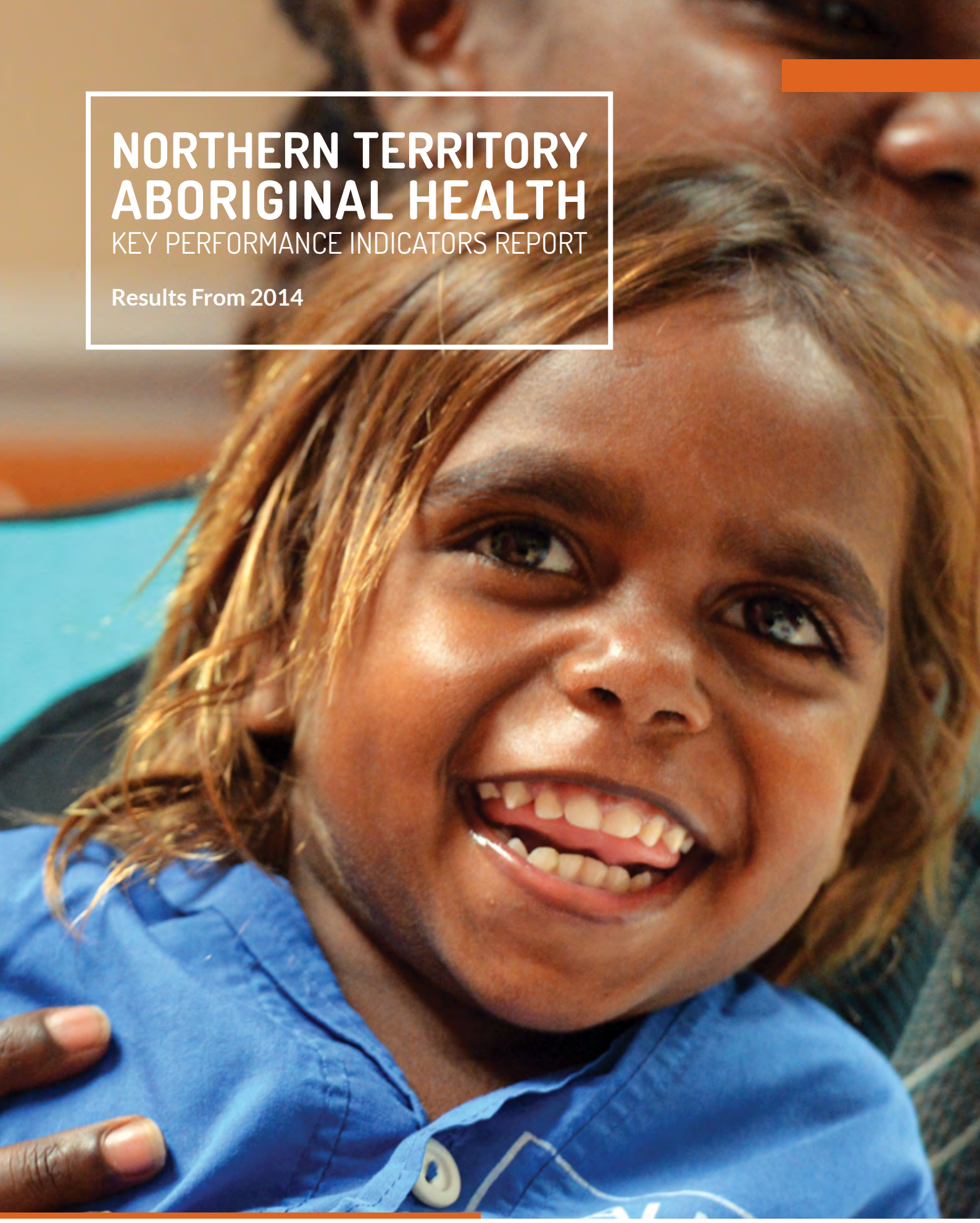

NORTHERN TERRITORY ABORIGINAL HEALTH

KEY PERFORMANCE INDICATORS REPORT

Results From 2014

AMSANT

phn NORTHERN TERRITORY
An Australian Government Initiative

Australian Government

NORTHERN TERRITORY GOVERNMENT

NORTHERN TERRITORY ABORIGINAL HEALTH

KEY PERFORMANCE INDICATORS

A Northern Territory Aboriginal Health Forum initiative

Results from 2014

Health Gains Planning Branch

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ACKNOWLEDGEMENT OF TRADITIONAL OWNERS

The Northern Territory Aboriginal Health Forum respectfully acknowledges the traditional owners and custodians of the lands and seas on which we work. We show our recognition and respect for Aboriginal people, their culture, traditions and heritage by working towards improving Aboriginal health and wellbeing.

Throughout this report, the term Aboriginal should be taken to include Aboriginal and Torres Strait Islander people.

ACRONYMS

ACCHO	Aboriginal community-controlled health organisation
ABS	Australian Bureau of Statistics
ACE	angiotensin converting enzyme
ACIR	Australian Childhood Immunisation Register
AHW	Aboriginal health worker
AHP	Aboriginal health practitioner
AIHW	Australian Institute of Health and Welfare
AMSANT	Aboriginal Medical Service Alliance Northern Territory
ARB	angiotensin II receptor blockers
ARF	acute rheumatic fever
ASGS	Australian Statistical Geography Standard
BPG	benzathine penicillin G
COAG	Council of Australian Governments
CHD	chronic heart disease
CKD	chronic kidney disease
CRG	clinical reference group
CQI	continuous quality improvement
CVD	cardiovascular disease
GP	general practitioner
GPMP	general practitioner management plan
HIV	human immunodeficiency virus
EHSDI	Expanding Health Services Delivery Initiative
HbA1c	glycated haemoglobin
HGP	Health Gains Planning
HSDA	health service delivery areas
IQR	interquartile range
KPI	key performance indicator
MCH	maternal child health
MBS	Medicare Benefits Schedule
mmHg	millimetres of mercury
nKPIs	national key performance indicators
NT	Northern Territory
NT AHF	NT Aboriginal Health Forum
NT AHKPI	NT Aboriginal Health Key Performance Indicator
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PBS	Pharmaceutical Benefits Scheme
PHC	primary health care
RDH	rheumatic heart disease
SC	steering committee
TRG	technical reference group
WHO	World Health Organization

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EXECUTIVE SUMMARY

The Australian and Northern Territory governments support a variety of health services that deliver care for Aboriginal and Torres Strait Islander people in the Northern Territory (NT). In 2009, the NT Aboriginal Health Forum introduced an indicator reporting system to monitor Aboriginal health outcomes and the performance of health services and provide feedback to communities. The NT Aboriginal Health Key Performance Indicator (AHKPI) system collects data from 21 health service providers and 84 communities across the NT that deliver care primarily for Aboriginal people and monitor trends against clinical performance indicators.

This report focuses on primary health care (PHC) delivered to Aboriginal people living in the NT and recorded as regular residents of the funded health services. It presents the main findings from the 2010 to 2014 NT AHKPI data collection, including health service utilisation, activity and workload, and selected PHC activities. The purpose of the report is to present service providers and their communities with findings on Aboriginal health status and how well services are performing for their clients. The results will inform policy makers and assist with service development, planning and PHC program delivery.

The data used in this report was accessed from the data repository maintained by the NT Government via a customised data request from communities and service providers. The report presents demographics and trends between regions and health services for each indicator. All findings are explained so readers understand variation within indicators and between health services, and the context of each indicator, which has been sourced from project documents and policies, government reports and academic papers.

The report results show improvement in a number of indicators and some areas that require continued effort.

The report is set out in five chapters:

Chapter 1 introduces the NT AHKPI system, including indicator background, demographic context, service delivery, data collection, governance and quality.

Chapters 2 to 4 present data for three groups of indicators:

- **Chapter 2:** service utilisation and activity, including episodes of health care and client contacts, and resident population.
- **Chapter 3:** maternal and child health, including timing of first antenatal visit, birthweight, infant and child immunisation status, timeliness of immunisations, growth monitoring and anaemic children.
- **Chapter 4:** chronic disease prevention and management, including chronic disease management plans, adult health assessments, glycated haemoglobin measurements, angiotensin converting enzyme inhibitors and/or angiotensin II receptor blockers prescription, cervical cancer screening, blood pressure control and rheumatic heart disease management.

Chapter 5 is a final discussion and conclusion.

There are five appendices:

- **Appendix 1:** a description of the NT AHKPIs, including indicators for which data was available in the 2015 reporting period and indicators currently under development.
- **Appendix 2:** NT results summary, 2014.
- **Appendix 3:** data tables for each indicator.
- **Appendix 4:** primary health care service and governance information.
- **Appendix 5:** an explanation of the figures and graphs used to present results.

Key findings

Good progress has been made in the majority of clinical indicators. Aboriginal people are high users of primary health services, and there are opportunities to increase uptake and further improve Aboriginal health outcomes. The report's key findings are:

- Since 2010, Aboriginal residents' utilisation of PHC services has increased by 10%, as reflected in the number of episodes of care.
- Forty-nine per cent of Aboriginal women had their first antenatal visit in the first trimester—an improvement by 5% since 2010.
- In 2014, 12% of Aboriginal babies had a low birthweight—twice the proportion of non-Aboriginal babies in the NT.
- A high proportion (91%) of Aboriginal children aged six months to six years received all age-appropriate vaccination coverage; however, there was variation between age subgroups (between 87% and 92%). The proportion of Aboriginal children aged one to less than 12 months who received all timely age appropriate immunisations was lower (81%).
- Between 2010 and 2014 the number of Aboriginal children measured for weight and anaemia increased. The proportion of underweight children of those measured decreased from 8% in 2010 to 4% in 2014, and the proportion of anaemic children decreased from 26% in 2010 to 22% in 2014.
- While most health checks for Aboriginal adults (15 years and over) occurred through Medicare Benefits Schedule (MBS) billing, some clients had an alternative health assessment without general practitioner (GP) involvement. Access to MBS-billing GP services is not uniform across the NT, and this result may reflect reduced access to GP services in remote areas (1).
- From 2010 to 2014, there was a marked increase in the number of Aboriginal residents with type 2 diabetes and/or chronic heart disease (CHD) and either a GP Management Plan (between 42% and 75%) or Team Care Arrangement (between 36% and 62%).
- From 2010 to 2014, there was a large increase in the proportion of Aboriginal residents who received a health assessment—from 17% to 53%. Overall, uptake among younger Aboriginal people was lower than that of older age groups.
- In 2014, 35% of clients with type 2 diabetes tested in the previous year had an HbA1c level less than or equal to 7%.
- From 2010 to 2014, the number of female Aboriginal residents who had a Pap smear within the previous 24 months or two reporting periods increased, from 28% to 46%. Nationally, 58% of all Australian women aged 20 to 69 years participated in cervical screening.
- In 2014, over 80% of Aboriginal residents with type 2 diabetes had their blood pressure measured. Of those, 51% reported good blood pressure control of less than or equal to 130/80mmHg.
- In 2014, 40% of eligible Aboriginal residents with a diagnosis of acute rheumatic fever or rheumatic heart disease received 80% or more scheduled benzathine penicillin G injections. This was a substantial increase from 30% recorded in the previous year.

