

Australian Trachoma Surveillance Report

2010



Edited by National Trachoma Surveillance and Reporting Unit



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Australian Trachoma Surveillance Report 2010

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Acknowledgements

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Guide to technical terms/definitions

Active trachoma: The presence of chronic inflammation of the conjunctiva caused by infection with *Chlamydia trachomatis*; includes World Health Organization grades Trachomatous inflammation follicular (TF) and/or Trachomatous inflammation intense (TI).

At-risk communities: Communities classified as being at higher risk of trachoma.

Clean face: Absence of dirt, dust and crusting on cheeks and forehead.

Community coverage: Calculated using the number of communities that were screened for trachoma as a proportion of those communities that were designated by each jurisdiction to be at-risk of trachoma in 2010.

Endemic trachoma: A prevalence of active trachoma of 5% or more in children aged one to nine years or a prevalence of trichiasis of at least 0.1% in the adult population. 'Endemic trachoma' is also referred to as blinding endemic trachoma.

Hyper-endemic trachoma: A prevalence of active trachoma of 20% or more in children within a community.

Prevalence of active trachoma: Includes active trachoma detected by trachoma screening programs and, in some circumstances, cases detected in clinics.

Screening coverage: Calculated using the number of children or adults who were examined for Trachoma or trichiasis as a proportion of those who were projected from the ABS 2006 Census of Population and Housing to be resident in Communities at-risk in 2010.

Trachomatous inflammation follicular (TF): Presence of five or more follicles in the upper tarsal conjunctiva, each at least 0.5 mm in diameter, as observed through a loupe.

Trachomatous inflammation intense (TI): Pronounced inflammatory thickening of the tarsal conjunctiva that obscures more than half of the normal deep tarsal vessels.

Trachomatous scarring (TS): Presence of scarring in the tarsal conjunctiva.

Trachomatous trichiasis (TT): Evidence of the recent removal of in-turned eyelashes or at least one eyelash rubbing on the eyeball.

Treatment coverage: Calculated using the number of children and adults who received treatment for trachoma as a proportion of those who were calculated according to appropriate treatment strategy to receive treatment for trachoma.

Abbreviations

ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Service(s)
AGEI	Australian Government Emergency Intervention
AHCSA	Aboriginal Health Council of South Australia
AMS	Aboriginal Medical Service
CDNA	Communicable Diseases Network Australia
EH&CDSSP	Eye Health and Chronic Disease Specialist Support Program
HSAK	Healthy School Age Kids program
NACCHO	National Aboriginal Community Controlled Health Organisation
NT	Northern Territory
NTSRU	National Trachoma Surveillance and Reporting Unit
OATSIH	Office for Aboriginal and Torres Strait Islander Health
SA	South Australia
SAFE	Surgery, Antibiotics, Facial Cleanliness, and Environmental improvement
TF	Trachomatous inflammation – follicular
TI	Trachomatous inflammation – intense
TS	Trachomatous scarring
TT	Trachomatous trichiasis
UNSW	University of New South Wales
WA	Western Australia
WHO	World Health Organization

Australian trachoma surveillance 2010: Executive summary

Trachoma screening and management data for 2010 were provided to the National Trachoma Surveillance and Reporting Unit by the Northern Territory (NT), South Australia (SA) and Western Australia (WA). Data were analysed by region, with five regions in the NT, six in SA and four in WA. Jurisdictional authorities designated 243 remote Aboriginal communities in these regions as being at-risk of endemic trachoma in 2010.

Screening coverage

- Overall, 150 (63%) of 240 at-risk communities were screened for trachoma during the year (Figure 1.2, Table 1.1).
- Within these communities, 6,762 (11.5%) of 58,429 resident children aged 1-14 years estimated to be at risk of trachoma in the target age range were screened.
- The screened proportion of children aged 1-14 years in at-risk communities was 45% for the NT, 37% for WA and 3% for SA (Table 1.1).
- Compared to previous years, screening coverage in 2010 has increased in the NT and WA, both in terms of the number of at-risk communities screened and the proportion of children screened within these communities (Figure 1.3).
- Screening coverage was highest in the 5-9 year age group, at an average of 57% of children in at-risk communities (Figure 1.10).
- Defining at-risk communities and estimating a population size remains a challenge and potentially limits the interpretation of estimated screening coverage.

Clean face prevalence

- In 2010, the overall prevalence of clean faces in screened populations was 80%, and among 1-14 year old children it was 80% in the NT, 45% in SA and 81% in WA (Table 1.1, Figure 1.4).
- Compared to previous years, the prevalence of clean faces remained stable.
- 53% of screened communities in WA and 42% in the NT met the WHO target of over 80% of children in the community screened having a clean face (Figure 1.5).
- Clean face prevalence was highest in the 10-14 year age group (Figure 1.12).

Trachoma prevalence

- The prevalence of trachoma among children screened aged 1-14 years in at-risk communities was 11% (Table 1.1).
- 36% (52/146) of communities screened had no trachoma detected, while 44% (64/146) screened had a prevalence of trachoma over 10% (Table 1.2).
- The prevalence of trachoma was 19% in SA, 12% in the NT and 9% in WA (Table 1.1).
- There was no change in the prevalence of trachoma among 5-9 year olds screened in 2010 in NT and 1-14 year olds in SA compared to prevalence estimates from the previous year.
- In WA there a decrease of 6 percentage points in 2010 compared with 2009, which was statistically significant ($p < 0.01$), (Figure 1.6).
- The proportion of screened communities with no trachoma increased in WA and was unchanged in the NT (Figure 1.7).
- The proportion of screened communities with endemic trachoma ($>5\%$ prevalence) decreased in WA and was unchanged in the NT (Figure 1.8).
- A decreasing trend in prevalence was found to be significant ($p < 0.01$) in WA and NT communities that had been screened every year from 2007 to 2010, there was no evidence that the trend differed between jurisdictions ($p > 0.1$) (Figure 1.9).
- Data to examine time trends in trachoma prevalence were not available for SA.
- The highest prevalence of trachoma was in the 1-4 (12%) and 5-9 (13%) year age groups (Figure 1.11).

Treatment coverage

- In the NT and WA, cases requiring treatment were detected in 98 out of the 135 communities screened.
- In 91 communities, both trachoma cases and their contacts were treated.
- Treatment coverage of cases and contacts was 64% in the NT, 90% in WA and 70% across both jurisdictions combined.
- Data on treatment coverage were not available for SA.

Trichiasis

- Trichiasis screening coverage was low in all jurisdictions, with a total of 1036 adults of an estimated at-risk population of 12557 were reported to have been screened across the NT, SA and WA (Table 1.2).
- Nine cases of trichiasis were reported in the NT, 13 cases in SA and none in WA, giving an overall prevalence among adults screened of 2%.
- No data were available regarding the extent of surgery for trichiasis in 2010.

Health Promotion activities

- Both the NT and WA reported increases in health promotion resources and programs during 2010 that promote clean faces.
- SA did not report on health promotion activities.

Environmental conditions

- In WA, 29% of communities screened were reported as having good environmental conditions, 20% reported variable conditions, 21% had poor conditions and there were no reports for 31%.
- SA and the NT did not report on the environmental conditions of communities screened.

Communities screened while not designated as at-risk

- Five communities defined as being potentially at-risk, but not designated at-risk, were screened for trachoma in 2010: one each in the NT and SA and three in WA.
- Trachoma was found in all three WA communities but not in the other two.

Main messages

- /// *The number of communities screened has increased in Western Australia and the Northern Territory between 2008 and 2010.*
- /// *The proportion of children screened in at-risk communities increased in the Northern Territory and Western Australia between 2007 and 2010.*
- /// *Trachoma remains endemic, as defined by national and World Health Organization guidelines, in many remote communities in the Northern Territory, South Australia and Western Australia.*
- /// *The prevalence of trachoma in screened communities decreased in Western Australia between 2009 and 2010 and was stable in the Northern Territory. Insufficient data were available from South Australia to determine a time trend.*
- /// *The prevalence of clean faces in screened populations was high at 80% in 2010 and has been consistently so since 2007.*
- /// *Overall treatment coverage was 70%, but varied widely, indicating the need for improved coverage in many communities if control goals are to be achieved.*
- /// *There was limited information on the extent of screening for trichiasis in adults in at-risk communities, so the burden of disease cannot be accurately estimated.*
- /// *Jurisdictions received a substantial injection of funding in 2010, which is reflected in increases in personnel and health promotion resources.*
- /// *Improvement is needed in the screening coverage of communities for both trachoma and trichiasis, the coverage and timeliness of treatment, the definition of populations to be screened, clarity of treatment strategies, and in the methods used for data collection.*

Background

Trachoma is one of the major causes of preventable blindness globally.¹ It is an eye infection caused by the bacterium *Chlamydia trachomatis* (*C. trachomatis*) serotypes A, B, Ba and C. The infection can be transmitted through close facial contact, hand-to-eye contact, via fomites (towels, clothing and bedding) or by flies. Trachoma is generally found in dry, dusty environments and is linked to poor living conditions. Overcrowding of households, limited water supply for bathing and general hygiene, poor waste disposal systems and high numbers of flies are all associated with trachoma. Children generally have the highest prevalence of trachoma and are believed to be the main reservoirs of infection due to longer durations of infection compared to adults.

Infections with *C. trachomatis* cause inflammation of the conjunctiva and trachoma is diagnosed by the presence of follicles (white spots) and papillae (red spots) of the inner upper eye lid. Repeated infections with *C. trachomatis*, especially during childhood, may lead to scarring, contraction and distortion of the eyelid which may in turn cause the eyelashes to rub against the globe; this is known as trichiasis and can lead to blindness.^{2 3}

Trachoma is usually treated by a single dose of azithromycin. Best practice includes treatment of all members of the household in which a case resides. Depending on the prevalence of trachoma in the community as a whole, treatment may also be extended to all children aged six months to 14 years; all household contacts of children, or all members of the community.⁴

Scarring of the cornea due to trichiasis is irreversible. However, if early signs of in-turned eyelashes are found then surgery is usually effective in preventing further damage to the cornea.

The Global Elimination of Blinding Trachoma (GET) 2020 initiative, supported by the World Health Organization (WHO) Alliance, advocates the implementation of the **SAFE** strategy. The key components are **S**urgery (to correct trichiasis), **A**ntibiotic treatment, **F**acial cleanliness and **E**nvironmental improvements. This strategy is ideally implemented through a primary care model within a community focus framework, ensuring consistency in screening, control measures and data collection and reporting.^{5 6}

Trachoma control in Australia

Australia is the only developed country where trachoma is still endemic. It occurs primarily in remote and very remote Aboriginal communities in the NT, SA and WA. In 2008, cases were also found in Aboriginal communities in New South Wales and Queensland, regions where trachoma was believed to have been eliminated.^{4 7 8} 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 four-year period towards eliminating trachoma in Australia. The funding is to be used for improving and expanding screening and control activities, as well as establishing a strong framework for monitoring and evaluation. In Australia, the surveillance and management of trachoma is guided by the Communicable Disease Network of Australia (CDNA) 'Guidelines for the Public Health Management of Trachoma in Australia' 2006. This document encompasses the WHO SAFE strategies and provides recommendations for improving data collection, collation and reporting systems.⁹ A substantial injection of funds was provided to the jurisdictions in 2010.

The National Trachoma Surveillance and Reporting Unit (NTSRU)

The NTSRU is responsible for trachoma data collation, analysis and reporting related to the ongoing evaluation of trachoma control strategies in Australia. It operates under contract with the Australian Government Department of Health and Ageing, and its primary focus is the three jurisdictions that have been funded to undertake trachoma control activities by the Australian Government. Since the end of 2010, the NTSRU has been based at The Kirby Institute (formally known as the National Centre in HIV Epidemiology and Clinical Research) at the University of New South Wales. It was previously based at The Centre for Eye Research Australia, which produced the 2006 to 2008 Annual Reports^{10 11 12}, and the Centre for Molecular, Environmental, Genetic and Analytic Epidemiology, The University of Melbourne, which produced the 2009 Annual Report.¹³

Methodology

Each jurisdiction undertook screening and treatment for trachoma according to their respective state/territory protocols, broadly following CDNA guidelines. Screening undertaken for each jurisdiction used a convenience sampling method.

In 2006, at the commencement of the National Trachoma Management Program, representatives from each jurisdiction identified at-risk communities from historical data and other knowledge. Over time, some communities have been reclassified. Screening for trachoma focuses on the at-risk communities, but a small number of other communities may be screened each year, generally if there is anecdotal information suggesting the presence of cases.

WHO trachoma grading criteria (Appendix 1) were used to diagnose and classify individual cases of trachoma. The CDNA guidelines recommend treatment strategies according to the prevalence of active trachoma within the community. Screening undertaken for each jurisdiction used a convenience sampling method.

Data collection forms (Appendix 2) 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. Information was to be provided to the NTSRU at the level of community and included:

- Number of Aboriginal children aged 1-14 years screened for clean faces and the number with clean faces;
- Number of Aboriginal children aged 1-14 years screened for trachoma and the number with trachoma;
- Episodes of treatment of active cases of trachoma, household contacts and community members;
- Number of Aboriginal adults screened for trichiasis, the number with trichiasis, and the number undergoing surgery for trichiasis;
- Community level implementation of WHO SAFE strategies.

Northern Territory

Trachoma screening and management in the NT is undertaken through collaboration between the Centre for Disease Control and Child Health Program within the NT Department of Health. Trachoma screening is incorporated into the Healthy School Age Kids (HSAK)¹⁴ annual check and conducted by either local primary health care units or Aboriginal Community Controlled Health Service (ACCHS). Following screening, treatment is generally undertaken by primary health care services with support from the CDC.

In 2010, there was no systematic trichiasis screening in adults. 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 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 and incorporated trachoma screening and management. Trichiasis screening was undertaken opportunistically for adults who saw the EH&CDSSP team.

Western Australia

Trachoma screening and management is the responsibility of Population Health Units (PHUs) in the Kimberley, Goldfields, Pilbara and Midwest Health Regions. In collaboration with the local primary health care units, the PHUs screen communities in each region within a two week period, usually at the end of August or early September. Treatment is undertaken at the time of screening.

Trichiasis screening was undertaken in conjunction with adult 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 there is at least one school. Community coverage is defined as the proportion of at-risk communities screened for trachoma. Individual screening coverage is the proportion of children in the target age group in a community who were actually screened.

Population data were based as in previous reports, on the 2006 census conducted by the Australian Bureau of Statistics (ABS)¹⁵. 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 NT, WA and SA respectively). Prevalence of active trachoma was calculated using the number of children screened as the denominator.

Trachoma data were collated in the age groups 0-4, 5-9 and 10-15 years. Comparisons over time were limited to the 5-9 year age range due to the consistently higher screening coverage across all jurisdictions in this age range. Data from 2006 were excluded from assessment of time trends as collection methods in this first year differed from those subsequently adopted.

Adherence to the CDNA guidelines was assessed by the proportion of active cases and contacts requiring treatment that were in fact treated within two weeks of screening of the index case. We also calculated the proportion of contacts treated regardless of when treatment took place. Data received did not provide information of treatment of active cases outside a two week period post screening.

If prevalence of trachoma exceeded the level at which community treatment was indicated, we used two methods to estimate the number of individuals requiring treatment for each region. Two methods were considered due to an apparent difference in interpretation of treatment guidelines.

- 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 the number of contacts was not reported and mass treatment was required, it was estimated as the number of children in the community aged 6 months – 14 years plus the number of household contacts of active cases.
- Method 2 (whole community treatment) was based on the assumption that all members of the community required treatment when mass treatment was required.

