as being at highest risk of trachoma. In the 1–4 year age group, most children screened were at the upper end of the age range and attending preschools, kindergartens or play groups linked to the schools. Extending trachoma screening to other programs that target younger children would improve coverage in these important age ranges.

The designation of at-risk status does not appear to have been systematically reviewed in any jurisdiction. Data collected in Western Australia in 2010, as well as previous annual national trachoma reports and in the National Indigenous Eye Health Survey conducted in 2008, demonstrate that communities considered not-at-risk may in fact harbour endemic trachoma. The NTSRU and jurisdictional stakeholders should collaborate to establish a register of communities that includes the at-risk status and trachoma screening history of each community. This would provide guidance to jurisdictions regarding communities to be targeted for screened and to improve consistency in estimating and monitoring screening coverage over time.

Trachoma prevalence

Eleven per cent of all children screened across the jurisdictions were found to have trachoma, with varying rates of prevalence in at-risk communities. This demonstrates that Australia continues to have endemic levels of trachoma. The target set by both CDNA and the WHO is a community-level prevalence among children aged 1–9 years of less than 5%. Compared with previous years, the proportion of children with active trachoma decreased in Western Australia, remained stable in the Northern Territory,and increased in South Australia, although this estimate is based on small numbers of children screened. Among the at-risk communities that were screened annually from 2007 to 2010, there were clear decreasing trends in trachoma prevalence in Western Australia but not in the Northern Territory.

It is likely that the decrease in trachoma prevalence observed in at-risk Western Australia communities is real. The prevalence of clean faces has been at approximately the same levels in both Western Australia and the Northern Territory, as has the proportion of children screened. However, a greater proportion of communities designated as at-risk in Western Australia have been consistently screened compared with the Northern Territory. Furthermore, screening in Western Australia occurs within a shorter time period than in the Northern Territory, which also enables reductions in the interval from screening to treatment. Re-infection might occur more frequently in the Northern Territory, either in the interval between screening and treatment, or through contacts between people in screened and unscreened communities. This hypothesis requires further critical examination.

Trachoma treatment

The CDNA guidelines recommend treating active cases as well as their household contacts and community members when required, within 2 weeks of screening. Nationally, just over one-third of cases detected through screening, and their contacts, were treated according to this recommendation. In Western Australia, treatment coverage was 89% in 2010, an increase from 70% in 2009[5] and exceeding the WHO target of 80%. In the Northern Territory, 20% of cases and contacts were treated within the recommended time period. Treatment of active cases and their appropriate contacts, irrespective of the interval since screening, is also an important indicator of appropriate management. When treatment coverage is estimated irrespective of timing, coverage of contacts was 90% in Western Australia and 65% in the Northern Territory.

Data on active cases treated outside of the 2-week period following screening were not collected in 2010. The success in achieving treatment goals in Western Australia may be attributed to the method of program delivery, which involves screening and treatment all taking place over the same 2-week period across its regions. In the Northern Territory, unusually high rainfall during a normally dry weather season in 2010 contributed to some delays in treatment. South Australia did not provide data regarding treatment of cases or contacts. CDNA guidelines recommend different treatment strategies according to the prevalence and clustering of active cases. These guidelines have been interpreted differently by different stakeholders. For this report, a second method was used to estimate treatment coverage. This method leads to substantially lower treatment coverage estimates. Resolution of the inconsistencies in interpretation of the guidelines for treating contacts is required to ensure that best practice is followed.

Trichiasis

Screening coverage for trichiasis was low across all jurisdictions. Among adults aged 40 years or older, coverage was 3% in the Northern Territory, 19% in South Australia and 10% in Western Australia. The low levels suggest that current approaches to integrate trichiasis screening with other programs are not achieving their goal. Furthermore, it is not clear that the trichiasis screening is being optimally targeted, because communities that are currently at-risk for trachoma may not reflect adult populations exposed to trachoma as children, due to the changing risk status of the communities. Establishing a register of all remote communities may assist in establishing better records of communities that would have substantial adult populations affected by trichiasis.

Referral processes were reported to be functioning within 97% of communities in the Northern Territory and 45% of communities in Western Australia; however, this does not assess the effectiveness of the systems. Ophthalmic consultation and surgery reports do not reflect the extent of actual service delivery. Greater collaboration in developing data transfer processes with stakeholders and jurisdictions that provide ophthalmic consultations and trichiasis surgery is required.