INTRODUCTION

This is the first public release report on the NT Aboriginal Health Key Performance Indicators (AHKPI). From 2009, PHC services funded by the Australian Government, NT Government and joint-funded services collected and submitted data against performance indicators for monitoring, analysis and reporting. This report summarises the results in 2014 from 84 reporting communities with a focus on Aboriginal residents. It included trends between 2010 and 2014 where available.

Aboriginal and Torres Strait Islander (hereafter referred to as Aboriginal) people experience poorer health outcomes than non-Aboriginal people as illustrated by higher rates of disease, higher mortality and lower life expectancy at birth (2). Chronic diseases significantly underpin this life expectancy gap and disadvantage (3).

Primary health care is considered an essential community service to improve health outcomes and address the complex and high health needs of Aboriginal people. It refers to prevention measures that avoid disease, management interventions to treat, stop or slow disease progression and reduce its complications, and rehabilitation and recovery services (4).

The NT Aboriginal resident population is small and widely dispersed, and the majority reside in very remote areas (58%) where health status decreases and higher rates of disease are reported. Primary health care services are delivered to individual clients and families in both the home and clinic. Providing and accessing PHC becomes more challenging with increasing remoteness, as reflected in the rates of avoidable hospitalisations (5) and reduced access to Medicare, the Australian Government's universal health insurance scheme and Pharmaceutical Benefits Scheme (PBS) benefits (2) (6)[1].

Research shows that there are reduced hospitalisations, better health outcomes and cost savings when access to PHC in remote communities is improved (7) (8). The relationship between PHC and hospitalisations is complex; more than an optimal level of PHC may actually lead to an increase in the number and length of hospitalisations (9).

In remote areas, PHC services frequently operate as the single health provider, playing a key role in ensuring access to diagnostic and treatment services (10). Services operate under a range of challenges, including complex client needs, cross-cultural practice, high costs (1), limited resources, poorer availability of general practitioners (GP) (6), high workforce turnover, inadequate service infrastructure and geographical barriers (10).

Established information reporting systems are important to manage clinical care, monitor PHC activities and service performance, maximise available resources, and facilitate consistent and appropriate use by clients. Performance indicators help PHC organisations and healthcare providers assess the effectiveness of their activities, which improves the health status of Aboriginal people and reduces health inequalities (11).

The NT AHKPI information system is an important development process, driving continuous quality improvement (CQI) in Aboriginal health since 2009. Some data in this report was required to be submitted as part of the national indicator data collection and is available in reports published by the Australian Institute of Health and Welfare (AIHW)[2].

Presenting these consolidated NT findings highlights variation in Aboriginal subpopulations. These results are intended to be shared and used for practical purposes and will be valuable to primary health service providers, decision makers, practitioners and communities. Interpretation and application of these results should happen in line with explanations provided, an understanding of the local context and with existing demographic and epidemiological evidence (12).

[1] PBS is a parallel publically funded plan to Medicare, which subsidies a wide range of prescribed medicines. Medicare reimburses the cost of primary care services provided mostly by GPs, and payments trends reflect usage of services.

[2] AIHW. Aboriginal and Torres Strait Islander health services report, 2010-11: OATSIH Services Reporting - key results. Cat. no. IHW 79. Canberra: Australian Institute of Health and Welfare, 2012.

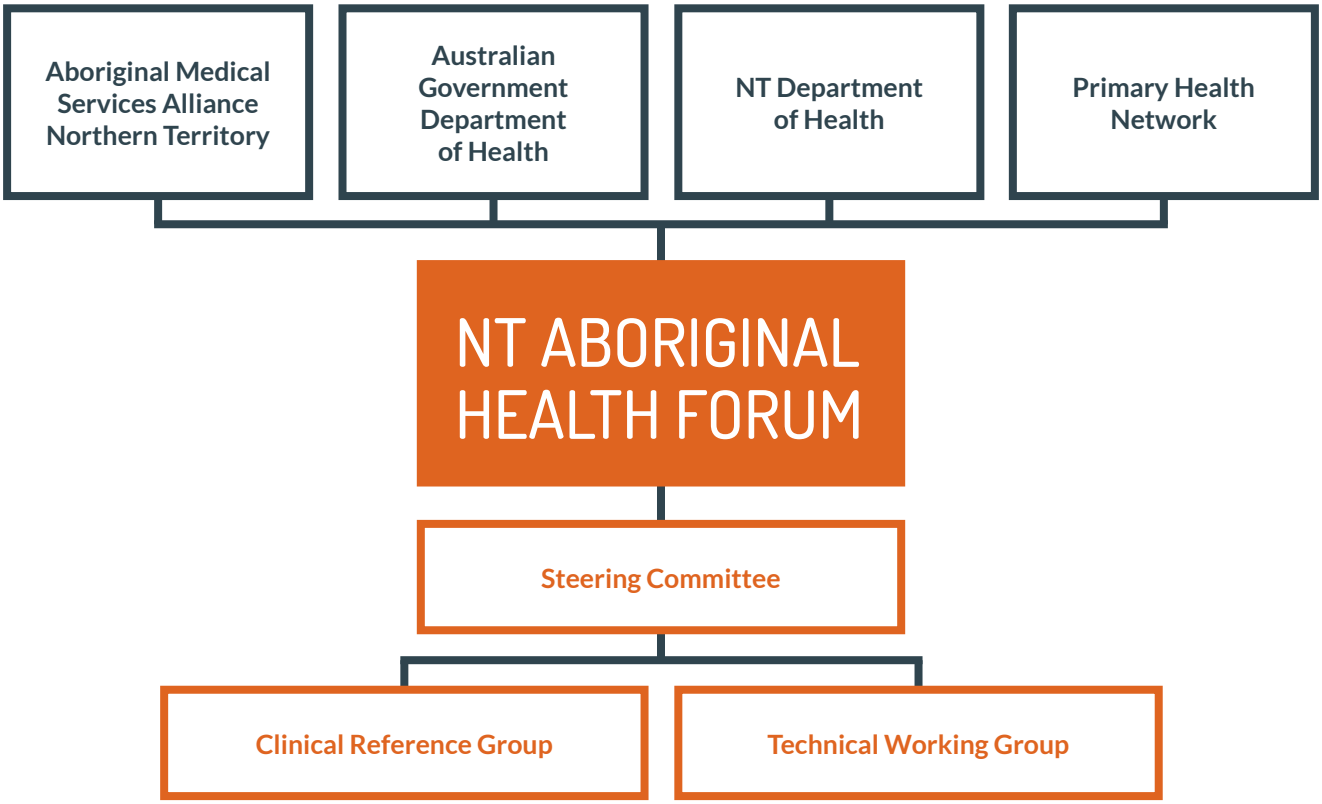
ABORIGINAL HEALTH FORUM

CHAPTER 1

The *National Framework Agreement*[3], enacted in each Australian jurisdiction between 1996 and 1999, included a range of measures to improve health outcomes for Aboriginal people (13). The establishment of the NT Aboriginal Health Forum (AHF) was a key part of the agreement as a collaborative process to inform planning and resource allocation. It represents a formal partnership between policy and funding stakeholders concerned with Aboriginal health service delivery in the NT, with a particular focus on PHC (14) **(See Figure 1)**.

There are five strategic focus areas of the NT AHF: PHC services, hospitals and specialist care, social determinants of health, health system strengthening and monitoring, and progress evaluation (15). The NT AHF has played a key role in the development of Aboriginal heath policy and reform, transition of government-led services to community control, regionalisation and development of initiatives such as the NT AHKPI information system and CQI program. The NT AHF retains responsibility for the NT AHKPI system with support from sub-committees consisting of NT AHF members.

Figure 1: Structure of the NT Aboriginal Health Forum



[3] NACCHO. Report on the implementation of the framework agreements on Aboriginal and Torres Strait Islander Health: executive summary and recommendations 1999. Available from: http://www.naccho.org.au/download/naccho-historical/Framework_Report.htm.

BACKGROUND TO THE NT AHKPIS

The National Framework Agreement outlined that performance indicators funded by the Australian Government should be key to improve regular health service reporting (13). Planning of the NT AHKPI information system commenced in 2003 with a goal:

To improve PHC services for Indigenous Australians in the NT by building capacity at the service level and the system level to collect, analyse and interpret data to:

- inform understanding of trends in individual and population health outcomes
- identify factors influencing these trends
- inform appropriate action, planning and policy development (17).

Data collection from PHC services commenced in 2009. Nineteen indicators were approved with 10 prioritised for implementation (14). Indicator development is guided by the capacity of reporting systems, existing and emerging health issues that affect Aboriginal people. Since 2009, multiple indicator revisions have occurred, additional indicators have been approved and further indicators are under development.

Data from 16 indicators that were available at December 2014 are presented in this report.

Additional indicators are approved by the Clinical Reference Group (CRG), in conjunction with the Technical Reference Group (TRG), the Steering Committee (SC) and key stakeholders. The process involves:

- indicator proposal
- mapping to existing sources and data collection tools
- expert review and feedback
- indicator endorsement and final approval.

Appendix 1 describes the indicators included in this report and the indicators for which data was available in 2015, and will be in 2016. Existing indicators will continue to be reviewed, updated and refined, and additional indicators will be approved in the future.

BOX 1. NT AHKPI SYSTEM CHRONOLOGY

1998: NT AHF established under the National Framework Agreement.

2005: 19 indicators for primary health care services under four domains agreed on to regularly report against.

2006: Operational data collection and reporting system developed by the steering committee and NTAHF technical reference group (1).

2008: Health Service District Areas approved by the Public Health Reference Group, AHF and the Office for Aboriginal and Torres Strait Islander Health (OATSIH) (16).

2009: NT AHKPI system completed. Data collection commenced for 10 clinical indicators under domain one.

2011: First community-level reports sent to health services.

2014: Data from 16 indicators available for collection.