(See Appendix 3 for further detail)

Antibiotic resistance

The recommended method of predicting Azithromycin resistance is by testing *Streptococcus pneumoniae* organisms for erythromycin resistance. The participating laboratory performed antimicrobial susceptibility tests according to their routine standardised methodology - CDS (calibrated dichotomous susceptibility test), CLSI (clinical and laboratory standards institute) agar dilution or MIC testing)¹⁶. Macrolide resistance will be measured to erythromycin (both intermediate and high level resistance) in *S. pneumoniae* (invasive and non-invasive) isolated from all specimen sites. This is the same testing methodology used by the AGAR in 2006.¹⁷

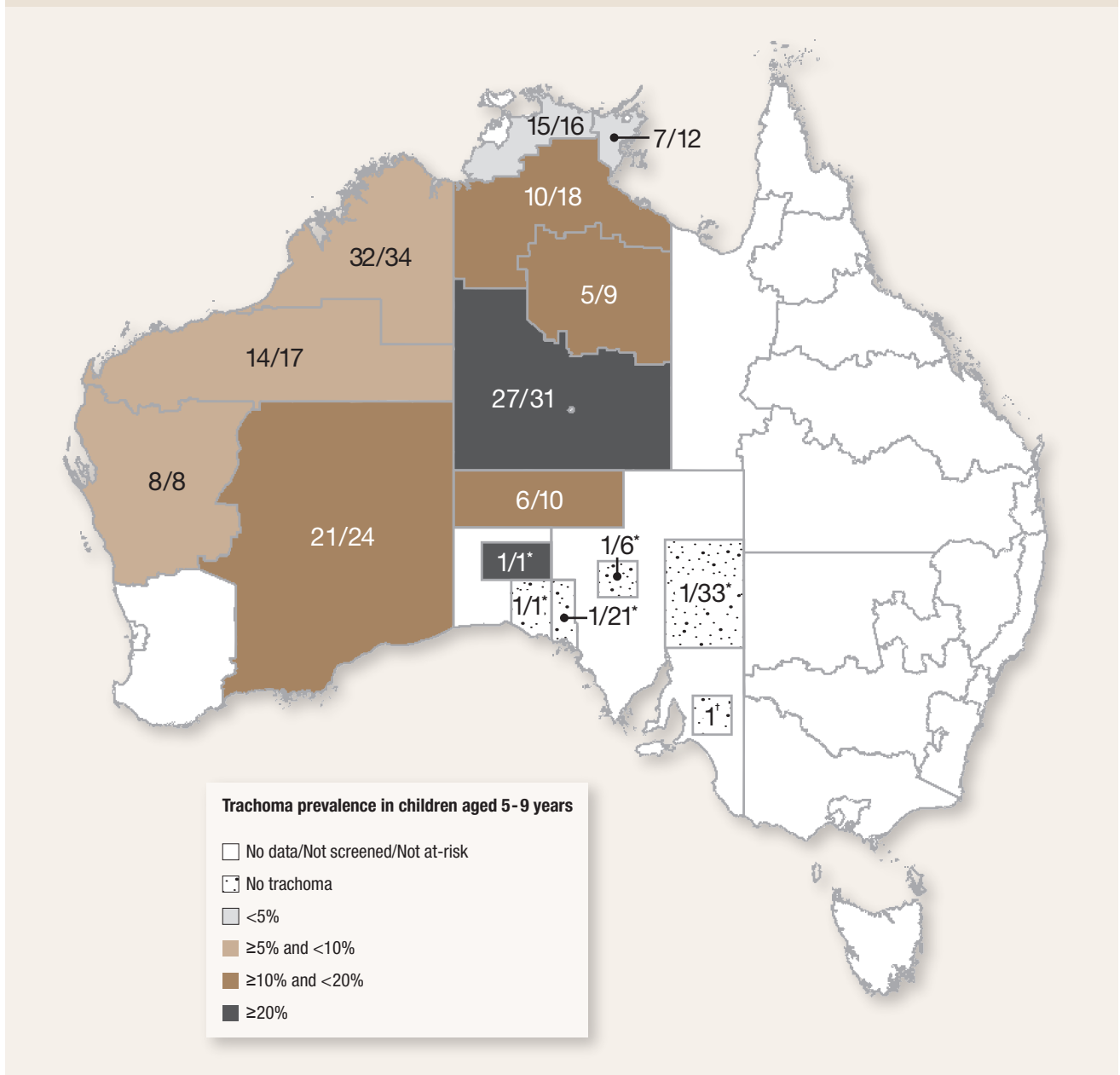
De-identified data will be extracted from the Pathology provider database for a period of six months from June to December 2010, and transferred to the NTSRU. While indigenous status is not recorded within the databases, region of residence or sample collection site will be utilised to include only regions with known high indigenous populations.

Results

National results 2010

Key findings

Figure 1.1 Number of at-risk communities screened and trachoma prevalence[‡] in 2010



* Less than 10 children screened in these regions

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

‡ Prevalence is reported for children aged 5-9 years except in SA where data were only provided for the age grouping 1-14 years

Figure 1.2 Number of communities screened* by year and jurisdiction



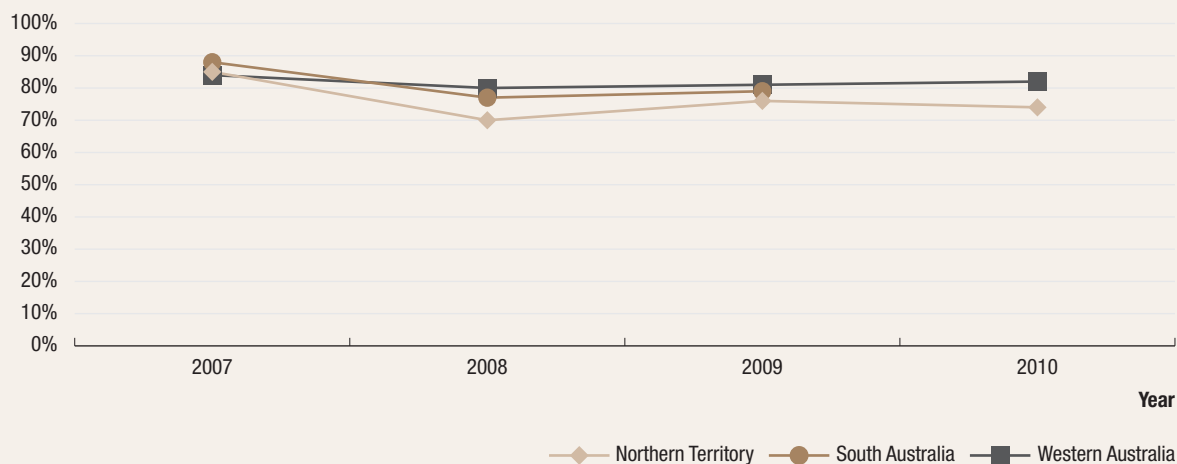
* Including communities screened but not at-risk

Figure 1.3 Population screening coverage* of children aged 5-9 years 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

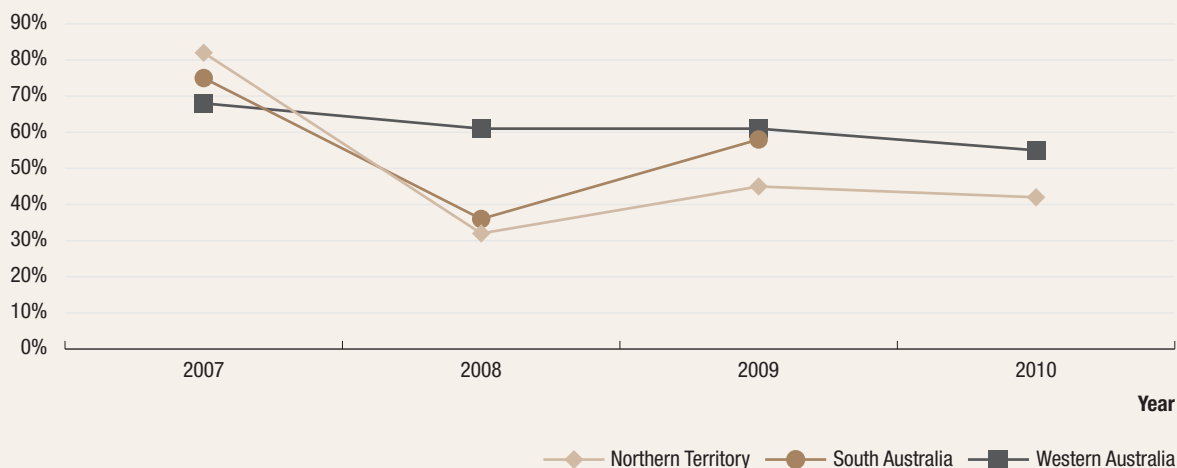
Figure 1.4 Proportion of screened children* aged 5-9 years who had a clean face† by year and jurisdiction



* Including children in communities screened but not at-risk

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 1.5 Proportion of communities screened* meeting clean face target† in children aged 5-9 by year and jurisdiction



* Including children in communities screened but not at-risk

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 1.6 Trachoma prevalence in screened* children aged 5-9 years by year and jurisdiction



* Including children in communities screened but not at-risk

Figure 1.7 Proportion of communities screened* where no trachoma was reported among children aged 5-9 years by year and jurisdiction



* Including communities screened but not at-risk

Figure 1.8

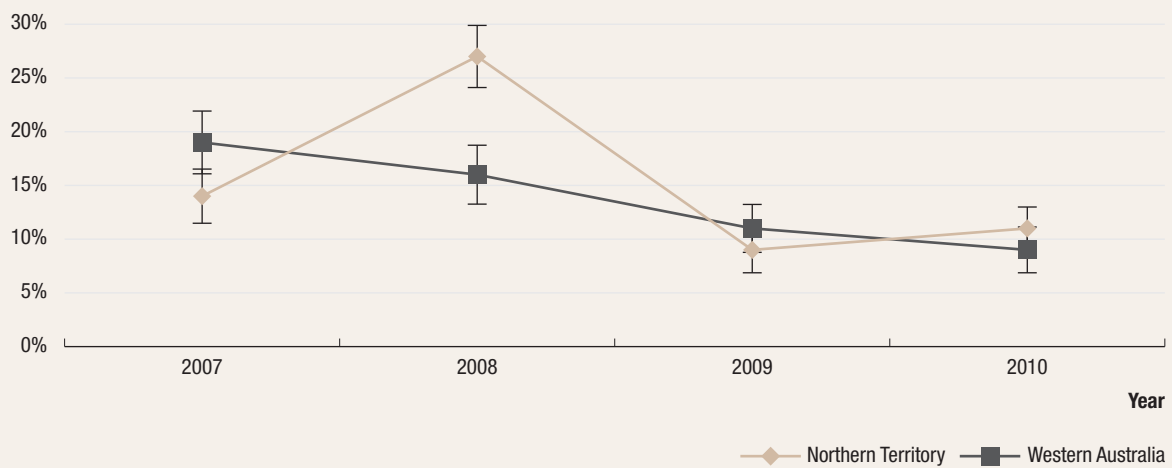
Proportion of communities screened* with endemic (greater than 5%) trachoma prevalence in children aged 5-9 years by year and jurisdiction



* Including communities screened but not at-risk

Figure 1.9

Trachoma prevalence in communities consistently screened* each year between 2007 and 2010 by year and jurisdiction



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

Figure 1.10 Screening coverage of children in at-risk communities in 2010 by age group and jurisdiction

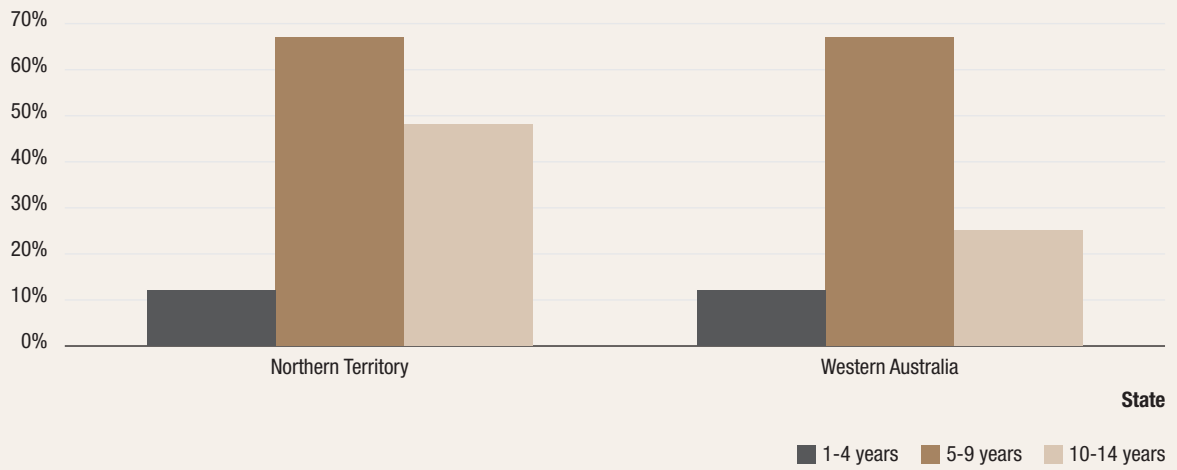


Figure 1.11 Trachoma prevalence in children screened in at-risk communities in 2010 by age group and jurisdiction

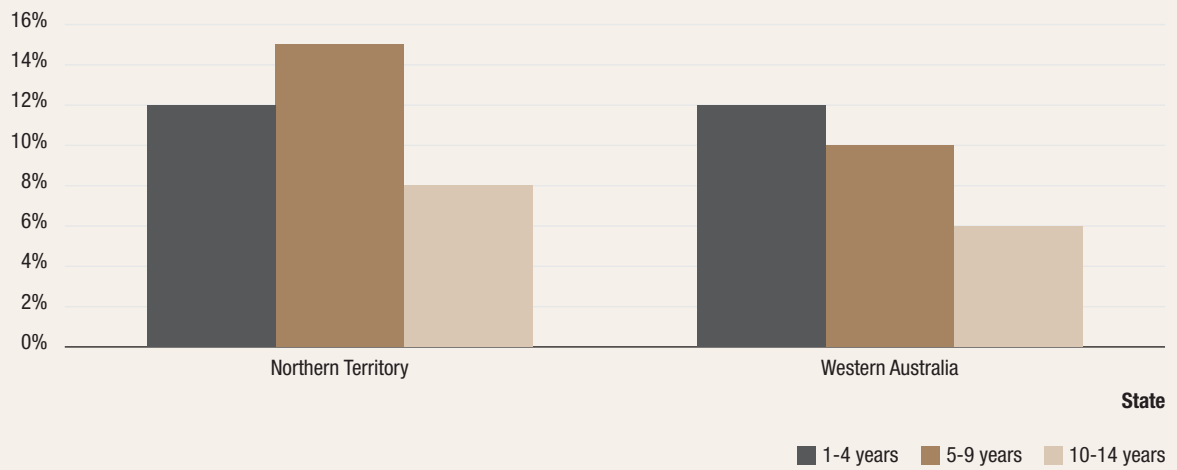
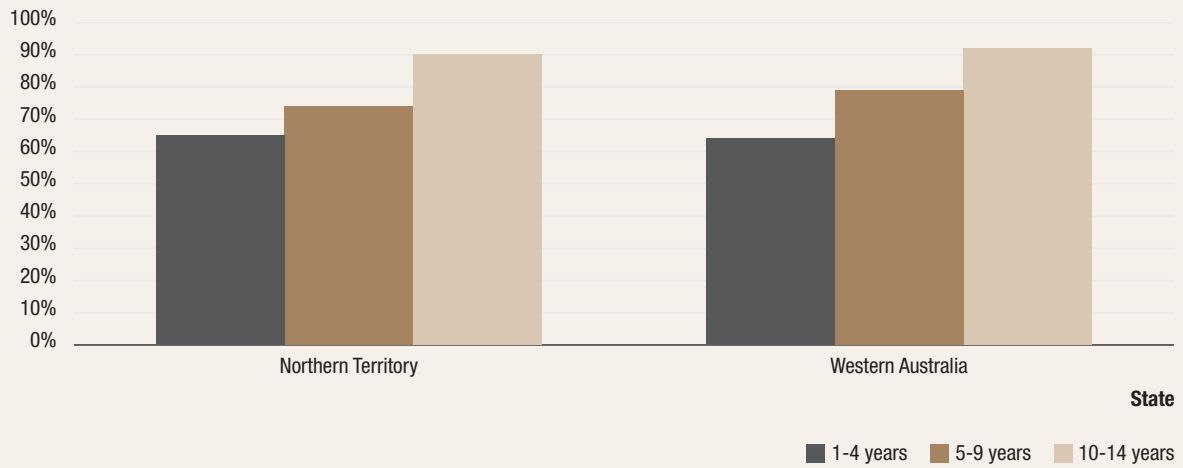


Figure 1.12 Prevalence of Clean Face* in children screened in at-risk communities in 2010 by age group and jurisdiction



* Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 1.13 Trachoma prevalence among screened at-risk communities in 2010 by jurisdiction