Facial cleanliness

At a community level, lower levels of facial cleanliness are a recognised risk factor for trachoma.[1] For this reason, facial cleanliness is a major component of the SAFE strategy. The overall proportion of children screened who had clean faces remained stable, with 80% of children screened in the Northern Territory, 82% prevalence in Western Australia and 51% in South Australia having clean faces.

Measures of facial cleanliness may not be a true estimation of actual risk. This could be due to the clean face definition specified in the CDNA guidelines, 'absence of dirt or crusting on cheeks or forehead',[1] which does not align with actual risk of transmission. Risk of transmission may be more accurately reflected by the presence of ocular and nasal discharge.[6]

Data quality and surveillance systems

A number of issues must be addressed if the national trachoma surveillance system is to provide optimal support for control programs. These include the better definition of population denominators, designation of at-risk status for communities and the interpretation of the CDNA trachoma control guidelines. There are also issues of data quality to be addressed, particularly with regard to inconsistent and missing items. For example, counts by age group were not uniformly provided, and data were missing for numbers treated and for components of the SAFE strategy implemented.

The NTSRU will work with the National Trachoma Surveillance Reference Group and jurisdictions to address these issues. It will also undertake the development of a web-based data entry system and collaborate with jurisdictions and Aboriginal community controlled health organisations to facilitate the transfer of trachoma data from clinic-based health information systems to jurisdictional and national databases. These changes will reduce delays in data transfer and minimise human error in data transfer.

Particular attention is required for South Australia, where there has not previously been a systematic screening and treatment program. The data provided for the 2010 report show modest community coverage, low population coverage and inconsistent reporting of other variables. The establishment of a contract between the Department of Health and Ageing and the South Australian Government in late 2010 to conduct trachoma control activities should lead to a substantial improvement in program coverage and the quantity and quality of surveillance data from South Australia.

Recommendationsfortrachoma surveillance

Whilst improvements have occurred over the past 5 reporting years, data gaps and other limitations noted above prevent precise estimates of disease prevalence and program delivery and impact. To overcome these barriers, we recommend:

- the establishment of a web-based system that will allow efficient transfer of data between jurisdictions and the NTSRU, as well as the generation of reports in a timely manner;

- that jurisdictional data collection protocols and trachoma management guidelines are made consistent with the CDNA guidelines, ensuring that there is no ambiguity in the interpretation of the guidelines;
- the establishment of a systematic and accountable procedure for updating the designation of communities as at-risk or not-at-risk, including a register of communities;
- the extension of screening and reporting of trachoma to other Australian jurisdictions where communities may be at risk of trachoma; and
- that a review and formalisation of procedures (and agreements as needed) be conducted in the following areas:
  - estimation of denominators for population sizes of communities;
  - collection of antibiotic resistance data;
  - collection of environmental data;
  - collection of information on health promotion information, education and communication material and program activity; and
  - trichiasis screening processes and management, referral systems and related data collection including data pertaining to surgery for trichiasis.

These recommendations, along with greater collaboration within and between jurisdictions and communities, should enable greater monitoring and evaluation of trachoma control efforts during the important next few years over which Australia aims to move towards trachoma elimination.

Authordetails

Carleigh S Cowling, Senior Surveillance Officer[1]
Gordana Popovic, Quantitative Research Assistant[1]
Bette C Liu, Senior Lecturer[1]
James S Ward, Head, Aboriginal and Torres Strait Islander Health Program[1]
Tom L Snelling, Infectious Disease Physician[2,3]
John M Kaldor, Professor of Epidemiology[1]
David P Wilson, Associate Professor and Head, Surveillance and Evaluation Program for Public Health[1]

1.National Trachoma Surveillance Reporting Unit, The Kirby Institute, University of New South Wales, Darlinghurst, New South Wales
2. Sydney Children's Hospital, Randwick, New South Wales
3.National Centre for Immunisation Research and Surveillance, Westmead, New South Wales

Corresponding author: Ms Carleigh Cowling, Senior Surveillance Officer, National Trachoma Surveillance Reporting Unit, The Kirby Institute, University of New South Wales, DARLINGHURST NSW 2010. Telephone: +61 2 9385 0865. Email: ccowling@kirby.unsw.edu.au

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