SERVICE DELIVERY

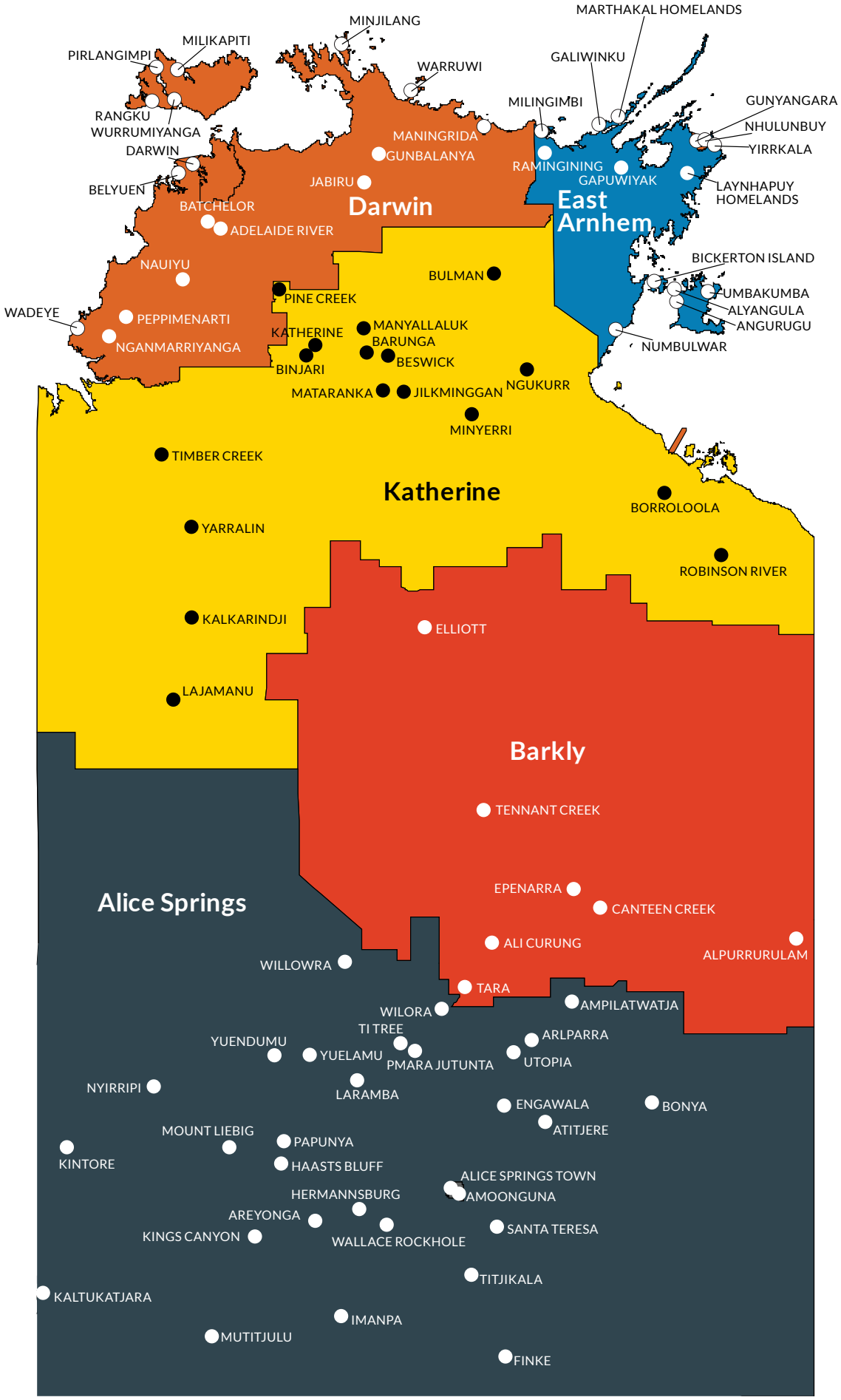
The NT covers an area of 1 346 200 square kilometres and 18% of the total Australian landmass (18). Aboriginal people receive PHC from providers with different governance and service structures that operate in regional, remote and very remote areas. Around 90% of PHC services deliver care in very remote areas supported by funding from the Australian Government, NT Government and Medicare Benefits Schedule (MBS) item billing[4]. While some larger regional communities can support a local hospital, health service options are restricted in more remote areas, where diminishing population size causes barriers to accessing care. Primary health care services are especially important in these locations.

Data is collected and reported at the community level and at a consolidated level for each health service delivery area There are 16 regional health service delivery areas (HSDA), which were developed to improve health service delivery in remote areas and devolve service delivery towards community control under the Expanding Health Services Delivery Initiative (EHSDI) (13).

Each HSDA is home to 2000 to 3000 people and was mapped based on a combination of historical and community links (14).

[4] MBS item billing is delivered through Australia's national health insurance scheme Medicare.

Figure 2: Location of NT Government and Aboriginal community-controlled health organisation (ACCHO) services funded under the NT AHKPI system



DEMOGRAPHIC CONTEXT

The resident Aboriginal population in the NT was estimated at 68 850 at 30 June 2011, with slightly more females than males (53%) (18). Thirty per cent of people in the NT identify as Aboriginal, and 80% of those people live in remote and very remote areas (18). These areas include Aboriginal communities, homelands, settlements, cattle stations and mine sites (2). There is significant seasonal and cultural migration by Aboriginal people within the NT and to other Australian jurisdictions, which influences the delivery of PHC and health status.

This report's population of interest is Aboriginal regular clients of health services whose core business is delivering PHC to Aboriginal people (Box 2). As some Aboriginal people may receive PHC from other avenues, findings are not representative of all NT Aboriginal people. Resident numbers vary significantly between communities, ranging from fewer than 100 to 3000 residents. In 2014, approximately half of the health services reported a resident population of fewer than 350 Aboriginal residents. Demographic characteristics, health needs and community priorities are diverse across Aboriginal communities, and they must be taken into account when delivering and evaluating PHC services (10).

DATA COLLECTION AND GOVERNANCE

Data is biannually transmitted electronically from 84 communities to the NT Government Data Warehouse **(See Appendix 3)**. The data is collected in two clinical information systems (14). Government services use the Primary Care Information System (PCIS), which tracks residents' attendance at any NT Government provider, including their 'usual' health service. Most ACCHOs use the Communicare patient information and recall system.

There is a lack of compatibility between ACCHOs (despite the common electronic system) and between the two clinical information systems. Clients may also be claimed as a 'resident' by more than one service, resulting in record duplication. This also allows clients to be proactively managed as they migrate between locations and health services.

Indicator data remains the property of health service providers who are responsible for data integrity, quality and reporting timeliness. The NT AHKPI Steering Committee, supported by two sub-committees, is responsible for data generation, external access and strategic use. Effective primary health and health promotion approaches have been found to be those that include evaluation and feedback to communities (10). Community reports are generated biannually for individual communities and aggregated at a regional HSDA level. Strong efforts have been made to improve data quality; for example, CQI facilitators and the NT AHKPI Interpretation Tool were introduced to provide system support and facilitate feedback by health staff (19).

BOX 2. DEFINITION OF A RESIDENT

All indicators are based on health service resident clients, except the first indicator (AHKPI 1.1 Episodes of health care). The system defines a resident as "an individual who is identified as a regular client of a health service, who usually resides in the community serviced by the health centre, and has been present in the community for at least six months of the reporting period, and has had some contact with the health service in the previous two years or has recently moved to the community and intends to stay there, and is not deceased, as at the end of the reporting period". The definition enables flexibility by health services to determine which service users are classified as a regular client and resident, in order for the individual to receive health care from multiple health services. This definition is designed to promote health care and management for Aboriginal people. The definition may allow Aboriginal people to be residents at multiple NT services affecting counts and data quality.

DATA QUALITY AND LIMITATIONS

Many things can affect the quality of indicator data and results, including variable functional capabilities of different extraction tools, data cleaning and maintenance processes, changes of software, and, in particular, the capability of staff to accurately enter, manage and extract data, which is affected by high staff turnover across services (20). Documented technical issues include the migration of data from old to new systems, disruption during transition from government to community control, changes of counting rules and inconsistent indicator alignment between services (21).

Examining the consistency of the resident population (denominator) data is fundamental in assessing data quality. Reliable denominator data is required to calculate indicators, health outcome monitoring and improving access and quality of care (20). The current definition of a 'resident' may result in an inconsistent application by health services.

Aboriginal people have multiple residences across different areas and may 'belong' to many communities. The existing definition, inter-community mobility and the absence of a single clinical information system is likely to result in double counting, as was also reported in the 2014 national KPI report (22) (23). The ability to identify Aboriginal people accurately and reliably in administrative health data is fundamental for outcome analyses (24). The recording of Indigenous status as 'unknown' by health services was generally low; however, it may still influence outcomes when sample sizes are small.

Poor quality data, including inconsistencies in denominator data, places constraints on the use of data extracted from the AHKPI system. The collection of aggregated data means results at an individual level cannot be verified so caution must be exercised during interpretation.

The indicators should be used as one tool to understand Aboriginal health status and service performance in conjunction with other demographic and epidemiological data. Results should be discussed and interpreted by health staff and managers in consideration of data limitations, knowledge of the local context, using appropriate judgement and in conjunction with local community reports.

DATA ANALYSIS

Quantitative data was analysed in Microsoft Excel 2010 and Stata 13.0 statistical software (StataCorp). Data is presented as a median (Interquartile range (IQR) 25, 75) for continuous variables, and actual numbers and proportions for categorical variables. Indicators were typically calculated by dividing the population that reported the health outcome or received the defined care by the eligible population[5]. Results were disaggregated by sex, age, and health district and service size. Aggregation of the data aimed to display meaningful results while avoiding identification of individual health services and communities.

There are seven health districts in the NT. In this report, five health districts are used to show result variance between different areas: Darwin, East Arnhem, Katherine, Barkly and Alice Springs district[6]. The five health districts were guided by the size of the data and the boundaries used by the Australian Bureau of Statistics (ABS) **(Figure 2)**. Health service size was measured by the total number of Aboriginal residents per service, as reported in 2014. Four resident population categories were based on the distribution of residents and previous research measuring PHC access[7]. More than one third of primary health services reported fewer than 250 Aboriginal residents. Remoteness was not reported because the majority of health services operate in very remote areas, limiting meaningful analysis and comparison.

The assumption was made for those people recorded as 'unknown' for Indigenous status were non-Indigenous.

[5] The eligible population for each indicator was the total number of eligible residents who reached the age milestone by 31 December of the relevant year.

[6] Darwin Urban and Darwin Rural, and Alice Springs Urban and Rural were collapsed.

[7] Health service size categories: 0-250, 251-500, 501-1000 and >1000 residents.

Data was ineligible if sex was unknown or there were internal inconsistencies and errors. There were instances when a community with valid data had no relevant clients, and this was indicated as '0' clients in the denominator and excluded from the analysis.

All health services were included in the analyses without adjustment for population, where greater weight is given to strata with more data. Considerable fluctuation may occur from small changes in health services with a small numerator and denominator. Smaller health services (denominator fewer than five Aboriginal residents) were excluded from analyses and figures where data was reported at a de-identified health service level. In these figures, the numbers included in the analyses are reported.

Trend data was presented across five years, from 2010 to 2014, when available. Statistical tests of significance were not conducted due to the subjective quality of the data, absence of a directly comparable group (e.g. non-Aboriginal population), and short collection period.

Where appropriate, data is compared with the 2014 national data for Aboriginal and Torres Strait Islander people, as published by the Australian Institute of Health and Welfare (AIHW), which contains the results from 233 health organisations (Box 3) (25). This included 74 from the NT, which had the most organisations.