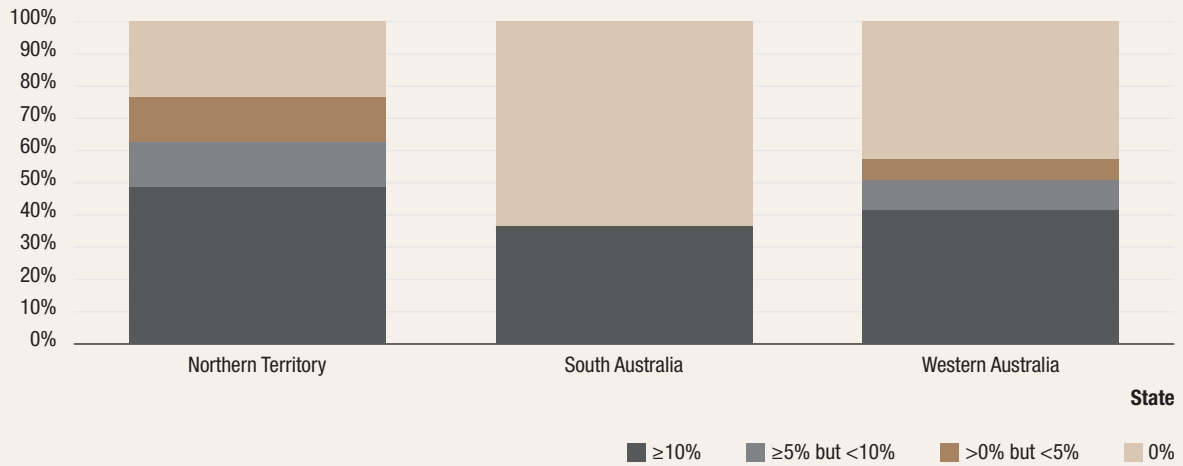
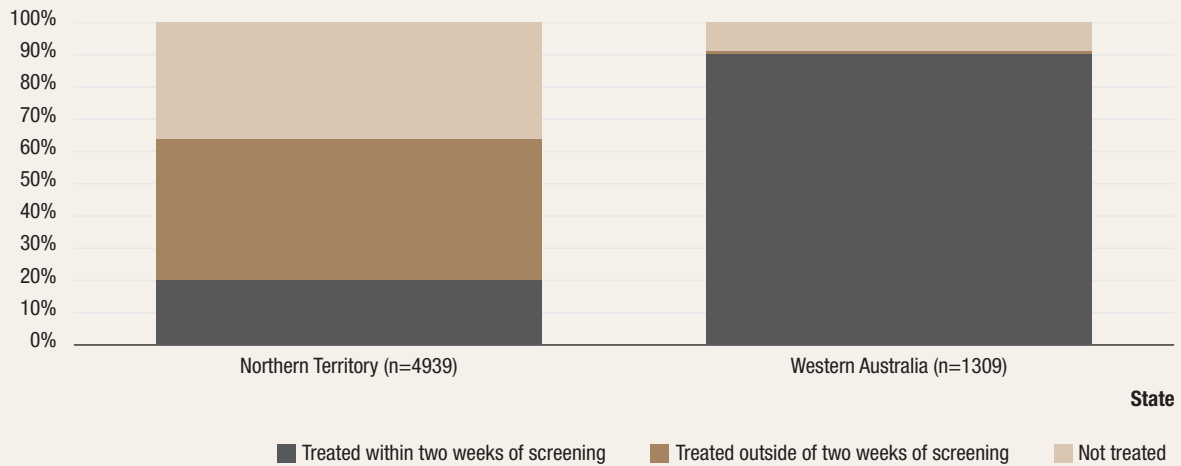
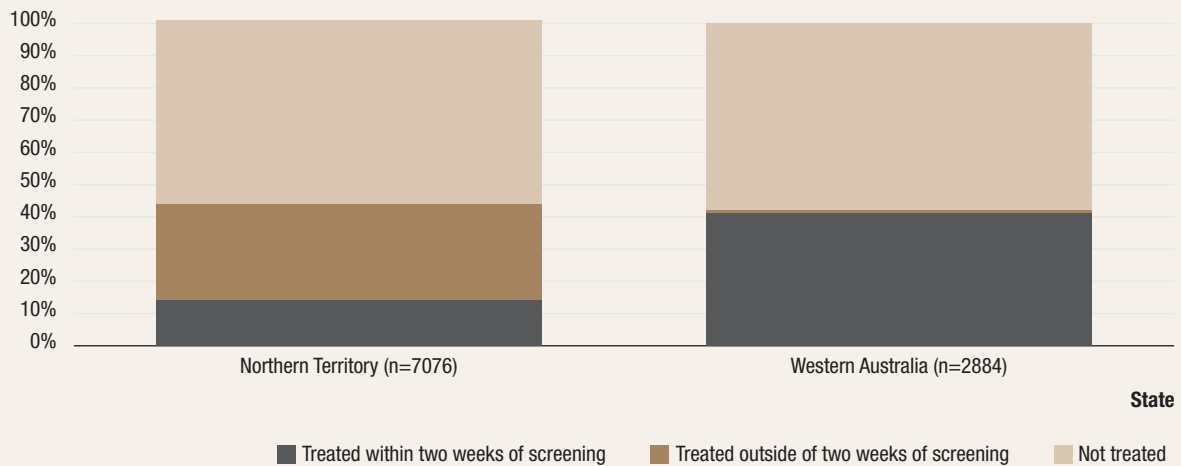


Figure 1.14 Method 1. Estimated proportion of population requiring treatment in at-risk communities, according to timing of treatment, by jurisdiction



(See Methods section for details)

Figure 1.15 Method 2. Estimated proportion of total population requiring treatment in at-risk communities, according to timing of treatment, by jurisdiction



(See Methods section for details)

Figure 1.16 Percentage of communities* with active cases of trachoma, where 80% of those requiring treatment were treated within two weeks of screening



* Including communities screened but not at-risk

Figure 1.17 Prevalence of trachoma in communities with 10 or more children aged 5-9 years examined in both 2009 and 2010

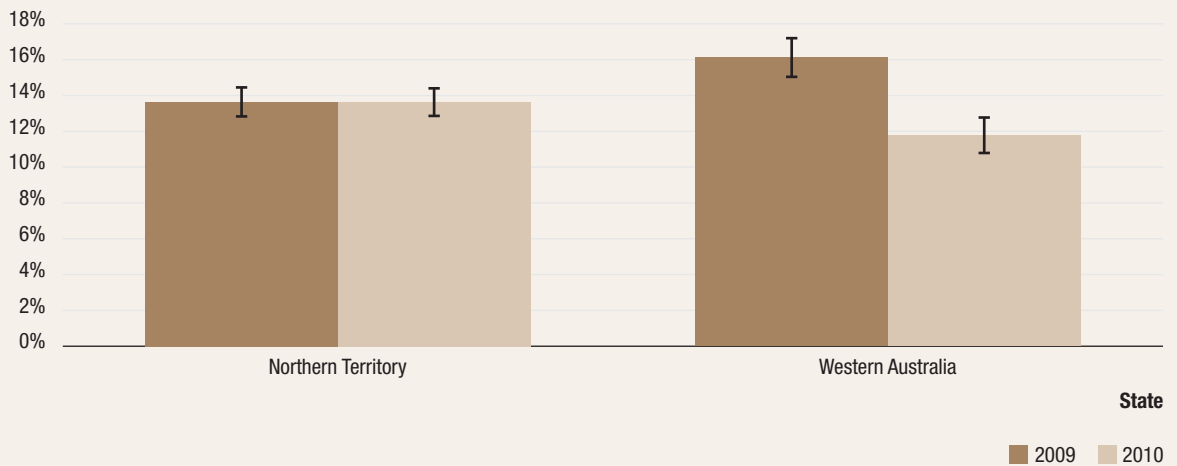


Table 1.1 Trachoma screening coverage and prevalence, clean face prevalence and treatment coverage in 2010 by jurisdiction

Age group (years)	At-risk communities																			
	Northern Territory				South Australia				Western Australia				Total							
	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All
Estimated Aboriginal population at-risk*	2843	3705	3395	20291	30784	818	1029	1125	7899	9503	1724	2300	1980	12046	18142	5384	7034	6500	40236	58429
Number of communities at-risk*					86					71					83					240
Number of communities screened					64					11					75					150
Children examined for clean face†	344	2468	1639		4451					86	205	1570	501		2276	549	4038	2140		6813
Children with clean face†	224	1836	1483		3543					39	132	1241	461		1834	356	3077	1944		5416
Clean face prevalence	65%	74%	90%		80%					45%	64%	79%	92%		81%	65%	76%	91%		79%
Children examined for trachoma	345	2468	1628		4441					86	202	1545	503		2250	547	4013	2131		6777
Screening coverage	12%	67%	48%		45%					3%	12%	67%	25%		37%	10%	57%	33%		35%
Children with active trachoma	42	359	125		526					16	25	151	32		208	67	510	157		750
Active trachoma prevalence	12%	15%	8%		12%					19%	12%	10%	6%		9%	12%	13%	7%		11%
Trachoma prevalence 1-9 years					14%										10%					13%
Trachoma prevalence 1-9 years (weighted by population)‡					14%										11%					13%
Age group (years)	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All
Number of communities requiring treatment					50										48					98
Active cases requiring treatment	42	360	125		527					25	151	32			208	64	508	154		726
Active cases received treatment within 2 weeks	25	145	47		217					24	148	32			204	46	290	76		412
% Active cases received treatment within 2 weeks	60%	40%	38%		41%					96%	98%	100%			98%	72%	57%	49%		57%
Method 1§																				
Estimated contacts requiring treatment					4257										1181					5438
Contacts received treatment total	370	505	381	1595	2851					97	271	149	537		1054	467	776	530	2132	3905
Estimated overall treatment coverage 2 weeks†					20%										90%					36%
Estimated overall treatment coverage total**					64%										91%					70%
Method 2§																				
Estimated contacts requiring treatment					6549										2791					9340
Contacts received treatment total	370	505	381	1595	2851					97	271	149	537		1054	467	776	530	2132	3905
Estimated overall treatment coverage 2 weeks					14%										41%					20%
Estimated overall treatment coverage total**					43%										42%					43%

* Communities were classified as at-risk or not at-risk by jurisdictions

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead²

‡ 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 done in order to account for uneven coverage with respect to age groups

§ Estimated using average number of household contacts per child in communities who reported number of contacts requiring treatment and population statistics (see Methodology for detail)

** Active cases treated, but not within two weeks, were not reported. Number of active cases treated in total is taken to be the same as number of active cases treated in two weeks

Table 1.2 Number of communities according to different trachoma prevalence ranges (among children aged 5-9 years)

Prevalence	At-risk* communities							
	Northern Territory		South Australia		Western Australia		Total	
0%	15	23%	7	64%	32	43%	54	36%
>0% but <5%	9	14%	0	0%	5	7%	14	9%
≥5% but <10%	9	14%	0	0%	7	9%	16	11%
≥10%	31	48%	4	36%	31	41%	66	44%
Total	64		11		75		150	

* Communities were classified as at-risk or not at-risk by jurisdictions

Table 1.3 Trichiasis screening coverage, prevalence and treatment among Aboriginal adults aged over 40 years in 2010

	Northern Territory		South Australia		Western Australia		Total	
Estimated adult population of at-risk* communities	6509		2297		3751		12557	
Number of communities at-risk*	86		32		83		201	
Number of communities screened for trichiasis	18	21%	12	38%	14	17%	34	17%
Adults examined (% of total estimated population)	221	3%	438	19%	377	10%	1036	8%
With trichiasis	13	6%	9	2%	0		22	2%
Offered ophthalmic consultation	12		0		0		12	
Surgery in past 12 months	1		0		1		1	

* Communities were classified as at-risk or not at-risk by jurisdictions

Northern Territory results 2010

Key findings

Screening coverage

- Overall, community screening coverage in the NT has been increasing across all regions since 2008. A greater number of at-risk communities are being screened for trachoma over time (Figure 2.2).
- Community coverage of trachoma screening over the five endemic regions was 74%, with 64 communities screened for trachoma out of the 86 at-risk communities (Table 2.1).
- The proportion of children screened aged less than 14 years in those 64 at-risk communities was 45%; with a range of 31% to 56% occurring in regions (Table 2.1, Figure 2.3)
- Since 2008, the screening rates of children in at-risk communities have increased in all regions of the NT. (Figure 2.3).

Clean face prevalence

- The overall prevalence of facial cleanliness in screened populations in the NT was 80%. The highest levels of facial cleanliness were found in the regions in the Top End of the NT and the lowest levels (of 69%) were observed in Alice Springs Remote (Figure 2.4).

Trachoma prevalence

- The overall prevalence of trachoma in children screened in the NT was 12%. This prevalence ranged from 1% in the East Arnhem to 27% in Alice Springs Remote region (Table 2.1).
- 23% (15/64) of communities screened had no active trachoma (Table 2.1).
- 48% (31/64) of communities screened had a prevalence of trachoma of over 10% (Table 2.1).
- Despite a large increase in reported trachoma prevalence in 2008 in a number of regions, compared to previous years there is the suggestion of an overall decreasing trend in the prevalence of trachoma in most regions, except Alice Springs Remote (Figure 2.5).

Treatment coverage

- 78% (50/64) of communities screened required treatment for trachoma (Table 2.1).
- 64% of the population estimated to require treatment received treatment, however, only 20% of those requiring treatment received treatment within 2 weeks of screening as recommended by CDNA guidelines (Table 2.1). Treatment coverage differed substantially between regions ranging from 41% to 98% (Figure 2.10). If treatment coverage is considered to be required to include all members of communities (method 2), then overall treatment coverage reduces to 43% (Table 2.1).
- Treatment is generally undertaken by primary health care service providers with support from the CDC.

Trichiasis

- Screening coverage for trichiasis was low with only Alice Springs Remote region undertaking any screening; 11% (221/1980) of the target population in this region were screened (Table 2.2).
- 6% of adults screened were found to have trichiasis.
- No data were available regarding the extent of surgery for trichiasis (Table 2.2).

SAFE strategy compliance

- 97% of all screened communities reported an operating trichiasis referral process. However, only one region conducted screening for trichiasis and no data were available regarding surgery.
- 15% of all screened communities were treated according to CDNA guidelines.
- All communities reported the presence and use of facial cleanliness resources.
- No data were reported on environmental conditions in communities screened (Table 2.3).

Communities screened not designated as at-risk

- One community designated as not-at-risk was screened in 2010, in the Darwin Rural region. This community had no active trachoma and a 78% prevalence of facial cleanliness.

Figure 2.1

Trachoma prevalence, community screening coverage and treatment coverage in communities designated as at-risk of trachoma and screened in 2010 in the NT