The NT AHKPI resident population represents approximately 84% of the NT Aboriginal population, as per the 2011 NT ABS estimates. As described above, this proportion should be treated with caution because Aboriginal clients may attend more than one health service and be counted more than once, inflating true NT AHKPI resident numbers.

In conclusion, the analyses in this report are intended to be primarily descriptive rather than explanatory. Reliable interpretation requires information about context, history and local circumstances, which are not available in administrative data.

BOX 3. NATIONAL KEY PERFORMANCE INDICATORS

There are eight NT AHKPIs in which the health condition is equivalent to national Key Performance Indicators (nKPI): timing of first antenatal visit, birthweight, child immunisation, MBS health assessment, General Practitioner Management Plan and Team Care Arrangements (client with type 2 diabetes), HbA1c measurement and result, blood pressure result and cervical screening. However, the national indicators are not directly comparable with the NT AHKPIs due to different indicator classifications, counting rules and applied definition of a 'regular client'. The nKPIs define a resident as a regular client who has an active medical record or attended the PHC organisation at least three times in the past two years (25). The NT AHKPI definition does not quantify the number of visits required and contains an extra component: those who have attended as 'their usual health service'. This reduces the comparability of the NT AHKPI results with the nKPIs, and the differences are highlighted when comparisons are made per indicator.

HEALTH SERVICE PROVISION AND ACTIVITY

Accessing a full range of quality health services, including PHC, is necessary for Aboriginal people to improve their health (1). Increasing access to and outcomes from primary care services for Aboriginal people was a key focus in the 2008 'Closing the Gap' reform by the Australian Government (26). Accessible primary health services are those that are physically available, affordable, appropriate and culturally acceptable. The ability to access services is a barrier for Aboriginal people and contributes to poor health outcomes, as reflected in the high rates of avoidable hospitalisations (5).

The indicator NT AHKPI 1.1 reports on three measures of work provided by primary health services: episodes of health care, number of client contacts, and regular residents per health service. An episode of care is defined as contact between an individual client and a service by one or more staff members. Client contacts are the number of individual client contacts made by each health care worker during the provision of health care. Many PHC services are primarily funded to deliver care for Aboriginal residents, but these services are also used by Aboriginal visitors and non-Aboriginal populations, creating additional financial costs and workloads. The number of episodes of health care and client contacts for non-Aboriginal people and visitors are also presented for this indicator.

Primary health services may be inaccessible for Aboriginal people due to physical barriers, cultural factors, language and communication barriers, poor health literacy, inappropriate or reduced health staff, unavailable transport, mistrust and the ongoing negative influence of colonisation (27). Measuring health service use and workload provides information for monitoring trends and regional patterns and planning for resources. Ongoing surveillance data is necessary to enable policy makers, administrators and planners to determine strategies to best meet the health needs of the NT Aboriginal population and improve access to PHC (28).

INDICATOR CONSIDERATIONS

- Aboriginal people attend a variety of services to receive PHC, including secondary and tertiary services. This information may not be captured in the indicator system. Proximity to secondary and tertiary care is important to take into account when measuring usage and indicator results.
- Some clients may use more than one PHC service between communities. The aggregated count may be an over-estimation due to difficulty in measuring accurate resident numbers.
- There is significant diversity between Aboriginal communities in demographic characteristics, language, governance, socio-economic disadvantage and burden of disease. This may affect health service usage and workload.
- Primary health care is provided by government and non-government community-controlled health organisations. Between health services there is variation in the governance and service structures, levels of funding, remoteness, availability of staffing, services and access to higher tertiary care.
- An increase or decrease in the data may be due to various factors, such as changes to programs and/or services, funding, availability and turnover of health staff and management.

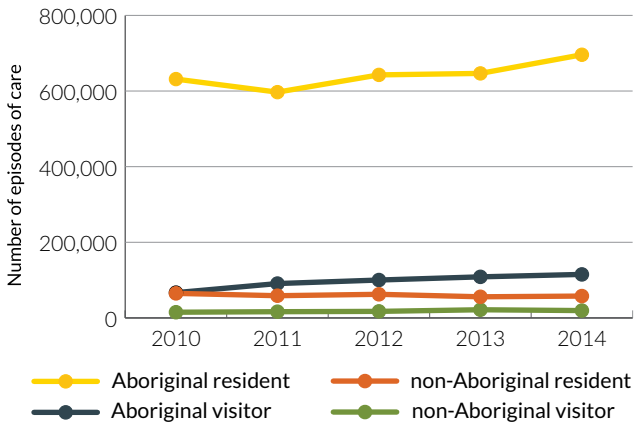
KPI 1.1
EPISODES OF HEALTH CARE

An episode of care is defined as contact between a client and one or more staff members of a service (29). It reflects a visit to a primary care service by an individual.

In 2014, PHC services reported a total of 892 157 episodes of health care. The median number of episodes of health care per health service was 6124 (IQR 4540, 11 358)[8]. On average, each resident received 11 episodes of care. Aboriginal residents received a higher number of average episodes of care compared with non-Aboriginal residents (11 compared with 6). Residents without Aboriginal status specified received approximately 3 episodes of care.

The majority of episodes of care were provided to Aboriginal people (91%) of which 86% were for Aboriginal residents. Of the episodes of health care provided for non-Aboriginal people (9%), the majority were for residents (75%).

Figure 1.1.A1: Number of episodes of care by Aboriginal and resident status, 2010 to 2014



[8] **Note:** The median refers to the midway value; half of the distribution lies below the median and half above it. The interquartile range figures include the lower (25th) and upper quartile (75th) of the distribution: with the median the distribution is divided into four equally sized groups. The range is the difference between the minimum and maximum values.

From 2010 to 2014, there was a 14% increase in total episodes of care. Aboriginal visitors reported the highest increase (72%) over the five reporting periods (from 66 864 to 115 067 episodes of care) **(Figure 1.1.A1)**.

Aboriginal residents aged 25 to 44 reported the highest proportion of episodes of health care (28%); residents aged over 65 years reported the lowest proportion (8%) **(Figure 1.1.A2)**. Females were more likely to use the health services than males (60%). Most episodes of health care were provided in the Alice Springs region (32%) **(Figure 1.1.A3)**.

CHAPTER 2

Figure 1.1.A2: Proportion of episodes of care for Aboriginal residents by sex and age, 2014

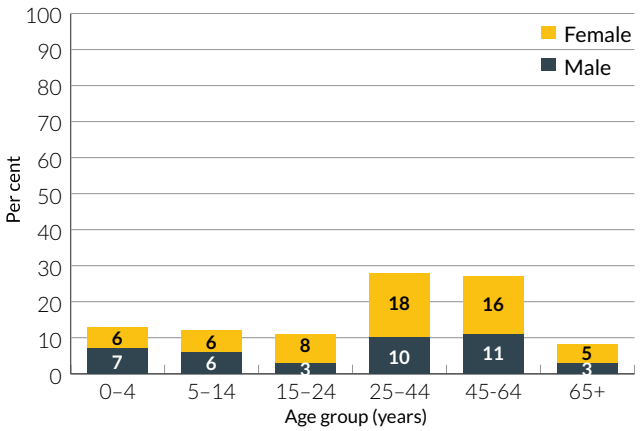
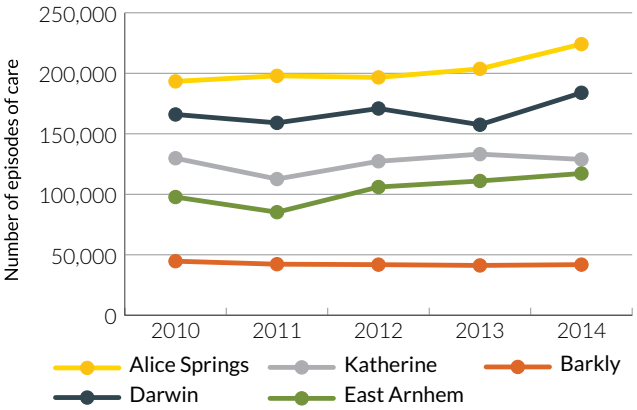


Figure 1.1.A3: Number of episodes of care for Aboriginal residents by health district, 2010 to 2014



KPI 1.1
CLIENT CONTACTS

Client contacts are defined as the total number of human resources involved during client care, including health professionals and those delivering transport (e.g. field officers and drivers). For example, management of chronic disease requires a multidisciplinary health care team including GPs, medical specialists, practice and remote area nurses, allied health professionals, Aboriginal health practitioners (AHP) and Aboriginal health workers (AHW). Most health centres are staffed by nurses, AHPs or AHWs, with regular visits from GPs, medical specialists and allied health professionals (1). This indicator measures the total number of staff for all clients, not only Aboriginal residents.

In 2014, PHC services reported 1 120 333 client contacts and a median of 7390 per health service (IQR 5356, 15 871).

From 2010 to 2014, there was a large increase (19%) in the recorded number of client contacts. The median number of client contacts per health service increased from 7040 (IQR 4578, 12 001) to 7390, (IQR 5356, 15 871) **(Figure 1.1.B1)**.

BOX 4. CLIENT CONTACTS

Data disaggregation by sex, age, Indigenous status and type of client contact is not available. The collection of this information may be valuable in informing health service usage and planning, including regional gaps in the availability of different health professionals and allied health care services.

Figure 1.1.B1: Number of total client contacts and episodes of care, 2010 to 2014

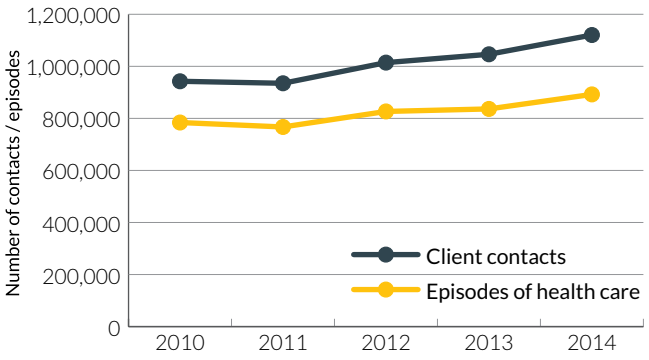


Figure 1.1.B2: Number of client contacts by health district, 2010 to 2014

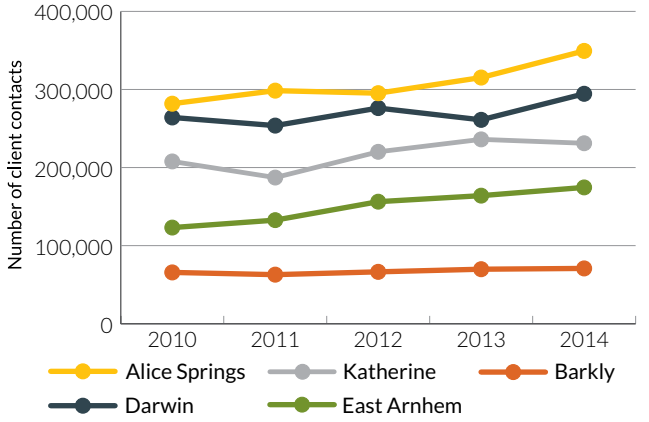
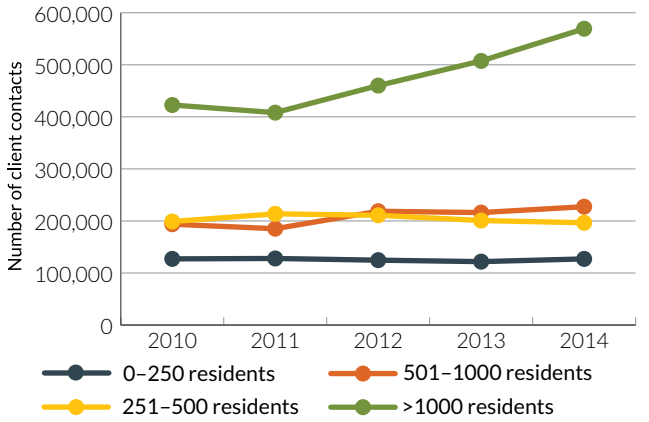


Figure 1.1.B3: Number of client contacts by health service size, 2010 to 2014



KPI 1.1
RESIDENT POPULATION

The definition of a resident is 'an individual identified as a regular client of the health service, who usually resides in the community serviced by the health centre, has been present in the community for at least 6 months of the reporting periods, and has had some contact with the health service in the previous 2 years or has recently moved to the community and intends to stay there, and is not deceased as at the end of the reporting period' (30).

In 2014, there were 71 791 residents reported by health services, of whom 85% identified as Aboriginal (60 975 residents). The median number of residents per health service was 356 residents (IQR 200, 704 residents).

Slightly more Aboriginal female residents (52%) were reported than males, and those aged 25 to 44 years represented the highest proportion of residents (29%) **(Figure 1.1.C1)**. The highest proportion were reported in the Darwin region (32%) and larger health services, as expected **(Figures 1.1.C2 & 1.1.C3)**.

Figure 1.1.C1: Proportion of Aboriginal residents by sex and age, 2014

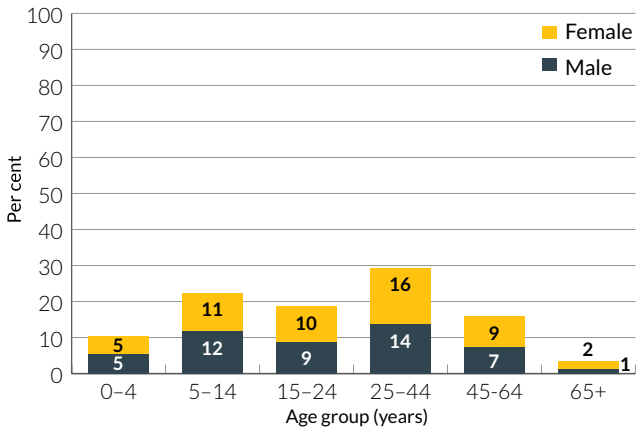


Figure 1.1.C2: Proportion of Aboriginal residents by health district, 2014

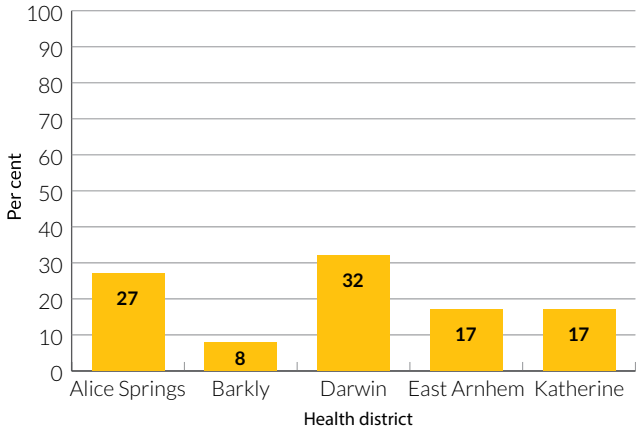
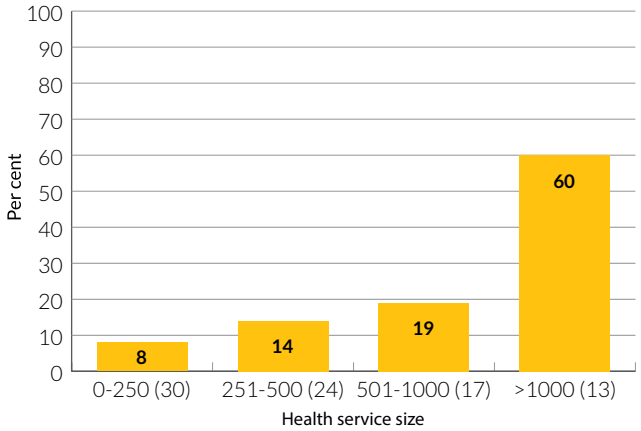


Figure 1.1.C3: Proportion of Aboriginal residents by health service size, 2014



Note: Number of communities per health service size in brackets.

MATERNAL AND CHILD HEALTH INDICATORS

Maternal and child health programs operating from NT Government and ACCHOs services are increasingly being recognised as the preferred approach for improving Aboriginal maternal and child health outcomes (31). This section presents indicators relating to maternal and child health: timing of first antenatal visit, birthweight, childhood immunisation rates, and measurements for weight and anaemia.

There are well documented disparities in pregnancy and birth outcomes between Aboriginal and non-Aboriginal women in the NT, as reflected by the higher rates of perinatal mortality (27.4 compared with 8.8 perinatal deaths per 1000 births), preterm births (16% compared with 6%) and low birthweight babies (14% compared with 5%) (32). The causes of the disparities are multifactorial and interlinking; they include prevalence of risk factors, gestational age, multiparity, educational attainment, access to culturally appropriate health services, remoteness, socio-economic disadvantage and the legacy of colonisation (32) (33).

Antenatal (prenatal) care is an important intervention to identify and modify factors that may affect the health of the mother and child. Care may be provided by a broad range of health care professionals (e.g. obstetricians, midwives, GPs, nurses, AHWs and AHPs) at scheduled visits during the pregnancy. The World Health Organization (WHO) recommends the first antenatal visit occurs within the first trimester (before 13 weeks) to assess maternal health status, and detect multiple pregnancies and major congenital defects (34) (35). Uptake of antenatal care by Aboriginal women is influenced by remoteness, appropriately skilled staff, culturally appropriate environment, relationship with health care providers, acceptance by other Aboriginal women, and available transport (33) (36). Perinatal outcomes are associated with the timing and quality of antenatal care; evidence indicates Aboriginal women tend to access antenatal care later and have fewer visits, underutilising available care (37) (38).

The risk of perinatal death is associated with a baby's birthweight and gestational age (39). The NT has the highest incidence of low birthweight births[9] in Australia (41). The incidence of low birthweight and gestational age in Aboriginal newborns reflects the higher prevalence of antenatal risk factors including poor maternal nutrition, higher parity, gestational age, anaemia, genito-urinary infections, existing medical conditions, psycho-social stress, alcohol consumption and smoking (42) (41). Aboriginal NT women are more likely than non-Aboriginal women to smoke during pregnancy, especially in rural and remote areas (32). Low weight at birth increases morbidity risk during infancy and childhood, as well as the development of various chronic diseases in adult life including hypertension, type 2 diabetes, obesity, cardiovascular disease and renal disease, all of which are overrepresented in the Aboriginal population (43). Antenatal care is an important intervention to reduce risk factors and improve immediate and future Aboriginal health outcomes.

Childhood immunisations are considered one of the most successful public health initiatives in reducing morbidity and mortality and have been highly effective in contributing to reducing Aboriginal health inequity (44). The NT Immunisation Register administered by the Centre for Disease Control records all immunisations administered in the NT (except influenza) and provides data to the Australian Childhood Immunisation Register (ACIR). For "targeted" vaccines, lower rates and coverage have been reported in Aboriginal children despite successful vaccination programs using standard schedule vaccines; this has important implications in the control of vaccine preventable infections (41) (45). Childhood vaccination barriers may be explained by larger family size, mobility, missed opportunities at health centres, inaccurate immunisation status assessment by health staff, parental work commitments and socioeconomic disadvantage (39) (46). A study of NT Aboriginal children examining routine immunisation milestones at seven,

[9] Low birthweight has been defined by the WHO as weight of less than 2500 grams at birth (40).

13 and 18 months of age found suboptimal and regional variation in coverage and timeliness, with delays more common for later doses (47) (45).

Effectiveness of immunisations is determined by both coverage and delivery timeliness, as reflected in the system by the introduction of two immunisation indicators to encourage improvement in these areas.

The health and development of Aboriginal infants and children are influenced by complex and interlinking family, school and community factors. Aboriginal infants and children in the NT have worse health outcomes, as reflected in the higher rates of underweight, stunting and wasting children, especially in remote areas. Poor growth increases the likelihood of infection, as reflected in the higher hospitalisation rates of respiratory, skin and gastrointestinal infections in Aboriginal infants (48) (41). Growth monitoring is the process of following the growth rate of a child by periodic anthropometric measurements to assess growth adequacy, identify early stage growth faltering and encourage actions that improve growth (49). Causes of growth faltering are complex and include poor nutrition, access to affordable and nutritious food, food security, acute and chronic diseases, parasitic infections and socio-economic disadvantage. Identifying and addressing growth faltering through the measuring of weight is important; early child growth influences learning and behaviour and is a strong predictor of cognitive performance, physiological achievement and chronic disease in adulthood (50).

Iron deficiency or anaemia is a significant problem for Aboriginal children in the first year of life, especially in remote communities (48). Anaemia may be caused by nutritional deficiency of iron-rich foods, hookworm and parasitic infections, chronic illness and blood loss. Iron deficient anaemia negatively affects cognitive, motor, social-emotional and neurophysiologic development (51). Low-birthweight babies have low iron stores at birth and are particularly at risk of becoming iron deficient in their first six months (52). The poor long-term health outcomes and relationship with malnutrition require early and joint monitoring and management strategies (51).