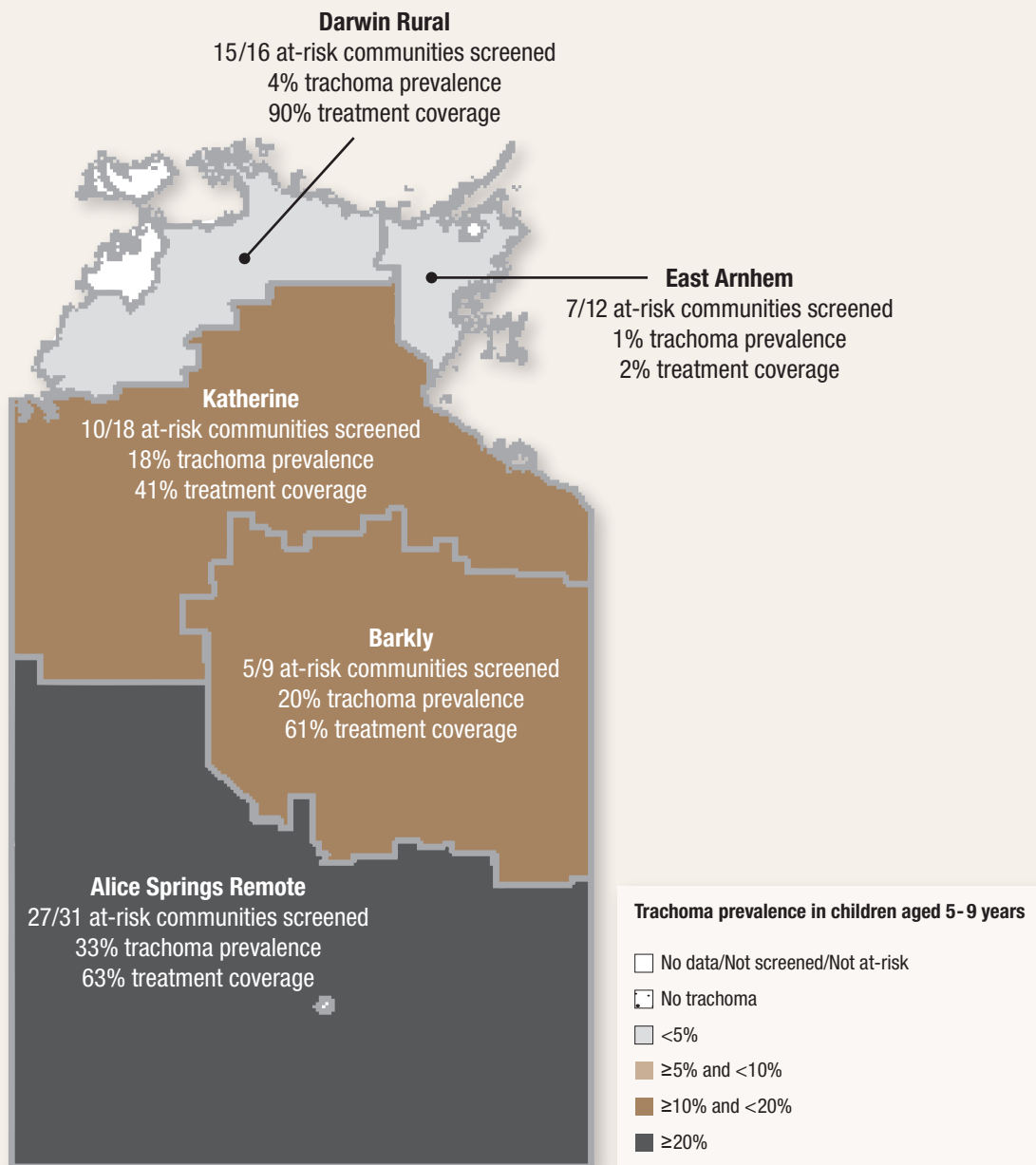
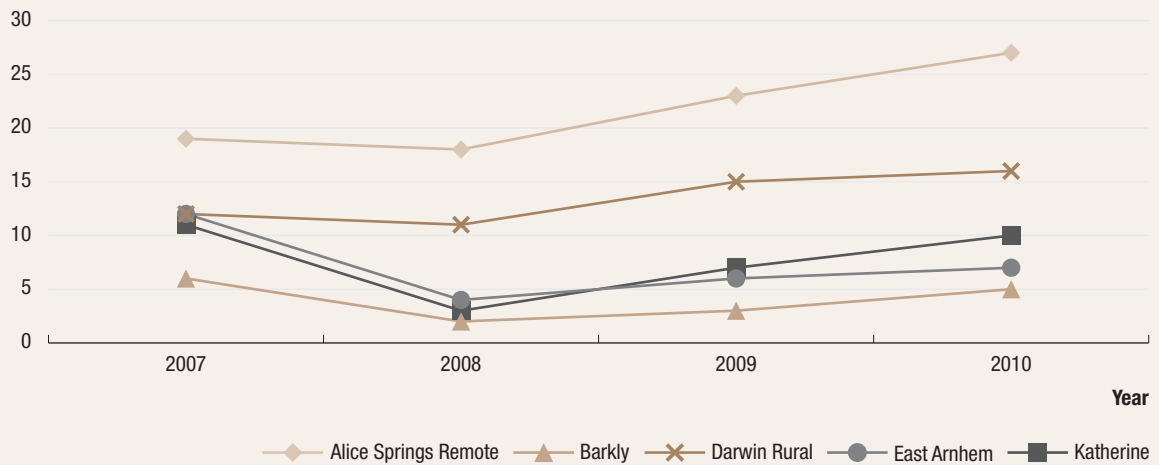
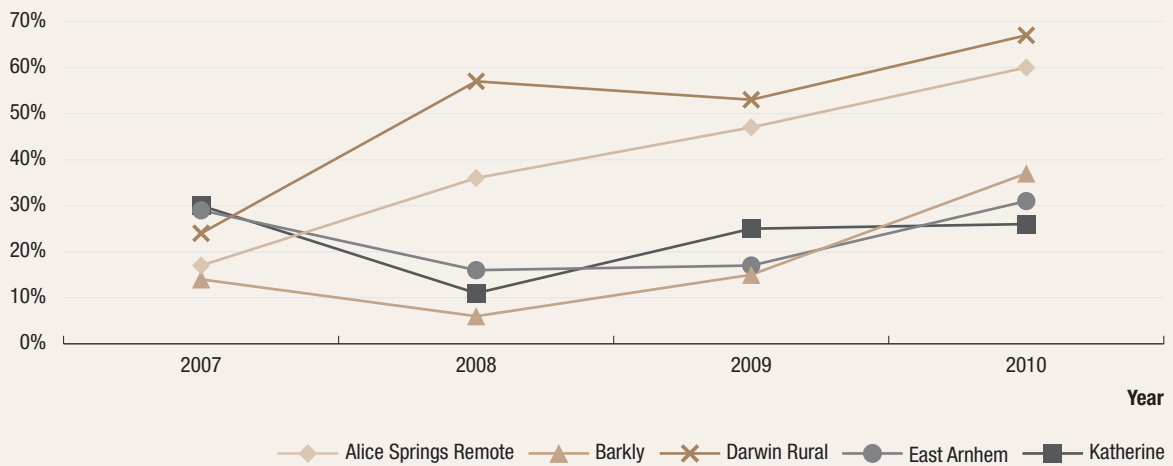


Figure 2.2 Number of communities screened* by year and region in the NT



* Including communities screened but not at-risk

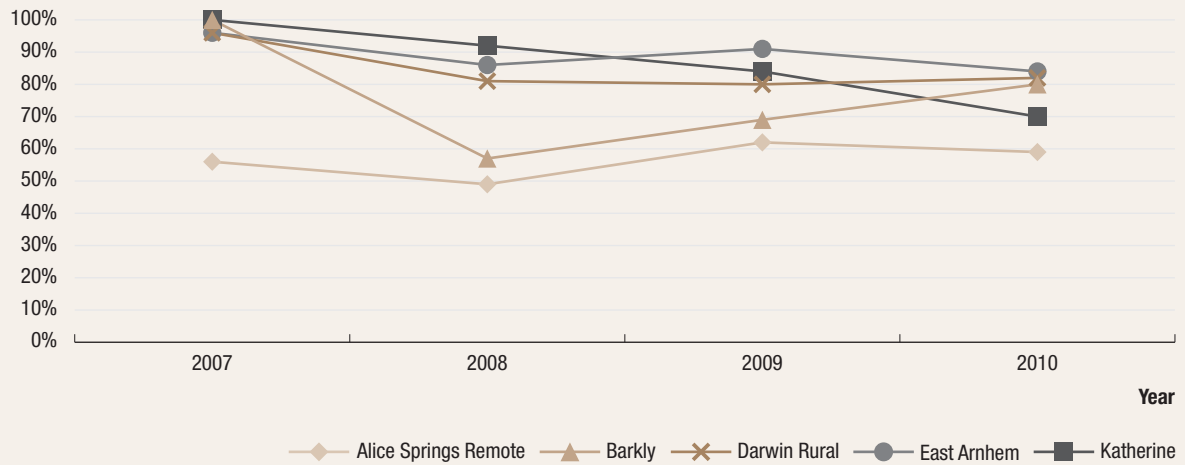
Figure 2.3 Population screening coverage* of children aged 5-9 years in regions containing at least one at-risk community by year and region in the NT



* 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 2.4

Proportion of screened* children aged 5-9 years who had a clean face† by year and region in the NT

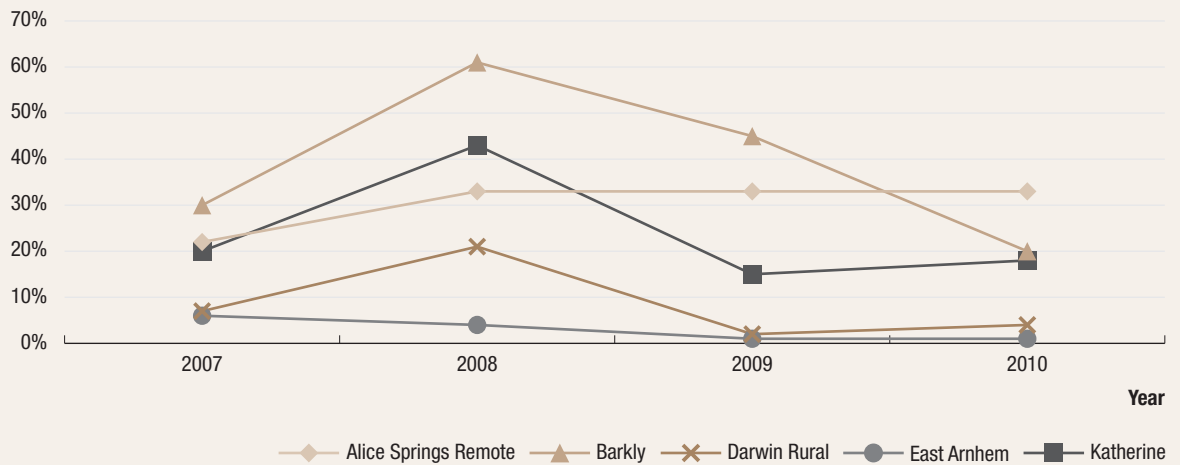


* Including children in communities screened but not at-risk

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 2.5

Trachoma prevalence of screened* children aged 5-9 years by year and region in the NT



* Including children in communities screened but not at-risk

Figure 2.6

Screening coverage of children in at-risk communities in 2010 by age group and region in the NT

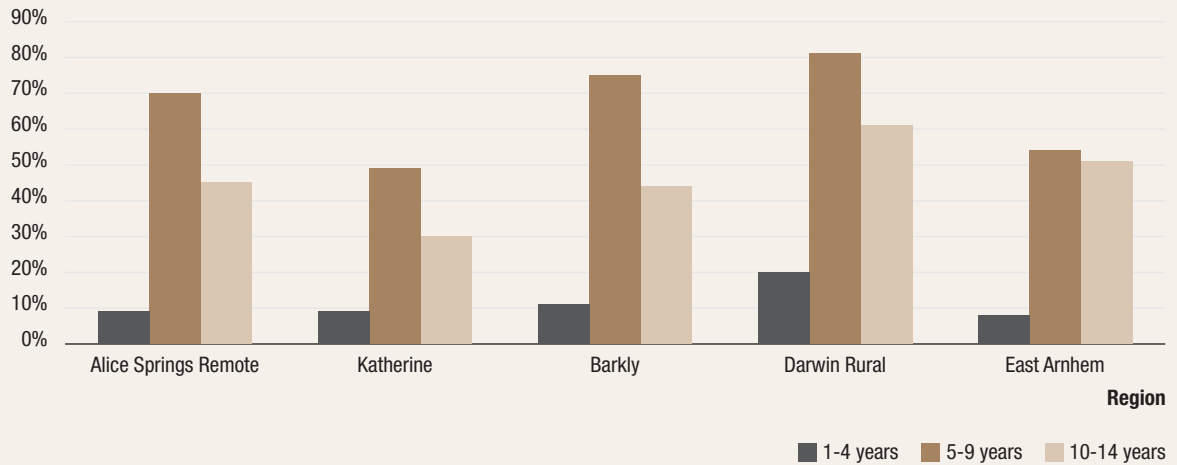


Figure 2.7

Trachoma prevalence of children screened in at-risk communities in 2010 by age group and region in the NT

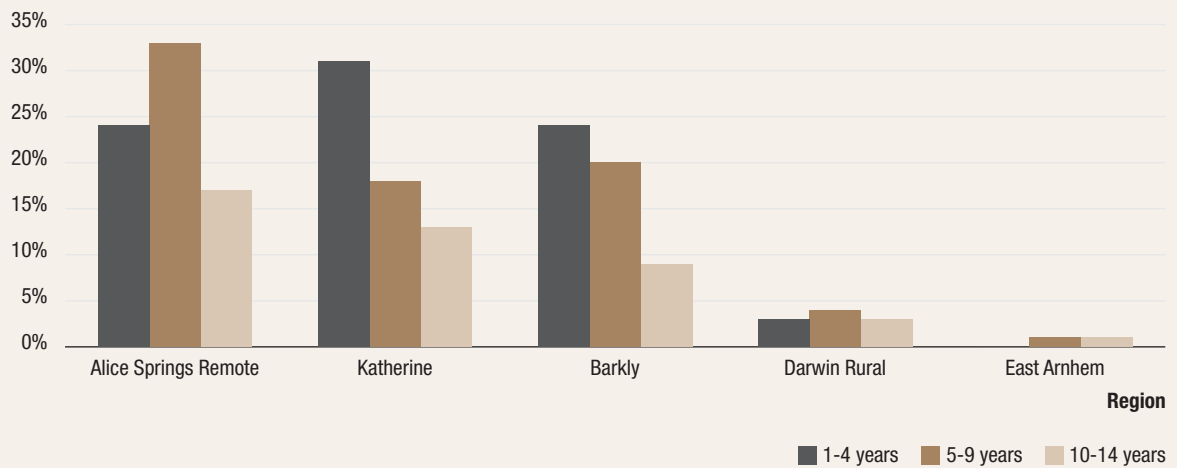
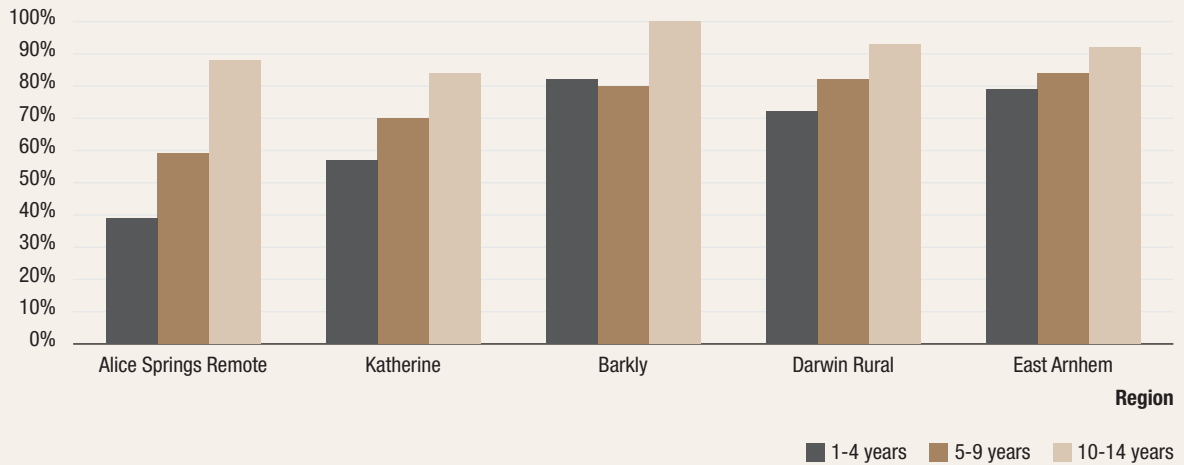


Figure 2.8 Proportion of screened children who had a clean face* in 2010 by age group and region in the NT



* Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 2.9 Trachoma prevalence among screened at-risk communities in 2010 by region in the NT

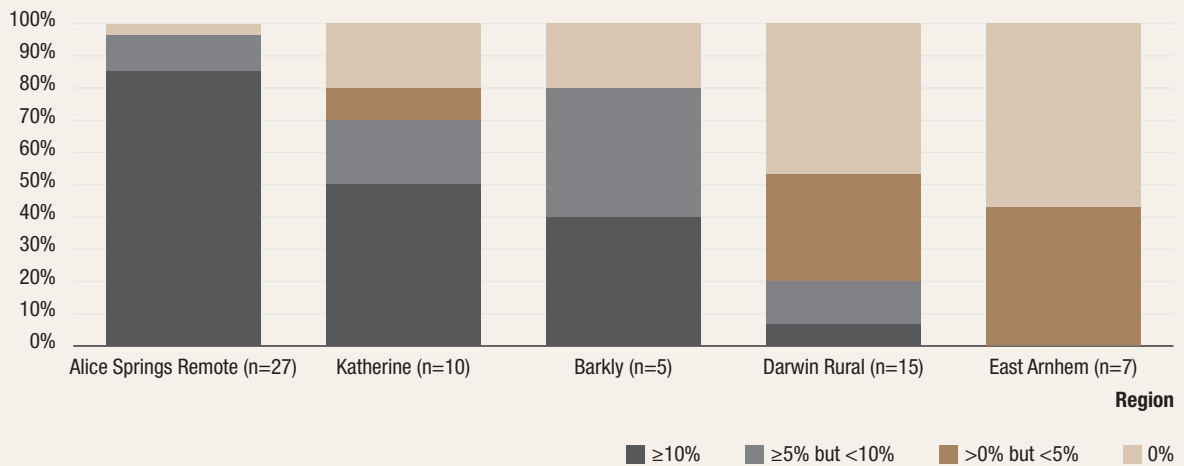


Table 2.1 Trachoma screening coverage and prevalence, clean face prevalence and treatment coverage NT in 2010 by region

Age group (years)	At-risk communities												Not at-risk communities																					
	Alice Springs Remote				Barkly				Darwin Rural				East Arnhem				Katherine				Total													
	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+	All	1-4	5-9	10-14	15+					
Estimated Aboriginal population at-risk*	727	939	961	5922	8702	159	178	1033	1607	881	1124	1019	5659	8841	490	707	602	4223	6096	586	740	635	3453	5539	2843	3705	3395	20291	30784					
Number of communities at-risk*					31				9					16					12					18					86					
Number of communities screened					27				5					15					7					10					64					
Children examined for clean face ¹	62	660	435		1157	17	146	79	242	172	914	617		1703	39	383	309		731	54	365	199		618	344	2468	1639	4451	0	0	27	27		
Children with clean face ¹	24	392	382		798	14	117	79	210	124	750	571		1445	31	321	284		636	31	256	167		454	224	1836	1483	3543	0	0	21	21		
Clean face prevalence	39%	59%	88%		69%	82%	80%	100%	87%	72%	82%	93%		85%	79%	84%	92%		87%	57%	70%	84%		73%	65%	74%	90%	80%	78%	78%	78%			
Children examined for trachoma	62	660	435		1157	17	146	79	242	172	914	617		1703	39	383	309		731	55	365	188		608	345	2468	1628	4441	0	0	27	27		
Screening coverage	9%	70%	45%		44%	11%	75%	44%	45%	20%	81%	61%		56%	8%	54%	51%		41%	9%	49%	30%		31%	12%	67%	48%	45%	45%	45%	45%	45%		
Children with active trachoma	15	219	73		307	4	29	7	40	6	40	18		64	0	4	3		7	17	67	24		108	42	359	125	526	0	0	0	0		
Active trachoma prevalence	24%	33%	17%		27%	24%	20%	9%	17%	3%	4%	3%		4%	0%	1%	1%		1%	31%	18%	13%		18%	12%	15%	8%	12%	12%	0%	0%	0%		
Trachoma prevalence 1-9 years					32%				20%					4%					1%					20%					14%					
Trachoma prevalence 1-9 years (weighted by population) [†]					29%				22%					4%					1%					23%					14%					
Age group (years)	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+	All	0-4	5-9	10-14	15+
Number of communities requiring treatment					26				4					8					4										50				0	
Active cases requiring treatment	15	220	73		308	4	29	7	40	6	40	18		64	0	4	3		7	17	67	24		108	42	360	125	527						
Active cases received treatment within 2 weeks	8	60	14		82	0	13	3	16	1	14	7		22	0	0	1		1	16	58	22		96	25	145	47	217						
% Active cases received treatment within 2 weeks	53%	27%	19%		27%	0%	45%	43%	40%	17%	35%	39%		34%	0%	0%	33%		14%	94%	87%	92%		89%	60%	40%	38%	41%						
Method 1 [§]																																		
Estimated contacts requiring treatment					2473				172					740					43.83										4257					
Contacts received treatment total	212	284	206	968	1670	20	19	16	59	114	124	102	379	701	0	0	0	0	0	42	78	57	189	366	370	505	381	1595	2851					
Estimated overall treatment coverage 2 weeks					8%				61%					20%					2%										20%					
Estimated overall treatment coverage total ^{**}					63%				61%					90%					2%										64%					
Method 2 [§]																																		
Estimated contacts requiring treatment					3555				439					740						43.8									6549					
Contacts received treatment total	212	284	206	968	1670	20	19	16	59	114	124	102	379	701	0	0	0	0	0	42	78	57	189	366	370	505	381	1595	2851					
Estimated overall treatment coverage 2 weeks					6%				27%					20%					2%										14%					
Estimated overall treatment coverage total ^{**}					45%				27%					90%					2%										43%					

- * Communities were classified as at-risk or not at-risk by jurisdictions
- † Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead²
- # 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 done in order to account for uneven coverage with respect to age groups
- § Estimated using average number of household contacts per child in communities who reported number of contacts requiring treatment and population statistics (see Methodology for detail)
- ** Active cases treated, but not within two weeks, were not reported. Number of active cases treated in total is taken to be the same as number of active cases treated in two weeks

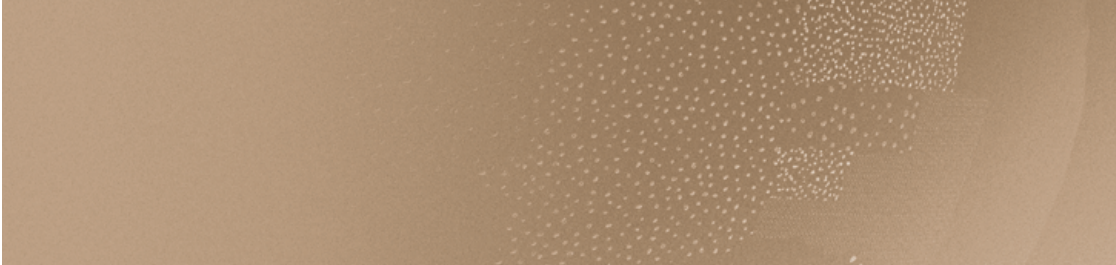


Table 2.2 Number of communities according to different trachoma prevalence ranges (among children aged 5-9 years) in the NT

Prevalence	At-risk* communities											Not at-risk communities		
	Alice Springs Remote		Barkly		Darwin Rural		East Arnhem		Katherine		Total			
0%	1	4%	1	20%	7	47%	4	57%	2	20%	15	23%	0	0%
>0% but <5%	0	0%	0	0%	5	33%	3	43%	1	10%	9	14%	0	0%
≥5% but <10%	3	11%	2	40%	2	13%	0	0%	2	20%	9	14%	0	0%
≥10%	23	85%	2	40%	1	7%	0	0%	5	50%	31	48%	1	100%
Total	27		5		15		7		10		64		1	

* Communities were classified as at-risk or not at-risk by jurisdictions

Table 2.3 Trichiasis screening coverage, prevalence and treatment among Aboriginal adults aged over 40 years in 2010 in the NT

	Alice Springs Remote		Barkly	Darwin Rural	East Arnhem	Katherine	Total	
Adult population of at-risk* communities	1980		330	1768	1384	1048	6509	
Number of communities at-risk*	31		9	16	12	18	86	
Number of communities screened for trichiasis	18	58%	0	0	0	0	18	21%
Adults examined (% of estimated population at risk)	221	11%					221	3%
With trichiasis (% of adults examined)	13	6%					13	6%
Offered ophthalmic consultation	12						12	0%
Surgery in past 12 months	1						1	0%

* Communities were classified as at-risk or not at-risk by jurisdictions

Table 2.4 Adherence to SAFE protocols in screened* communities in 2010 in the NT

	Alice Springs Remote		Barkly		Darwin Rural		East Arnhem		Katherine		Total	
Surgery for trichiasis												
Referral process exists	27	100%	5	100%	16	100%	7	100%	9	82%	64	97%
No referral process												
Referral unknown												
Not Reported									2	18%	2	0%
Antibiotics												
<i>Distribution in line with CDNA guidelines</i>												
Active cases and contacts treated within two weeks	4	15%	3	60%	10	63%	3	43%	2		22	34%
No treatment required	2		1		7		3		1		14	
<i>Distribution not in line with CDNA guidelines</i>												
Active cases and contacts treated but not within two weeks	23	85%	2	40%	6	38%	4	57%	8		43	66%
Not all contacts treated [†]	7				4				1		12	
Active cases only treated	5				1						6	
No distribution	5						1		4		10	
	6		2	100%	1		3		3		15	
Facial cleanliness resources												
Present and used	27	100%	5	100%	16	100%	7	100%	9	82%	64	97%
Present, not used												
No resources												
Not reported									2	18%	2	3%
Facial cleanliness programs												
Program exists	27	100%	5	100%	16	100%	7	100%	9	82%	64	97%
No program												
Not reported									2	18%	2	3%
Environmental Conditions												
Good												
Variable												
Poor												
Not reported	27	100%	5	100%	16	100%	7	100%	11	100%	66	100%

* Including communities screened but not at-risk

† Less than 80% of contacts treated

South Australia results 2010

Key findings

Screening coverage

- The overall, community coverage among at-risk communities in SA over the six endemic regions was 17%, with 12 communities screened for trachoma out of the 72 designated at-risk communities (Table 3.1).
- The proportion of children screened in those 32 at-risk communities was 3% (86/2971); Oak Valley had the highest coverage with 17% (Table 3.1).
- The overall trend for screening coverage has decreased in 2010 with 95 children screened, compared to 2009 where 149 children were screened for trachoma.

Clean face prevalence

- The overall prevalence of facial cleanliness among screened populations in SA was 51%, ranging from 0% to 100% (Table 3.1).
- The trends over time are difficult to interpret given the small numbers in the data.

Trachoma prevalence

- The overall prevalence of trachoma in children screened in SA was 17% (Table 3.1).
- 67% (8/12) of communities screened had no active trachoma.
- 33% (4/12) of communities screened had a prevalence of trachoma of over 10%.
- Small numbers of children screened suggest that estimates of trachoma prevalence in SA regions may not be representative of the true extent of the prevalence of trachoma.
- The trends over time are difficult to interpret given the small numbers in the data.

Treatment coverage

- Data were not available.

Trichiasis

- 438 adults in 12 communities were screened for trichiasis.
- Among adults screened the prevalence of trichiasis was 2% (9/438) (Table 3.2).

SAFE strategy compliance

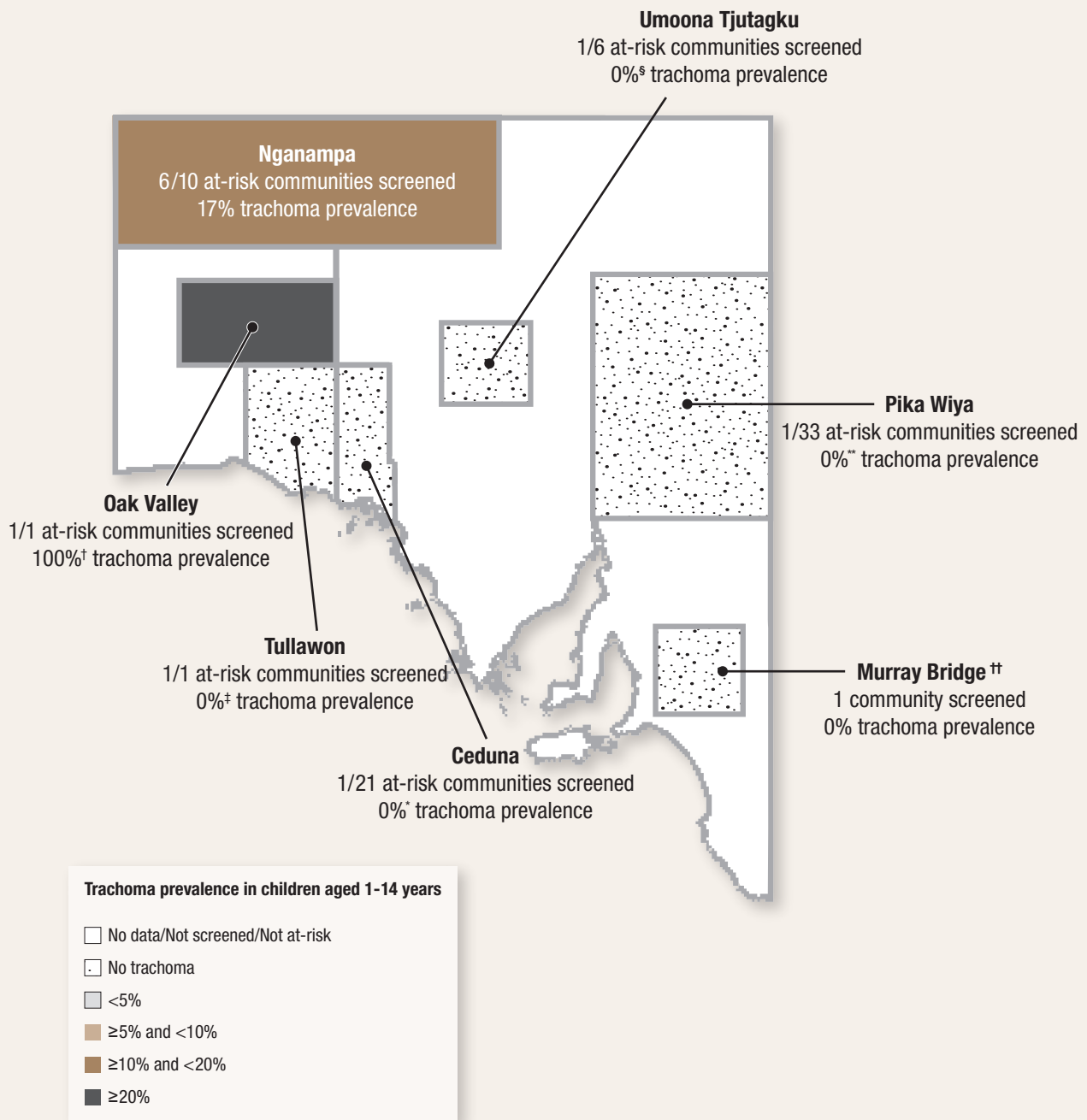
- Data were not available.

Communities screened not designated as at-risk

- One not-at-risk community was screened in SA in the Murray Bridge region which has not been previously screened for trachoma
- No cases of trachoma were found in the children screened (Table 3.1).

Figure 3.1

Trachoma prevalence and community screening coverage in communities screened in 2010 in SA



* Ceduna 2 children screened

† Oak Valley 5 children screened

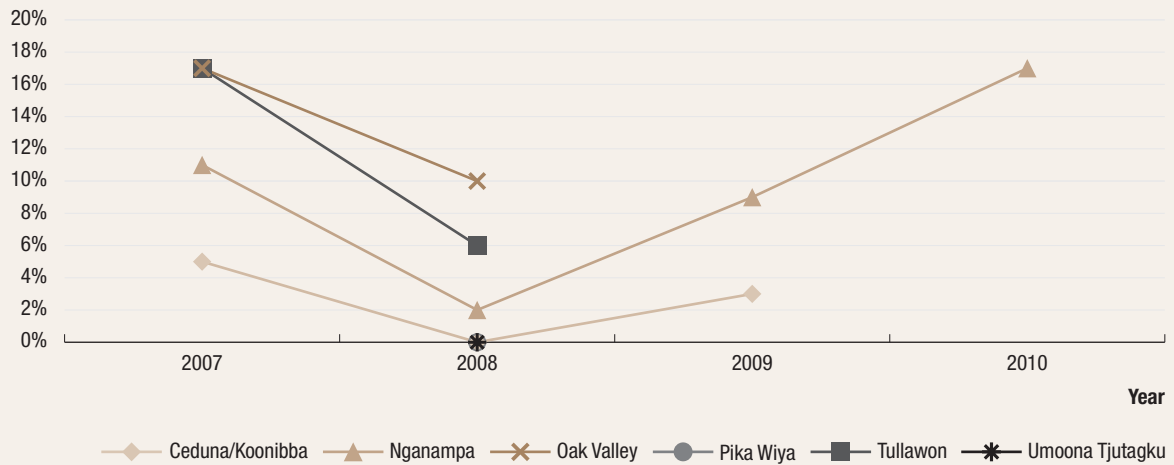
‡ Tullawon 5 children screened

§ Umoona Tjutagku 4 children screened

** Pika Wiya 6 children screened

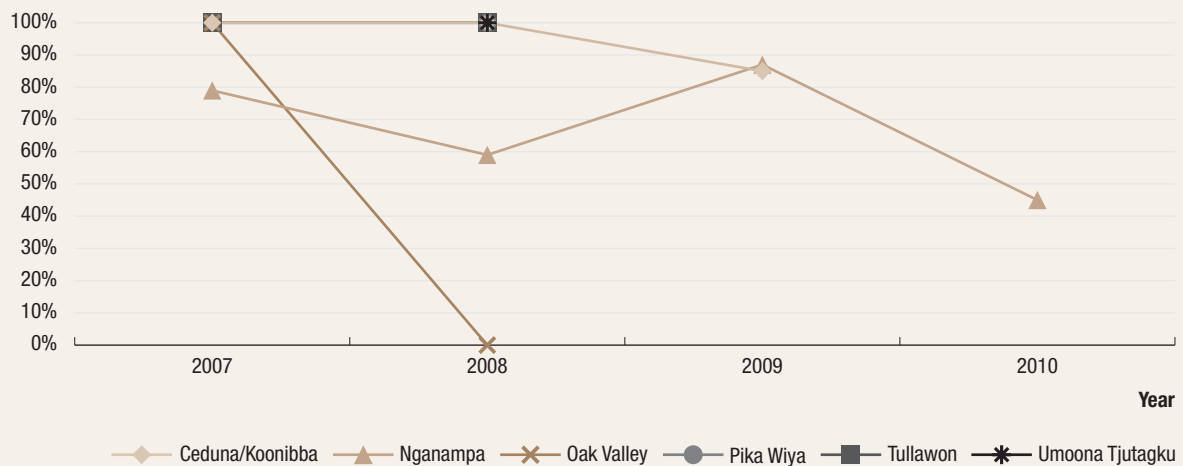
** Number of communities at-risk not known in Murray Bridge, 9 children screened