CHAPTER 3

INDICATOR CONSIDERATIONS

- Many Aboriginal children and their families are highly mobile. Their overall care may be better than it appears at any one location because they may have had interventions at health centres where they are classified as non-resident, with no record of treatment reaching their home service.
- Factors affecting the provision of antenatal care are likely to be different in regional, remote and very remote areas. In regional areas, Aboriginal women, children and infants may access a range of health service providers, including tertiary hospitals and major ACCHOs.
- The timing of the first antenatal visit is one indicator of good antenatal care. Others include the number of antenatal visits, antenatal hospitalisations and quality of care. The components and quality of ANC vary between health care services (53). Literature on models of ANC for Aboriginal women is limited and there is a significant gap in the knowledge and practice of ANC service delivery, including patterns and frequency of use (36).
- Timing of first antenatal visit data is sourced through the NT Midwives' Collection and Communicare. Data is entered by a midwife into Caresys[10] following a birth in a public hospital, or into the NT Midwives' Collection website following planned home births and deliveries in Darwin Private Hospital. Communicare is used by ACCHOs to record antenatal care information electronically. Lost or handheld records may result in incomplete and inaccurate data entry. For example, the first antenatal visit may be recorded as the date of the hospital outpatient attendance or date of first ultrasound, rather than the first antenatal visit.
- Good quality data about Aboriginal women and their babies is not yet available on a national level due in part to difficulties in the accurate ascertainment of Aboriginal status of both mothers and fathers (53). Not all current NT systems record the paternal Aboriginal status. It is possible there are babies who have Aboriginal fathers and non-Aboriginal mothers who are not included.
- Low numbers of children in some categories mean that caution should be exercised when interpreting results, as small fluctuations may result in large changes in proportions.
- Preventing growth faltering and reducing anaemia among Aboriginal children requires key prevention interventions across multiple and interlinking areas, including housing, water and sanitation, hygiene, nutrition, supplementation, education (community and family), and case management with underlying causes informing the choice of intervention(s) (54).

[10] Caresys is a centralised administrative hospital information system used by all five NT public hospitals (9).

KPI 1.2
FIRST ANTENATAL VISIT

This indicator measures the first antenatal visit[11] for Aboriginal women who are regular residents of the health service and who gave birth to a live baby or stillborn of at least 20 weeks gestation. Antenatal care involves: health promotion/education, assessment of maternal physical and mental health, screening for infections and obstetric complications, provision of pregnancy advice and support, regular clinical assessments and referrals if necessary (41).

In 2014, approximately half (49%) of resident Aboriginal women had their first antenatal visit within the first trimester. Nationally, 36% of Aboriginal and Torres Strait Islander regular clients had their first antenatal visit before 13 weeks of pregnancy, as per the 2014 national KPI report (56)[12].

From 2010 to 2014, there was an increase in the number of first antenatal visits within the first trimester by Aboriginal women (from 44% to 49%) **(Figure 1.2.1)**. Resident Aboriginal women aged 20 to 34 years gave birth to 72% of Aboriginal babies in 2014 **(Figure 1.2.2)**. Aboriginal women aged 20 to 34 (53%) and 35 years and over (51%) were more likely to have their first antenatal visit within the first trimester than women aged less than 20 years (37%). The timing of the first antenatal visit within the first trimester ranged from 30% to 57% between health districts. Katherine reported the highest proportion within the first trimester (57%) **(Figure 1.2.3)**. Health services with between 501 and 1000 Aboriginal residents reported the highest proportion of Aboriginal women who had their first antenatal visit before 13 weeks **(Figure 1.2.4)**.

Figure 1.2.1: Duration of pregnancy at first antenatal visit for Aboriginal women, 2010 to 2014

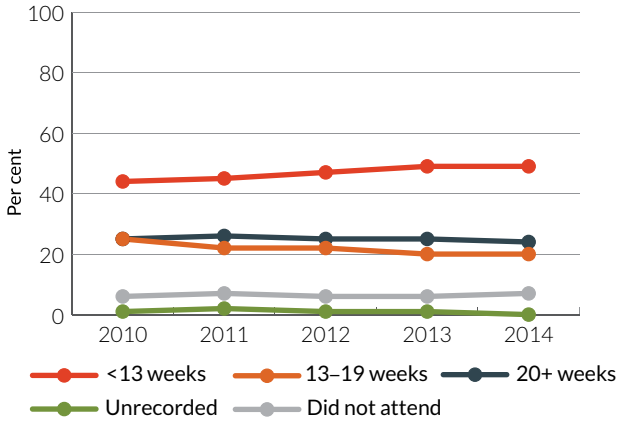


Figure 1.2.2: Duration of pregnancy at first antenatal visit for Aboriginal women by maternal age, 2014

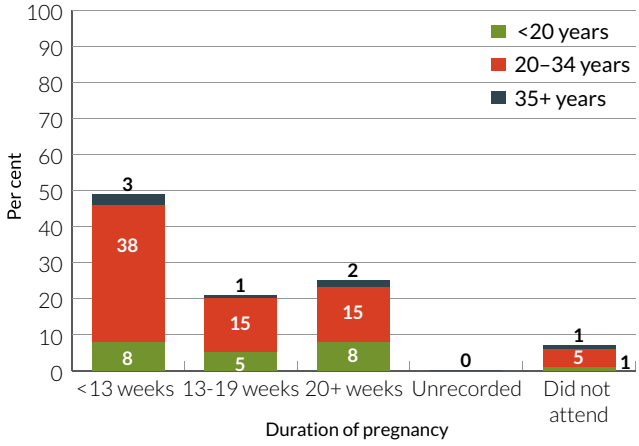
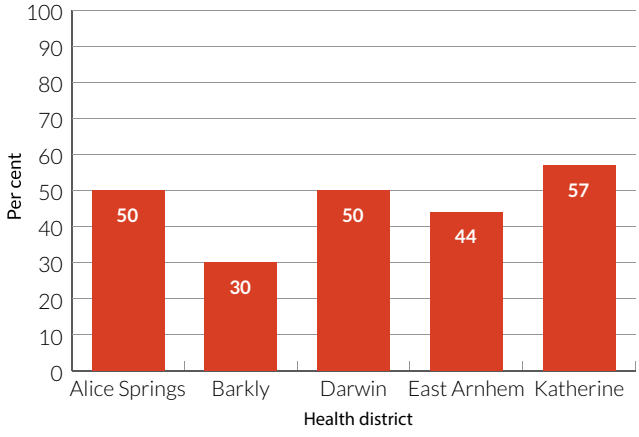


Figure 1.2.3: Proportion of Aboriginal women with first antenatal visit within the first trimester by health district, 2014



[11] First antenatal visit is guided by the following definition: the undertaking of a blood pressure test; ordered mid-stream urine specimen for microscopy, culture and sensitivity; and ordered blood group and antibody test (55).

[12] Caution is required with comparison to the national KPI results. The national KPIs measure the proportion of Aboriginal babies. In contrast, the AHKPIs measure Aboriginal babies as defined by mothers Indigenous status only for some health services.

BOX 5. MATERNAL AND CHILD HEALTH

Improving maternal, infant and child health is dependent on improving socioeconomic status and providing better access to quality maternity care, including antenatal care (39). Opportunities for improvement may include: increasing PHC initiatives and resourcing, re-organisation and development of innovative and culturally acceptable maternal services, access to evidence-based screening, and improved health information (57) (38).

Figure 1.2.4: Aboriginal women first antenatal visit by duration of pregnancy and health service size, 2014

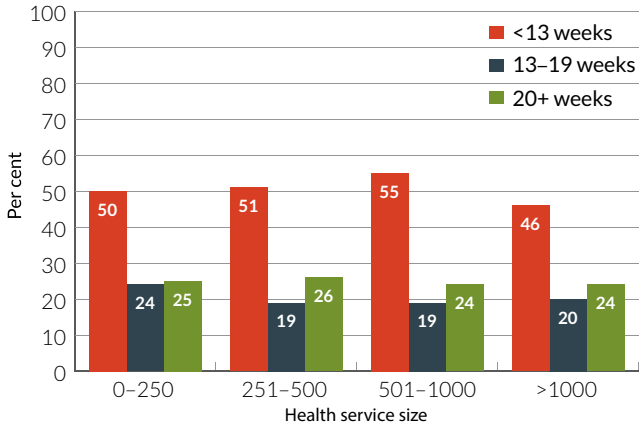
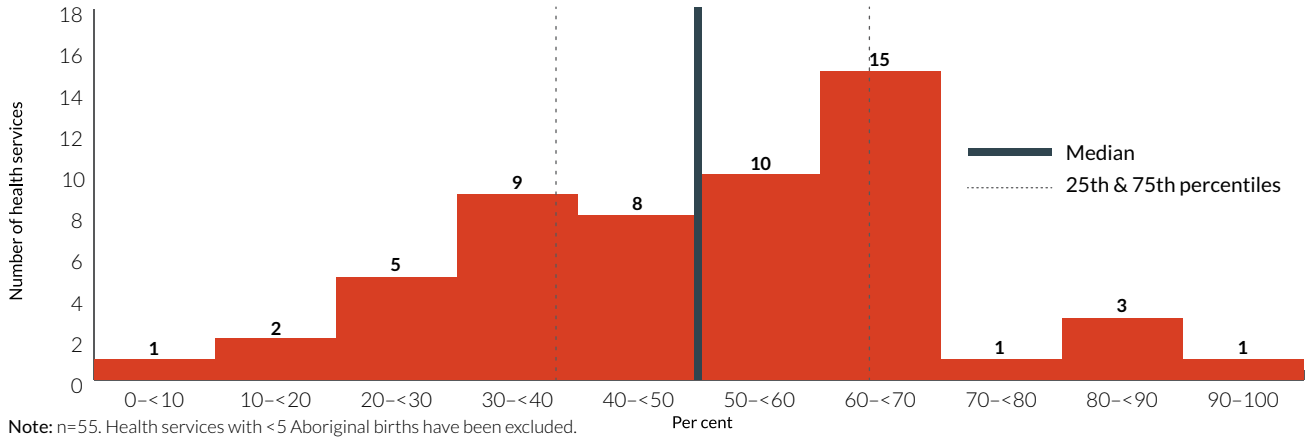


Figure 1.2.5: Distribution of percentage of Aboriginal women first antenatal care visit within the first trimester by health service, 2014