Figure 3.2 Trachoma prevalence of screened* children aged 1-14 years by year and region in SA (where 10 or more children were screened)



* Including children in communities screened but not at-risk

Figure 3.3 Proportion of screened* children aged 1-14 years who had a clean face† by year and region in SA (where 10 or more children were screened)



* Including children in communities screened but not at-risk

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Table 3.1 Trachoma screening coverage and prevalence, clean face prevalence and treatment coverage SA in 2010 by region

	Ceduna	Nganampa	Oak Valley	Pika Wiya	Tullawon	Umoona Tjutagku	Murray Bridge*	Total
Estimated Aboriginal population at-risk†	685	575	30	1484	30	166	NA	2971
Number of communities at-risk†	21	10	1	33	1	6	NA	72
Number of Communities screened	1	6	1	1	1	1	1	12
Children examined for clean face	2	64	5	6	5	4	9	95
Children with clean face	2	27	0	6	0	4	9	48
Clean face prevalence	100%	42%	0%	100%	0%	100%	100%	51%
Children examined for trachoma	2	64	5	6	5	4	9	95
Screening coverage	0%	11%	17%	0%	16%	2%		3%
Children with active trachoma	0	11	5	0	0	0	0	16
Active trachoma prevalence	0%	17%	100%	0%	0%	0%	0%	17%

* Communities were classified as at-risk or not at-risk by jurisdictions

† Note that Murray Bridge was not considered at-risk for trachoma

Table 3.2 Trichiasis screening coverage, prevalence and treatment among Aboriginal adults aged over 40 years in 2010 in SA

	Ceduna		Nganampa		Oak Valley		Pika Wiya		Tullawon		Umoona Tjutagku		Murray Bridge		Total	
Estimated Aboriginal population at-risk*	466		413		21		1148		21		229		NA		2297	
Number of communities at-risk*	6		10		1		11		1		3		NA		32	
Number of communities screened for trichiasis	1	17%	6	60%	1	100%	1	9%	1	100%	1	33%	1		12	38%
Adults examined (% of total estimated population)	27	6%	230	56%	13	63%	39	3%	49	236%	37	16%	43		438	19%
With trichiasis (% of those examined)	0	0%	8	3%	1	8%	0	0%	0	0%	0	0%	0	0%	9	2%
Offered ophthalmic consultation																
Surgery in past 12 months																

* Communities were classified as at-risk or not at-risk by jurisdictions

Western Australia results 2010

Key findings

Screening coverage

- The overall community screening coverage in WA over the four regions with endemic trachoma was 90%, with 75 communities screened for trachoma out of the 83 at-risk communities (Table 4.1).
- Compared to previous years the community screening coverage remains stable with some increases in screening coverage from 2009 to 2010 in the Midwest and Kimberley region (Figure 4.2).
- The proportion of children screened in the 75 at-risk communities was 37%; this ranged from 72% in the Midwest region to 30% in the Kimberley region (Table 4.1, Figure 4.3).

Clean face prevalence

- The overall prevalence of facial cleanliness among screened populations in WA was 81%. There was little variation between regions with the highest levels found in the Midwest region (92%) and the lowest level (73%) observed was in the Goldfields region (Table 4.1, Figure 4.4).

Trachoma prevalence

- The prevalence of trachoma in children screened in WA was 9%. The Goldfield and Kimberley region reported active trachoma among 10% of screened children, 8% in the Pilbara region and the Midwest Region reported active trachoma among 7% of screened children (Table 4.1).
- 43% (32/75) of communities screened had no active trachoma (Table 4.2).
- 33% (31/75) of communities screened had a prevalence of trachoma of more than 10% (Table 4.2).

Treatment coverage

- 58% (48/83) of at-risk communities and 66% (48/73) of communities screened required treatment for trachoma (Table 4.1).
- 90% of the at-risk population estimated to require treatment received treatment and the vast majority were treated within 2 weeks of screening in accord with CDNA Guidelines. If treatment coverage is considered to be required of all members of communities (method 2), then overall treatment coverage reduces to 41% (Table 4.1, Figure 4.10).

Trichiasis

- Overall, 10% of the target population were screened for trichiasis; the level of screening ranged from 6% in the Goldfields Region to 16% in the Kimberley Region (Table 4.3).
- No cases of trichiasis were reported in adults screened.
- One case of trichiasis was reported to have received surgery (Table 4.3).

SAFE strategy compliance

- 45% of all communities screened for trichiasis reported an operating trichiasis referral process.
- 90% of all screened communities were treated according to CDNA guidelines.
- 63% of communities screened reported the presence and use of facial cleanliness resources.
- 75% of communities screened reported having facial cleanliness programs functioning within the community.
- 29% of screened communities reported good environmental conditions, 20% reported variable environmental conditions, 21% reported poor environmental conditions, and 31% did not report on environmental conditions (Table 4.4).

Communities screened not designated as at-risk

- Three not-at-risk communities were screened in WA, all three communities were in the Kimberley region.
- Collectively, these communities reported a 4% prevalence of active trachoma and a 97% prevalence of facial cleanliness.
- 100% of contacts were treated within 2 weeks of screening within these not-at-risk communities (Table 4.1).

Figure 4.1

Trachoma prevalence, community screening coverage and treatment coverage in communities designated as at-risk of trachoma and screened in 2010 in WA

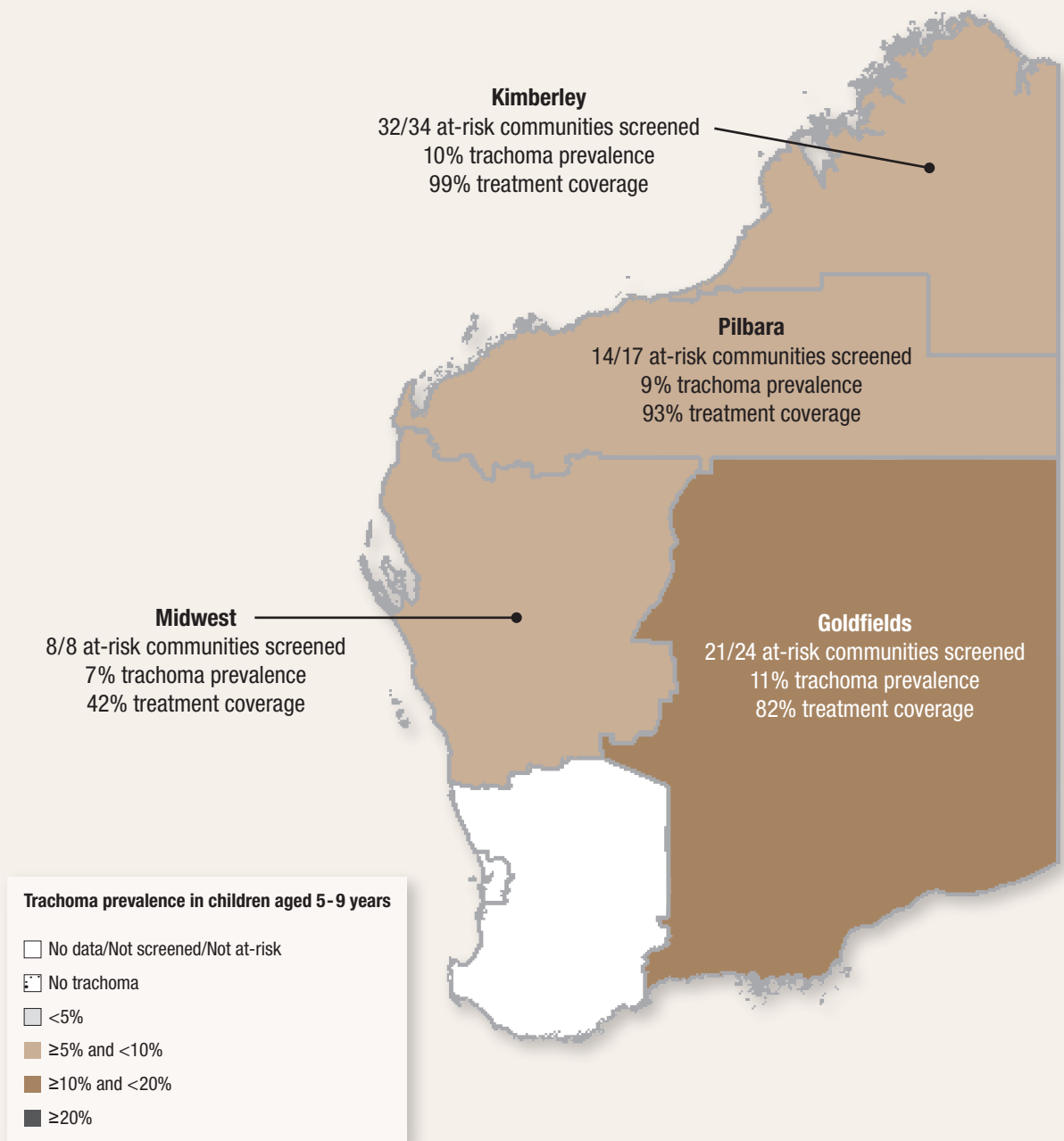
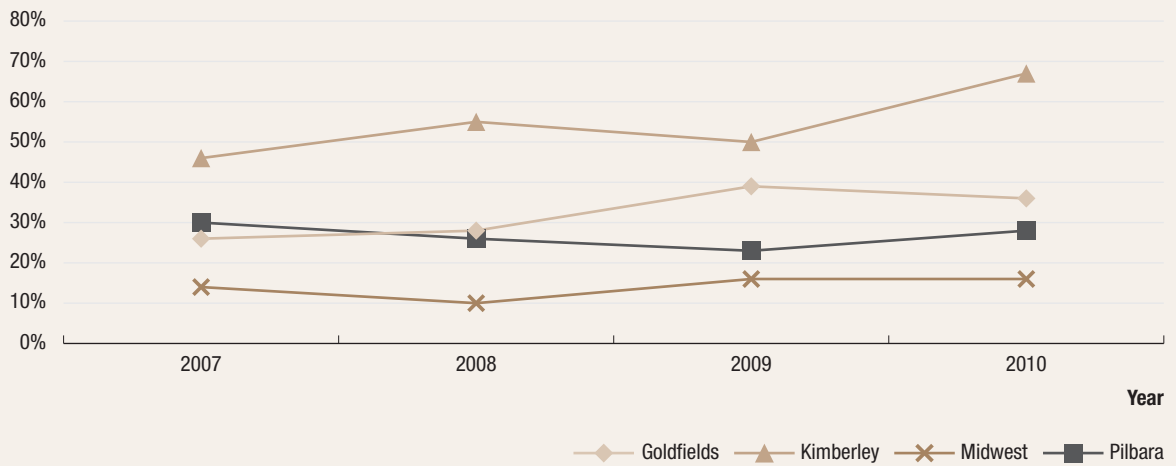


Figure 4.2 Number of communities screened* by year and region in WA



* Including communities screened but not at-risk

Figure 4.3 Population screening coverage* of children aged 5-9 years over all regions containing at least one at-risk community by year and region in WA



* 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 4.4 Proportion of screened children* aged 5-9 years who had a clean face† by year and region in WA



* Including children in communities screened but not at-risk

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 4.5 Trachoma prevalence of screened* children aged 5-9 years by year and region in WA



* Including children in communities screened but not at-risk

Figure 4.6 Screening coverage of children in at-risk communities in 2010 by age group and region in WA

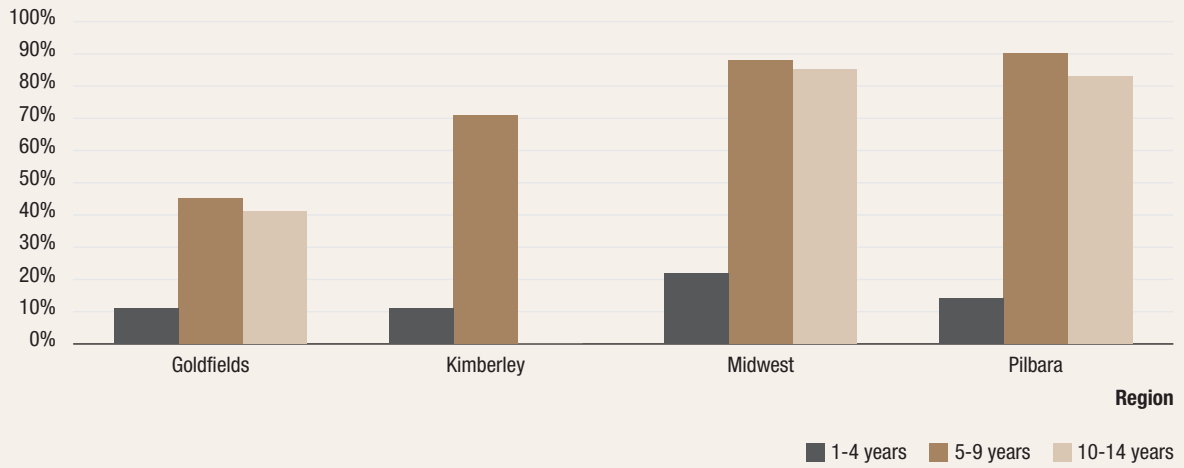


Figure 4.7 Trachoma prevalence of children screened in at-risk communities in 2010 by age group and region in WA

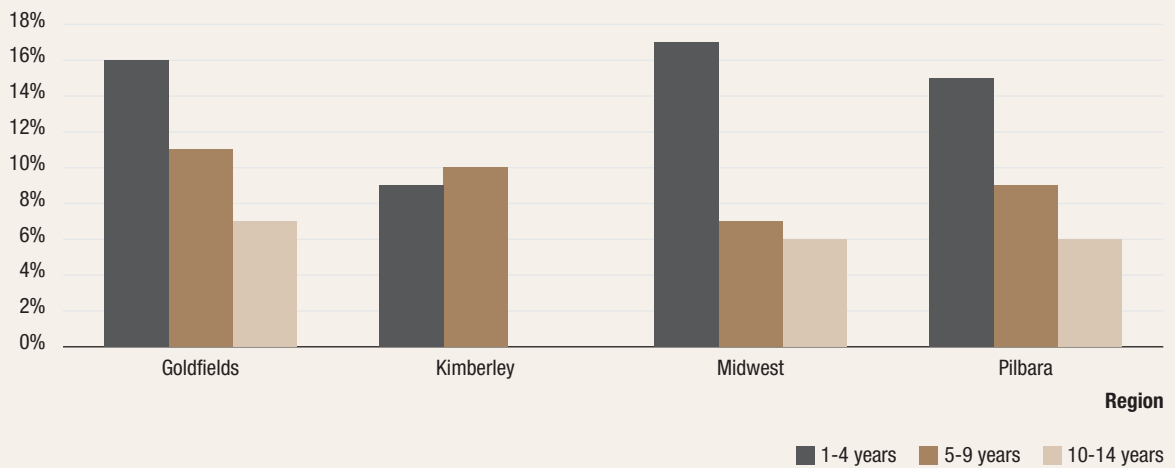
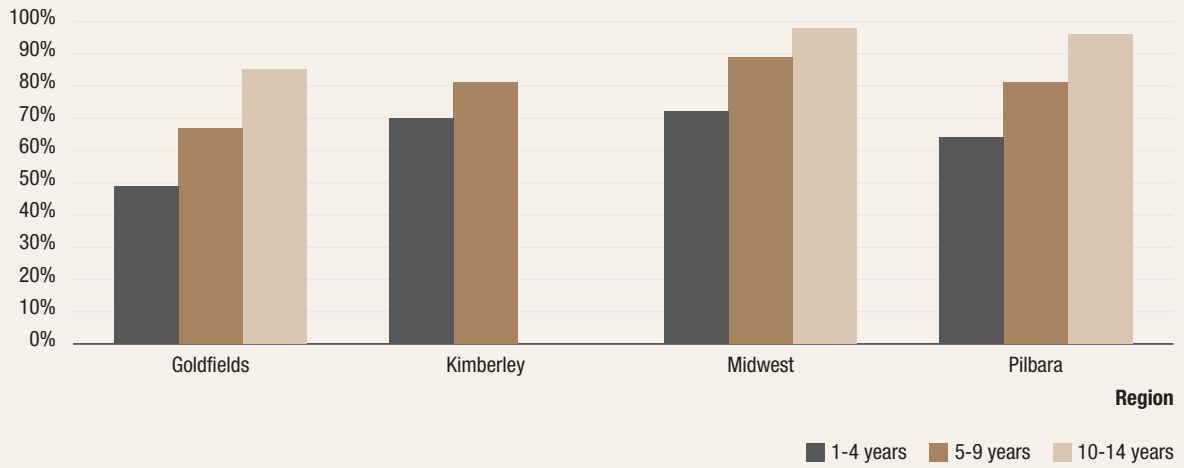
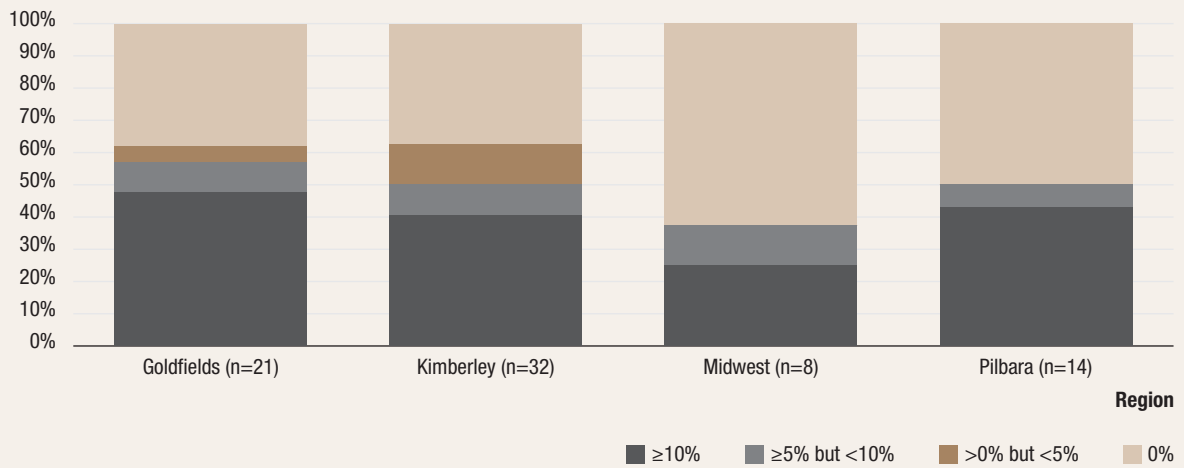


Figure 4.8 Proportion of screened children who had a clean face* in 2010 by age group and region in WA



* Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead

Figure 4.9 Trachoma prevalence among screened at-risk communities in 2010 by region in WA



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Table 4.1 Trachoma screening coverage and prevalence, clean face prevalence and treatment coverage in WA in 2010 by region

Age group (years)	At-risk communities																		Not at-risk communities																
	Goldfields						Kimberley						Midwest						Pilbara						Total										
	1-4	5-9	10-14	15+	All	%	1-4	5-9	10-14	15+	All	%	1-4	5-9	10-14	15+	All	%	1-4	5-9	10-14	15+	All	%	1-4	5-9	10-14	15+	All	%					
Estimated Aboriginal population at-risk*	453	598	522	3074	4815		988	1321	1112	6948	10272		81	133	141	680	1031		192	248	205	1344	2024		1724	2300	1980	12046	18142						
Number of communities at-risk*					24					34							8						17						83						
Number of communities screened					21					32							8					14							75						
Children examined for clean face ¹	49	271	211		531		110	957	0	1067			18	117	120	120	255		28	225	170	423			205	1570	501	2276		16	261	0	277		
Children with clean face ¹	24	182	179		385		77	772	0	849			13	104	118	118	235		18	183	164	365			132	1241	461	1834		14	256	0	270		
Clean face prevalence	49%	67%	85%		73%		70%	81%		80%			72%	89%	98%	98%	92%		64%	81%	96%	86%			64%	79%	92%	81%		88%	98%		97%		
Children examined for trachoma	49	271	213		533		108	933	0	1041			18	117	120	120	255		27	224	170	421			202	1545	503	2250		16	267	0	283		
Screening coverage	11%	45%	41%		34%		11%	71%		30%			22%	88%	85%	85%	72%		14%	90%	83%	65%			12%	67%	25%	37%							
Children with active trachoma	8	30	15		53		10	92	0	102			3	8	7	7	18		4	21	10	35			25	151	32	208		0	12	0	12		
Active trachoma prevalence	16%	11%	7%		10%		9%	10%		10%			17%	7%	6%	6%	7%		15%	9%	6%	8%			12%	10%	6%	9%		0%	4%	4%	4%		
Trachoma prevalence 1-9 years					12%					10%							8%					10%						10%						4%	
Trachoma prevalence 1-9 years (weighted by population) ²					13%					10%							11%					12%						11%							4%
Age group (years)	0-4	5-9	10-14	15+	All		0-4	5-9	10-14	15+	All		0-4	5-9	10-14	15+	All		0-4	5-9	10-14	15+	All		0-4	5-9	10-14	15+	All					All	
Number of communities requiring treatment					15					20							5					11							51						3
Active cases requiring treatment	8	30	15		53		10	92	0	102			3	8	7	7	18		4	20	10	34			21	145	27	193		0	12	0	12		
Active cases received treatment within 2 weeks	8	30	15		53		10	91	0	101			3	8	7	7	18		3	18	10	31			20	142	27	189		0	12	0	12		
% Active cases received treatment within 2 weeks	100%	100%	100%		100%		100%	99%		99%			100%	100%	100%	100%	100%		75%	90%	100%	91%			95%	98%	100%	98%		100%		100%	100%	100%	
Method 1 ³																																			
Estimated contacts requiring treatment					346					591							44					200							1181						72
Contacts received treatment total	23	39	38	175	275		59	171	70	284			0	0	0	8	8		15	61	41	70			97	271	149	537	1054		8	23	7	34	72
Estimated overall treatment coverage 2 weeks					79%					99%							42%					93%							90%						100%
Estimated overall treatment coverage total ⁴					82%					99%							42%					93%							91%						100%
Method 2 ⁵																																			
Estimated contacts requiring treatment					373					1365							44					1009							2791						72
Contacts received treatment total	23	39	38	175	275		59	171	70	284			0	0	0	8	8		15	61	41	70			97	271	149	537	1054		8	23	7	34	72
Estimated overall treatment coverage 2 weeks					74%					47%							42%					21%							41%						100%
Estimated overall treatment coverage total ⁶					77%					47%							42%					21%							42%						100%

* Communities were classified as at-risk or not at-risk by jurisdictions

† Clean face is defined as the absence of dirt, dust or crusting on the cheeks and forehead²

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 done in order to account for uneven coverage with respect to age groups.

§ Estimated using average number of household contacts per child in communities who reported number of contacts requiring treatment and population statistics (see Methodology for detail)

** Active cases treated, but not within two weeks, were not reported. Number of active cases treated in total is taken to be the same as number of active cases treated in two weeks

Table 4.2 Number of communities according to different trachoma prevalence ranges (among children aged 5-9 years) in WA

Prevalence	At-risk* communities										Not at-risk* communities	
	Goldfields		Kimberley		Midwest		Pilbara		Total			
0%	8	38%	12	38%	5	63%	7	50%	32	43%	0	0%
>0% but <5%	1	5%	4	13%	0	0%	0	0%	5	7%	2	67%
≥5% but <10%	2	10%	3	9%	1	13%	1	7%	7	9%	0	0%
≥10%	10	48%	13	41%	2	25%	6	43%	31	41%	1	33%
Total	21		32		8		14		75		3	

* Communities were classified as at-risk or not at-risk by jurisdictions

Table 4.3 Trichiasis screening coverage, prevalence and treatment among Aboriginal Adults aged over 40 years in 2010 in WA

	Goldfields		Kimberley		Midwest		Pilbara		Total	
Adult population of at-risk* communities	1145		1627		268		711		3751	
Number of communities at-risk*	23		33		8		19		83	
Number of communities screened for trichiasis	1	4%	9	27%	1	13%	3	16%	14	
Adults examined (% of estimated population at risk)	72	6%	266	16%	20	7%	19	3%	377	10%
With trichiasis (% of adults examined)	0		0		0		0		0	
Offered ophthalmic consultation	0		0		0		0		0	
Surgery in past 12 months	0		0		0		0		1	

* Communities were classified as at-risk or not at-risk by jurisdictions

Table 4.4 Adherence to SAFE protocols in screened* communities in 2010 in the NT

	Goldfields		Kimberley		Midwest		Pilbara		Total	
Surgery for trichiasis										
Referral process exists	4	18%	15	42%	7	78%	12	67%	38	45%
No referral process	10	45%			1	11%			11	13%
Referral unknown	8	36%	14	39%	1	11%	3	17%	26	31%
Not Reported			7	19%			3	17%	10	12%
Antibiotics										
<i>Distribution in line with CDNA guidelines</i>										
Active cases and contacts treated within two weeks	19	86%	36	100%	5	63%	11	85%	71	90%
No treatment required	14		24		2		10		50	
	5		12		3		1		21	
<i>Distribution not in line with CDNA guidelines</i>										
Active cases and contacts treated but not within two weeks	3	14%			3	37%	2	15%	8	10%
Not all contacts treated†					3				3	
Active cases only treated							1		1	
No distribution	3						1		4	
Facial cleanliness resources										
Present and used	5	23%	29	81%	7	78%	12	67%	53	63%
Present, not used	3	14%	2	6%	0	0%	0	0%	5	6%
No resources	4	18%			2	22%	0	0%	6	7%
Not reported	10	45%	4	11%			6	33%	20	24%
Facial cleanliness programs										
Program exists	14	64%	31	86%	7	78%	11	61%	63	75%
No program	3	14%	0	0%	2	22%	2	11%	7	8%
Not reported	5	23%	5	14%			5	28%	15	18%
Environmental Conditions										
Good	6	27%	6	17%	3	33%	9	50%	24	29%
Variable	12	55%	1	3%	1	11%	3	17%	17	20%
Poor	3	14%	13	36%			2	11%	18	21%
Not reported	1	5%	16	44%	5	56%	4	22%	26	31%

* Including communities screened but not at-risk

† Less than 80% of contacts treated

Antibiotic resistance

Key findings

- Antibiotic resistance was received from Western Diagnostic Pathology. All samples received were from the Northern Territory. Erythromycin resistance in 2010 from 84 isolates was 14%, a decrease from last year's results of 28% in the NT

Figure 5.1 Number of Aboriginal people treated with azithromycin for trachoma in the NT

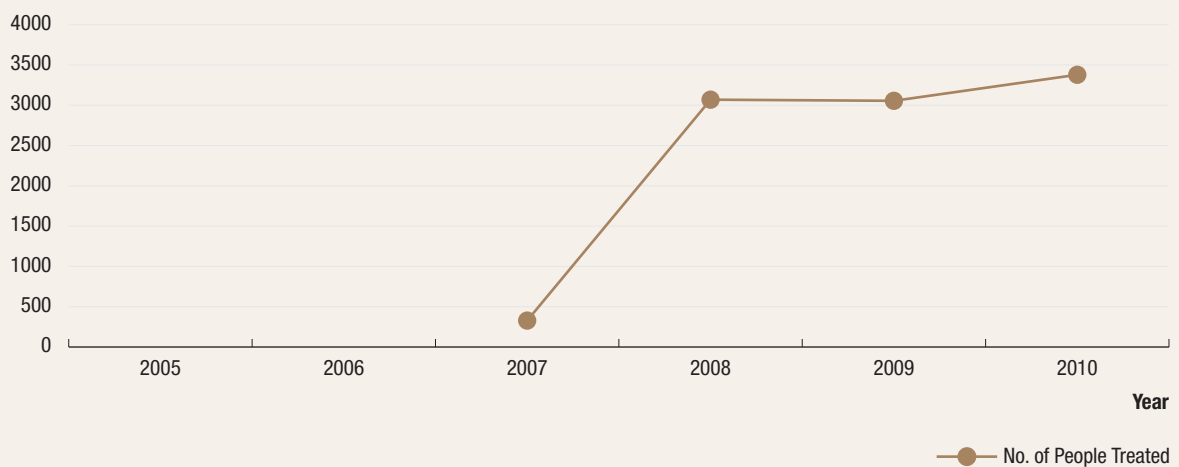


Figure 5.2 Erythromycin resistance (%) to *S.pneumoniae* isolates from people residing in remote Aboriginal communities collected from all sites and NT sites only

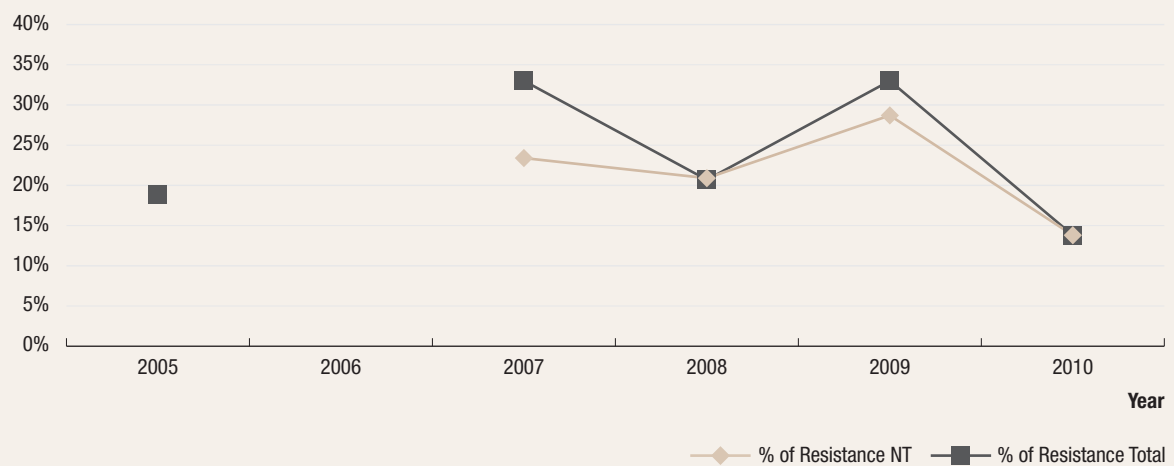


Table 5.1 Erythromycin resistant *S.pneumoniae* isolates from people residing in remote Aboriginal communities in the NT according to age, 2010

	Resistance	Total
0-4	0	4
5-9yr	0	4
10-14yr	0	2
15+	6	47
no age recorded	4	25
Total	10	82

Table 5.2 Erythromycin resistant *S.pneumoniae* isolates from people residing in remote Aboriginal communities according to NT regions, 2010

Region	Resistant	Total
Alice Springs Remote	4	20
Katherine	0	9
Darwin Remote	4	33
East Arnhem	2	20

Table 5.3 Erythromycin resistant *S.pneumoniae* isolates from people residing in remote Aboriginal communities in the NT according to specimen site, 2010

Site	Resistant	Total
Breast	0	1
Ear	0	2
Endocervical swab	0	1
Eye	0	2
Nose	0	6
Site unspecified	0	1
Sputum	10	55
Skin	0	2
Ulcer	0	1
Vaginal swab	0	1

Discussion

Endemic trachoma remains a concern in Aboriginal communities in Australia. The Australian Government's commitment to the WHO's GET2020 trachoma elimination campaign resulted in a substantial increase in funding for jurisdictional-based activities in 2009-10. This has resulted in increased community and population screening and treatment coverage, additional health promotion resources and exercises, and an increased focus on hygiene and environmental health. In principle, these measures should ensure a continued downward trend of endemic trachoma in the following years.

Screening coverage

Coverage can be measured as a proportion of communities or as a proportion of individuals screened. In 2010 the community coverage levels in the NT and WA were high, with 74% of the designated at-risk communities screened in the NT and 83% in WA. Community coverage was low in SA at 17%. On the measure of individual coverage, results were poorer, with 45% of children in the target age range of 1-14 having been seen in screened communities in the NT, 37% in WA, and only 3% in SA. Compared to previous years, there was a small increase in the number of at-risk communities screened in all three jurisdictions with the trend most apparent in WA.

Trachoma was found in four communities screened in WA that were not previously classified as at-risk. With a combined prevalence of 6%, these communities should now be considered for reclassification as at-risk.