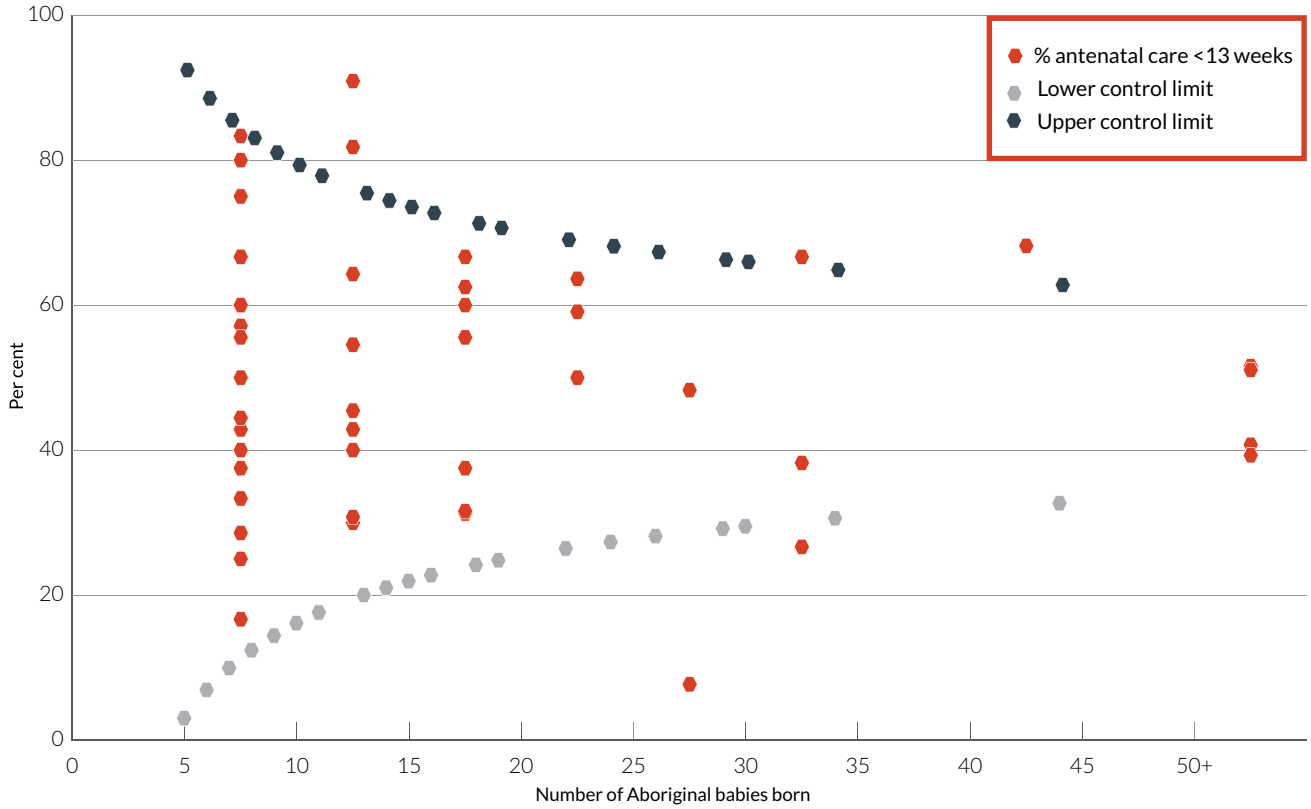


Note: n=55. Health services with <5 Aboriginal births have been excluded.

In 2014:

- The median proportion of Aboriginal women who had their first antenatal care visit within the first trimester was 50%.
- The highest quartile of health services recorded 64% or more of Aboriginal women who had their first antenatal care visit within the first trimester.
- The lowest quartile of health services recorded 38% or less of Aboriginal women who had their first antenatal care visit within the first trimester **(Figure 1.2.5)**.
- Aboriginal women who had their first antenatal visit within the first trimester varied between health services, even when the number of Aboriginal babies born per health service were similar. The majority of health services had results within an expected variation, according to their denominator size. Variation between health services in the proportion of Aboriginal women with the first antenatal visit within the first trimester was high (between 8% and 91%) **(Figure 1.2.6).**

Figure 1.2.6: Proportion of Aboriginal women with the first antenatal visit within the first trimester of pregnancy by health service, 2014



Note: n=55. Health services with <5 Aboriginal births have been excluded.

3

KPI 1.3
BIRTHWEIGHT

Low birthweight is defined by WHO as a weight at birth of less than 2500 grams, based on epidemiological observations that infants weighing less than this weight are more likely to die than heavier babies. Low birthweight is the result of preterm birth (before 37 weeks of gestation) or due to restricted fetal (intrauterine) growth (58).

In 2014, there were 1058 Aboriginal babies with their birthweight recorded, of whom 12% were low birthweight births, 87% normal weight and less than 1% recorded as high weight[13] **(Figure 1.3.1)**. This is comparable with the national KPIs, which reported that 13% of Aboriginal and Torres Strait Islander babies born in the previous year had a low birthweight, as of December 2014 (56)[14].

From 2010 to 2014, the proportion of low birthweight births was between 12% and 16%.

For Aboriginal women, the highest proportion of low birthweight births was observed in those aged 35 years and over (18%), followed by less than 20 years (14%) and between 20 and 34 years (11%) **(Figure 1.3.2)**. The proportion of low birthweight births ranged from 7% to 16% between health districts **(Figure 1.3.3)**[15] and 9% to 14% by health service size **(Figure 1.3.4)**.

Figure 1.3.1: Proportion of low, normal and high birthweight Aboriginal babies, 2010 to 2014

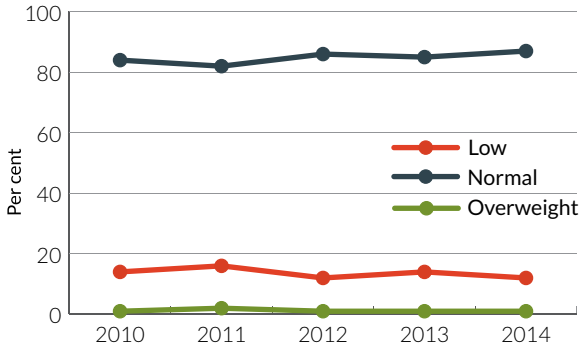


Figure 1.3.2: Proportion of low, normal and high birthweight Aboriginal babies by maternal age, 2014

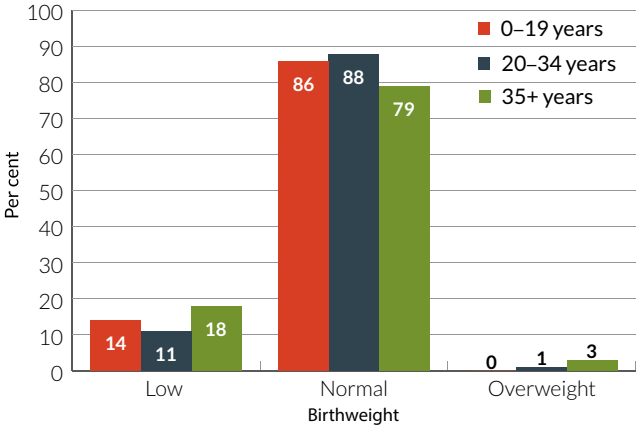
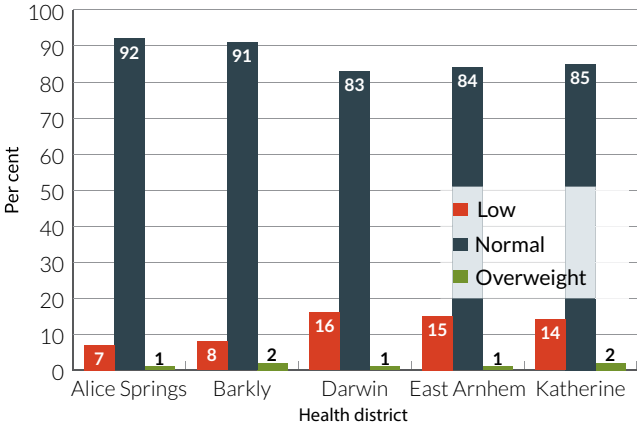


Figure 1.3.3: Proportion of low, normal and high birthweight Aboriginal babies by health district, 2014



[13] Normal weight is defined as 2500 to 4499 grams and high weight defined as 4500 grams and over (30).

[14] Caution is required with comparison to the national KPI results. The national KPIs measure the proportion of Aboriginal babies. In contrast, the AHKPIs measure Aboriginal babies as defined by mothers Indigenous status only for some health services.

[15] Local policies require women in remote areas to be transferred into regional hospitals for birthing about one month prior to delivery. Women experiencing premature labour (gestational age less than 32 weeks) in and around Alice Springs may be transferred onwards to Adelaide for neonatal services, impacting birthweight data.

BOX 6. DATA INTERPRETATION

Care must be taken when using and interpreting this indicator data. Only babies born to Aboriginal women have their birthweight recorded in the PCIS used by NT Government services. The proportion of Aboriginal babies born with their birthweight recorded at the PHC organisation is not recorded. According to the NT Midwives' Collection, in 2013, there were 1243 Aboriginal babies born to 1232 resident Aboriginal women. This suggests that approximately 85% of Aboriginal babies are captured in the NT AHKPI system; data should not be regarded as representative of all Aboriginal babies born in the NT.

Figure 1.3.4: Proportion of low, normal and high birthweight Aboriginal babies by health service size, 2014

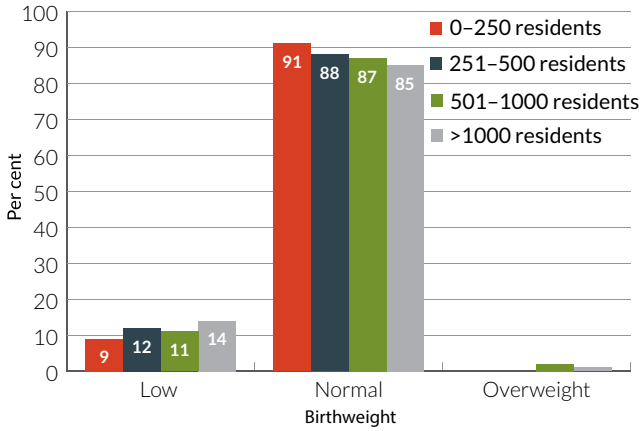
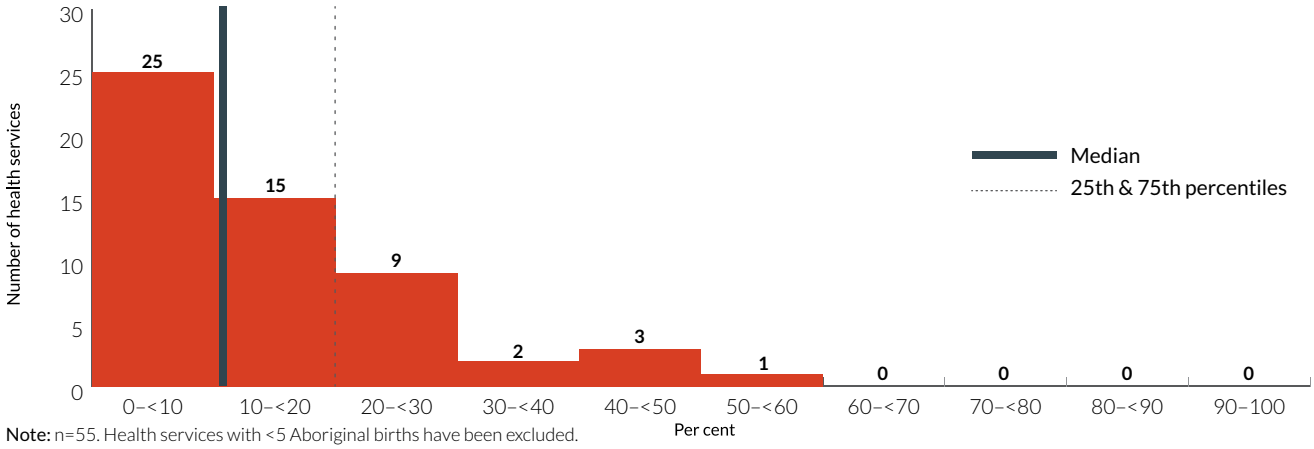


Figure 1.3.5: Distribution of percentage of low birthweight Aboriginal babies by health service, 2014



Note: n=55. Health services with <5 Aboriginal births have been excluded.