Interpretation of the coverage data is limited by the accuracy of community population estimates, the school-based approach to screening and the designation of communities at-risk. Community population estimates are based on projections from census data. Although this approach is current best practice, the estimates may not accurately reflect populations at the time of screening, given the small size and mobility of some communities.

The majority of children were screened through schools-based programs; consequently, with screening rates higher in the 5-9 and 10-14 year age groups than in the 1-4 year age group, even though this youngest group is recognised to be at highest risk of trachoma. Within the 1-4 year age group, the majority of children screened were at the older end of the range, and were usually attending preschools, kindergartens or play groups linked to the schools. Extending trachoma screening to other programs that target younger children in the 1-4 year age group would improve coverage in this important age range.

Designation of at-risk status does not appear to have been systematically reviewed in any jurisdiction. Data collected in WA in 2010, as well as previous Annual National Trachoma Reports and in the National Indigenous Eye Health Survey conducted in 2008, have all demonstrated that communities considered not at-risk may in fact have endemic trachoma. It is recommended that the NTSRU and jurisdictional stakeholders collaborate to establish a register of communities that includes the at-risk status and trachoma screening history. This would provide guidance to jurisdictions regarding communities to be screened and ensure consistency in estimating and monitoring coverage.

Trachoma prevalence

Of all children screened across jurisdictions, 11% had trachoma, demonstrating that Australia continues to have endemic levels of infection. The target set by both WHO and CDNA is community prevalence in children 1-9 years of less than 5%. Compared to previous years, the proportion of children with active trachoma decreased in WA from 15% in 2009 to 9% in 2010, with decreases observed in all four regions ($p < 0.01$). In the NT, the prevalence remained stable at 12% in 2009-2010, with variation in trends across the regions. Trachoma prevalence in SA increased from 13% in 2009 to 17% in 2010, although this estimate is based on very small numbers of children screened. Among at-risk communities screened annually from 2007-2010, there were clear decreasing trends in trachoma in WA but not in the NT.

It is likely that the fall in trachoma prevalence observed in at-risk WA communities is real, but there is not a ready explanation for the difference in trend between NT and WA. The prevalence of clean faces has been at the same high levels in both jurisdictions, as has the proportion of children screened in communities. However, WA has been consistently screening a higher proportion of designated at-risk communities. Furthermore, it does so in the same short (two week) time period and has reduced the interval to treatment (see below), so it may be postulated that re-infection is occurring more frequently in the NT, either in the interval between screening and treatment, or through contacts between people in screened and unscreened communities. This hypothesis will require further critical examination.

Trachoma treatment

CDNA guidelines recommend treating active cases as well as their household contacts and community members when required. The guidelines also recommend treatment occurs within two weeks of screening. Nationally, just over a third of cases detected through screening and their contacts were treated according to this recommendation. In WA, the treatment coverage was 89%, up from 70% in 2009¹³ and exceeding the WHO target of 80%. In the NT, 20% of cases and contacts were treated within the recommended time period. Overall treatment of active cases and their appropriate contacts, despite length of time from screening, is also an important indicator of appropriate management. When treatment coverage is estimated regardless of timing, treatment coverage of contacts was 90% in WA and 65% in the NT. Data on active cases treated outside of the two week post screening period was not collected in 2010. The success in meeting treatment goals in WA can be attributed to the method of program delivery, which involves screening and treatment all taking place over the two week period across regions. In the NT an unusually wet dry season in 2010 contributed to some delays in treatment.¹⁸ SA did not provide data regarding treatment of cases or contacts.

CDNA guidelines recommend a range of 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 (see **Methods** and **Findings** Tables 1.1, 2.1 & 4.1). The method leads to substantially lower treatment coverage estimates. Resolution of inconsistencies in the guidelines for treating contacts is required to ensure that best practice is being followed.

Trichiasis

Screening coverage for trichiasis was low across all jurisdictions. Among Aboriginal adults aged 40 years and older, coverage was 3% in the NT, 19% in SA and in 10% in WA. The low levels suggest that current approaches to integrate trichiasis screening with other programs appear to not be achieving their goal. Furthermore, it is not clear that the screening programs are being optimally targeted, given that they are based on communities currently designated as at-risk for trachoma, and do not take into account the possibility that as endemic areas have changed over time, current at-risk communities may not reflect adult populations who were exposed to trachoma as children. Establishing a register of all remote communities may assist in better establishing records of those likely to have substantial adult populations affected by trichiasis.

Referral processes were reported to be functioning within 97% of communities in the NT and 45% of communities in WA; 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.⁴ 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% prevalence in children screened in the NT, 82% prevalence in WA and 51% in SA. Measures of facial cleanliness may not be a true estimation of actual risk due to the definition specified by the CDNA guidelines. The definition according to CDNA guidelines is “absence of dirt or crusting on cheeks or forehead”⁹, which does not align with actual risk of transmission, which is increased with ocular and nasal discharge.

WA and the NT reported facial cleanliness or hygiene-based programs in operation in most communities. Facial cleanliness resources were present and used in 97% of communities in the NT in 2010, an increase from 76% in the previous year¹³. There have also been increases in the presence and use of facial cleanliness programs and resources in at-risk WA communities from 43% in 2009 to 75% in 2010. The increase in facial cleanliness programs may be attributable to the rollout of the *Trachoma Story Kits* in 2010.¹⁹ WA may have also benefited from other Information, Education and Communication (IEC) resources and the recruitment of Health Promotion personnel.

Environment

The NT and SA did not report on environmental conditions and less than a third of WA communities reported good environmental conditions, with another third not reporting on this outcome. For future reports, the NTSRU will work with environmental health units and other authorities to develop data collection tools and processes that facilitate the compilation of information on environmental factors known to affect trachoma prevalence.

Antibiotic resistance

Antibiotic resistance data was collected from Western Diagnostic Pathology of isolates of *S.pneumoniae* specimens from individuals residing in remote Aboriginal communities in the NT. Erythromycin resistance in 2010 from 84 isolates was 14%, a decrease from last year's estimates (which were 28% in the NT and 33% for all jurisdictions that provided data). Antibiotic coverage rates for trachoma have continued to increase. Azithromycin is also widely used in remote Aboriginal communities for a range of diseases including pneumonia, genital chlamydia and acute ear infections. Interpretation of this result is difficult, given the small sample size as well as the age range of individuals tested which do not reflect the target age group of those receiving mass drug administration therapy. However, the results are encouraging in that resistance to erythromycin and presumably azithromycin does not appear to be increasing.

Data quality and surveillance systems

As noted in the preceding sections, a number of conceptual issues must be addressed if the national trachoma surveillance system is to provide optimal support for control programs. They include the 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 in regard to inconsistent and missing items. For example, counts by age groups were not uniformly provided, and data were missing for numbers treated and components of the SAFE strategy implemented.

Over the coming year, the NTSRU will work with the 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 SA, where previously there has not been a systematic screening and treatment program. The data provided for the 2010 report show very moderate 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 is likely to lead to a substantial improvement in program coverage and the quantity and quality of surveillance data from SA.

Recommendations for trachoma surveillance

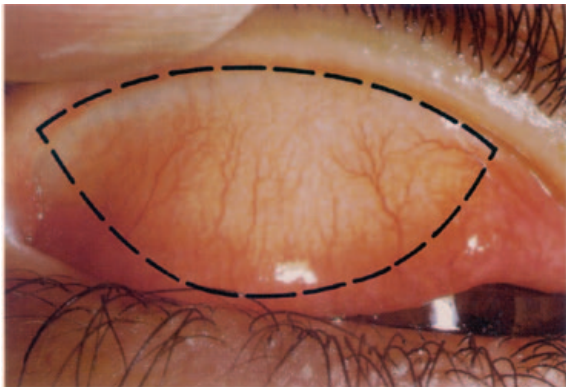
While improvements have occurred over the past five reporting years, gaps in data collected and limitations noted in the discussion prevents precise estimates of disease prevalence and program delivery and impact. For this reason, the further recommendations are made:

- Establish 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.
- Ensure jurisdictional data collection protocols and trachoma management guidelines are consistent with the CDNA Guidelines and that there is no ambiguity in the guidelines.
- Establish a systematic and accountable procedure for updating designation of communities as at-risk or not at-risk, including a register of communities.
- Extend screening and reporting of trachoma to other Australian jurisdictions where communities may be at risk of trachoma.
- Review and formalise procedures (and agreements as needed) 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 IEC material and program activity
 - Trichiasis screening processes and management, referral systems and related data collection including data pertaining to surgery for trichiasis.

These programmatic recommendations along with greater collaboration within and between jurisdictions and communities will continue to decrease the prevalence of trachoma in Australia, moving towards elimination.



Appendix 1: World Health Organization Trachoma Grading Card



Normal tarsal conjunctiva (x 2 magnification). The dotted line shows the area to be examined.



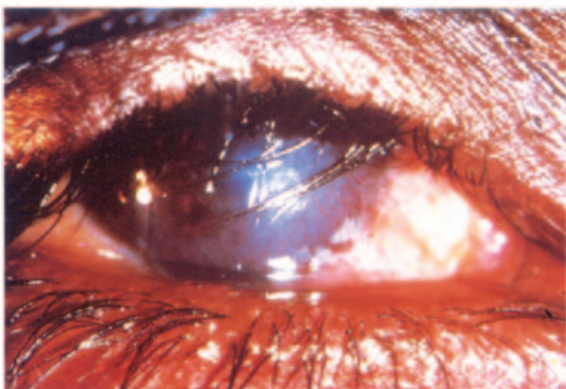
Trachomatous inflammation – follicular (TF).



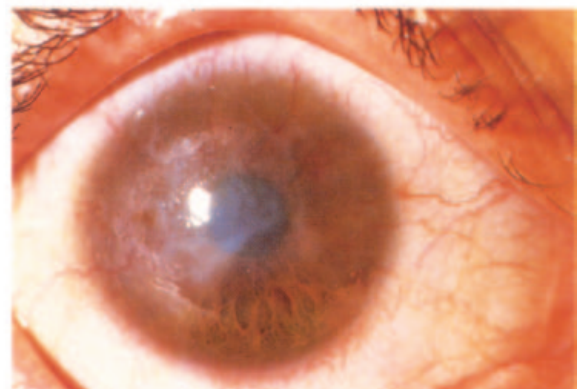
Trachomatous inflammation – follicular and intense (TF + TI).



Trachomatous scarring (TS)



Trachomatous trichiasis (TT)



Corneal opacity (CO)

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Appendix 2: Data Collection Forms

FORM 1

COMMUNITY/SCHOOL SUMMARY FORM FOR SCREENING OF CHILDREN FOR ACTIVE TRACHOMA

State/Territory _____

Population Health unit Region _____

Community/School _____

Screening Strategy _____ School _____ Community

Date(s) of screening _____

Form completed by _____ Name _____ Date _____

NUMBER OF ABORIGINAL CHILDREN:	1-4 YEARS	5-9 YEARS	10-14 YEARS
Total number in community/school			
Total number enrolled in school			
Examined for trachoma and clean face *			
With TF			
With active trachoma (TF and/or TI)			
With TS			
With clean face *			
Requiring azithromycin for active trachoma (TK and/or TI)			
Received azithromycin for active trachoma (TF and/or TI) within 2 weeks of screening			

* Defined as the absence of dirt, dust or crusting on the cheeks and forehead

TF: Trachomatous inflammation – FOLLICULAR

TI: Trachomatous inflammation – INTENSE

TS: Trachomatous SCARRING

Based on World Health Organization simplified grading system, Source: World Health Organization, 1987

FORM 2

COMMUNITY/SCHOOL SUMMARY FORM FOR TREATMENT OF HOUSEHOLD AND COMMUNITY CONTACTS WITH AZITHROMYCIN

State/Territory _____

Population Health unit Region _____

Community/School _____

Date(s) of screening _____

Form completed by _____ Name _____ Date _____

Date of first treatment _____

TREATMENT STRATEGY (Tick one box only)

The treatment strategies are based on CDNA Guidelines recommendations

Prevalence \geq 10% in children

- NO** obvious clustering in the community
Treatment Strategy: Treat all Aboriginal children in the community aged 6 months-14 years and all household contacts aged 6 months and over
- Cases obviously clustered in several households in the community and all household contacts are easily identified
Treatment Strategy: Treat all household contacts aged 6 months and over (Community wide treatment not required)

Prevalence < 10% in children

- Prevalence <10% but \geq 5%
Treatment Strategy: Treat all household contacts aged 6 months and over
- Prevalence <5%
Treatment Strategy: Treat all household contacts aged 6 months and over

NUMBER OF CONTACTS:	<1 YEAR	1-4 YEARS	5-9 YEARS	10-14 YEARS	15+ YEARS
Requiring treatment with azithromycin					
Treated with azithromycin within two weeks of starting distribution of treatment					
Total treated with azithromycin					

Completion date of last treatment _____

FORM 3

COMMUNITY/SCHOOL SUMMARY FORM FOR TRACHOMA CONTROL ACTIVITIES IMPLEMENTED

State/Territory _____

Population Health unit Region _____

Community/School _____

Date(s) of screening _____

Form completed by _____ Name _____ Date _____

	DESCRIPTION OF ACTIVITY	COMPLETENESS OF IMPLEMENTATION	INTERSECTORAL PARTNERSHIPS
'S' Surgery			
'A' Antibiotics			
'F' Facial Cleanliness			
'E' Environmental conditions			
Other			

FORM 4
COMMUNITY/SCHOOL SUMMARY FORM FOR TRICHIASIS IN ABORIGINAL ADULTS

State/Territory _____

Population Health unit Region _____

Community/School _____

Date(s) of screening _____

Form completed by _____ Name _____ Date _____

NUMBER OF ABORIGINAL ADULTS:	<30YEARS		30-49 YEARS		50+ YEARS	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Examined for trichiasis						
With trichiasis						
In the screening target group (i.e. number of Aboriginal adults in the screened age group in communities/ towns targeted for screening)						
In the community/school in the screened age group (from census data)						
With trichiasis who were offered an ophthalmological consultation within 6 months of previous screening						

Please report the number of Aboriginal adults who underwent trichiasis surgery in the previous year

<30YEARS		30-49 YEARS		50+ YEARS	
MALE	FEMALE	MALE	FEMALE	MALE	FEMALE

Appendix 3: Methods for estimating number of people requiring treatment

As stated in the Methods section, two approaches are used to estimate the denominator of the number of people requiring treatment for each region. The methods are based on the following assumptions:

Method 1 (targeted treatment) assumes that if a community has reported the number of contacts requiring treatment then this number is correct, and contacts are only estimated when this number is not reported. In the case that community treatment is required, it is assumed that all children in the community aged 6 months – 14 years as well as household contacts of active cases require treatment.

Method 2 (whole community treatment) additionally estimates the number of contacts requiring treatment, assuming that all members of the community require treatment if community treatment is required, rather than just those aged 6 months – 14 years and household contacts of active cases.

Each approach follows the following steps but the two methods only differ in points d and e of Step 2.

Step 1: Estimate the average number of contacts of each active case in jurisdiction	
<ul style="list-style-type: none"> For each community where household treatment is reported, calculate the average number of contacts requiring treatment per active case by dividing total number of contacts by total number of active cases. Calculate the unweighted average number of contacts per active case in each jurisdiction by averaging over each the estimates in (a) for each community in the jurisdiction. 	
Step 2: Estimate the number of community and household contacts requiring treatment	
<p>a. If trachoma prevalence in children aged 1-9 years is less than 10% go to b, else go to (d)</p> <p>b. If number of household and community contacts requiring treatment is given, take this number as the true number of household and community contacts requiring treatment and exit algorithm, else go to c.</p> <p>c. Estimate number of contacts requiring treatment as: (Number of active cases of trachoma in the community) x (average number of contacts per active case in communities which used household treatment strategy in the jurisdiction) and exit algorithm.</p>	
Method 1	Method 2
<p>d. If number of household and community contacts requiring treatment is given, take this number as the true number of household and community contacts requiring treatment and exit algorithm, else go to e.</p> <p>e. Estimate number of contacts requiring treatment as: Reported (during screening) number of children in community aged 1-14 years plus (Number of active cases if trachoma in the community) x (average number of contacts per active case in communities which used household treatment strategy in the jurisdiction) and exit algorithm.</p>	<p>d. If community reports clustering of cases and the number of household contacts is reported, take this number as the true number of household and community contacts requiring treatment and exit algorithm, else go to e.</p> <p>e. Estimate the total number of persons (active cases and contacts) in the community who require treatment as the total population of the community using ABS data and exit algorithm.</p>

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