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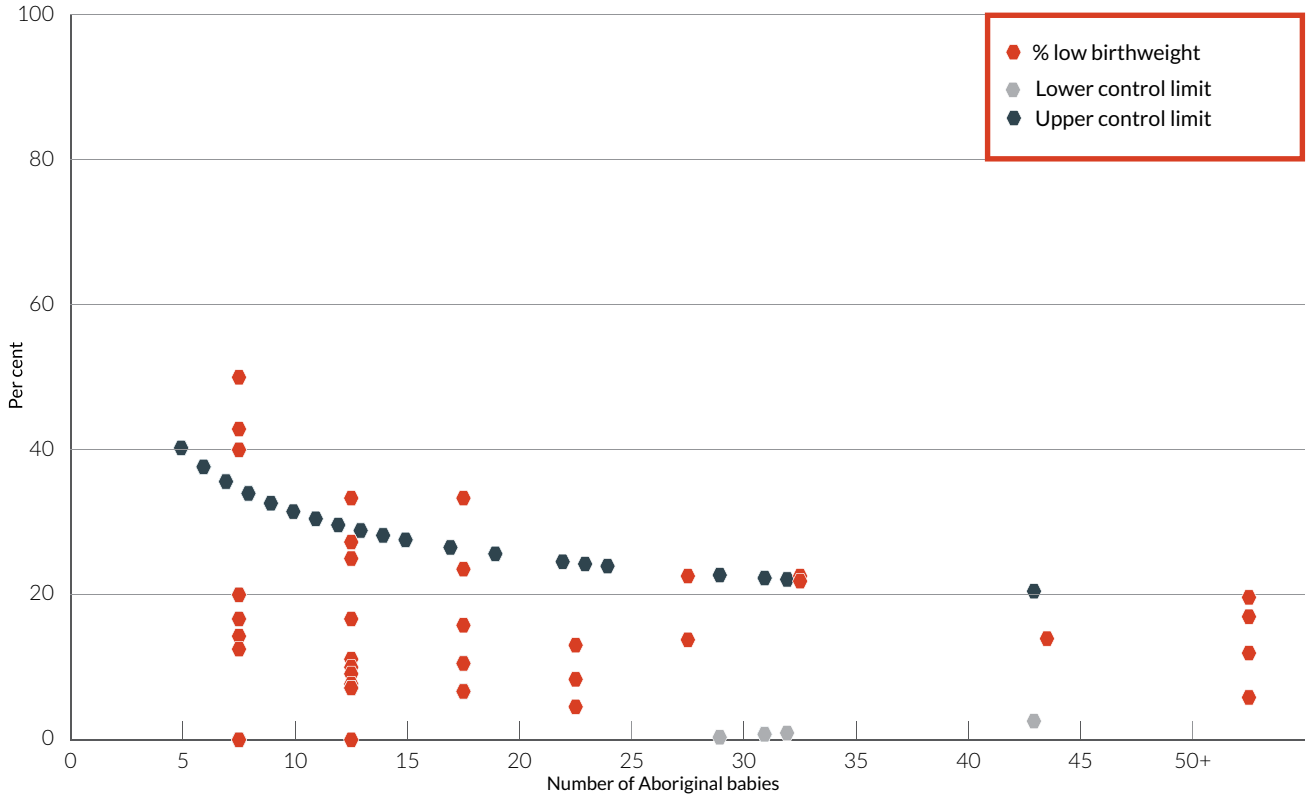
In 2014:

- The median proportion of Aboriginal babies born with low birthweight was 11%.
- The highest quartile of health services recorded 20% or more of Aboriginal babies born with low birthweight.
- The lowest quartile of health services reported 0% of Aboriginal babies with low birthweight births. Caution is required when interpreting this value; the majority of these health services reported few births (<10) **(Figure 1.3.5)**.
- Many health services that reported a high proportion of low birthweight births had low total numbers of Aboriginal babies born during the reporting period. Low birthweight births occurred across all health service sizes **(Figure 1.3.6)**. In health services with five or more Aboriginal births during the reporting period, variation in the proportion of low birthweight Aboriginal babies ranged from 0% to 50%.

Figure 1.3.6: Proportion of low birthweight Aboriginal babies by health service, 2014



Note: n=55. Health services with <5 Aboriginal births have been excluded.

KPI 1.4.1
FULLY IMMUNISED CHILDREN

Immunisations are highly effective in reducing morbidity and mortality caused by vaccine-preventable diseases (59). This indicator assesses the vaccination status of resident Aboriginal children aged six months to five years and disaggregated into three age categories. The time points permit a grace period to complete primary and booster phases after a child reaches the relevant milestones. Data is reported across all recommended vaccines for Aboriginal children living in the NT, as per the NT immunisation schedule[16].

In 2014, 91% of resident Aboriginal infants and children aged six months to less than six years were fully immunised. Six to 11 months and 12 to 23 month age groups reported lower vaccination coverage than children aged 24 to 71 months.

From 2010 to 2014, the proportion of Aboriginal children immunised across all age groups increased from 85% to 91%. Improvements were reported for those immunisations due between 12 and 23 months (from 77% to 87%) and 24 to 71 months (from 87% to 92%). Age appropriate immunisations due between six and 11 months remained steady (between 86% and 87%) **(Figure 1.4.1.1)**.

Figure 1.4.1.1: Proportion of Aboriginal children aged 6 to 71 months fully immunised by age, 2010 to 2014

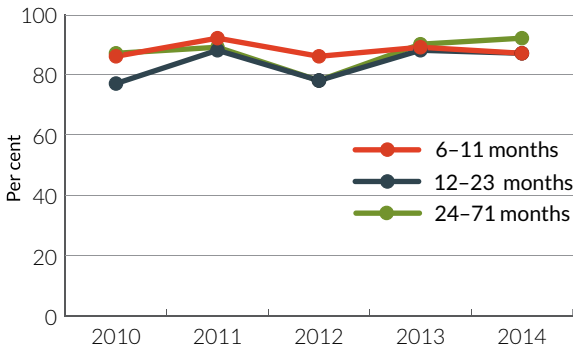


Figure 1.4.1.2: Proportion of Aboriginal children fully immunised by age and health district, 2014

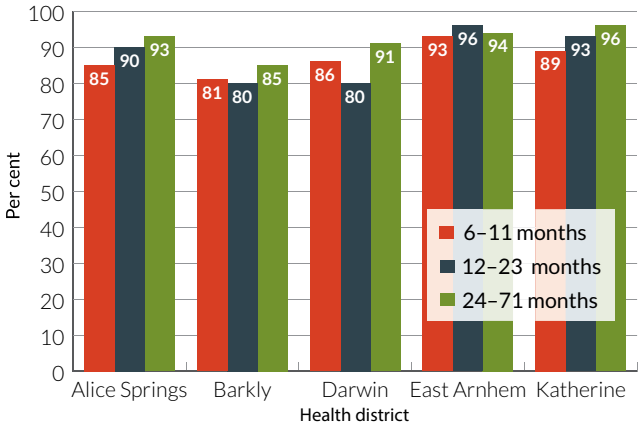
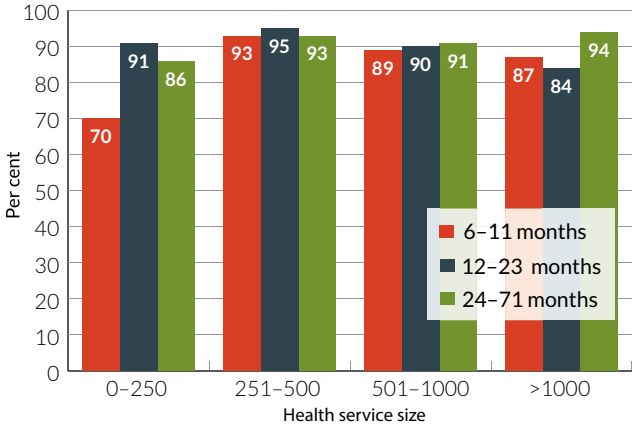


Figure 1.4.1.3: Proportion of Aboriginal children fully immunised by age and health service size, 2014



[16] NTG childhood vaccination schedule recommends the following vaccines due at birth to <6 years): hepatitis B; rotavirus; diphtheria-tetanus- pertussis (DTP); poliomyelitis; haemophilus influenza type b; conjugate pneumococcal (13vPCV); meningococcal C; measles-mumps-rubella (MMR); and hepatitis A (for Aboriginal children and non-Aboriginal children living in remote areas) (60).

BOX 7. CHILDHOOD IMMUNISATION

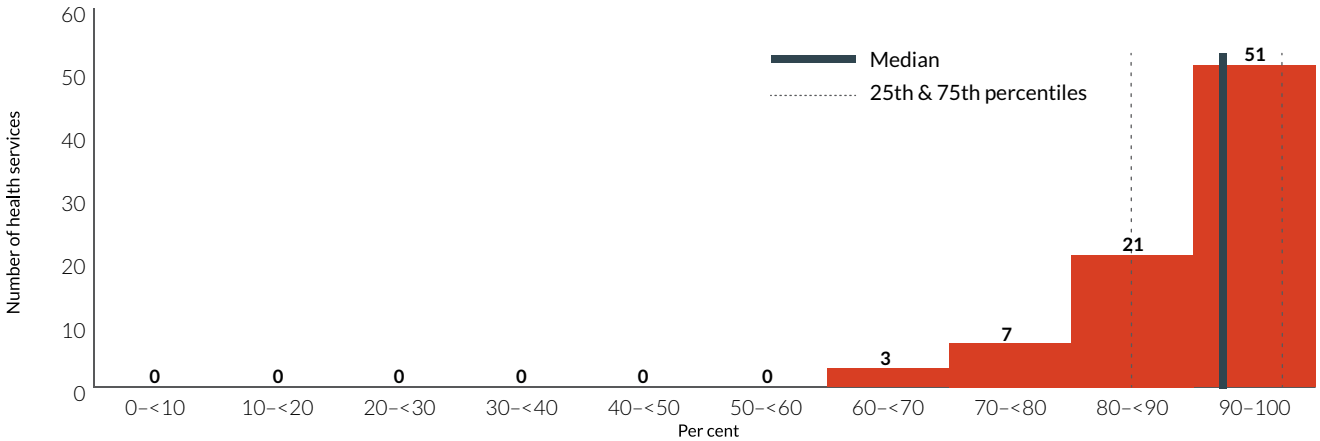
This indicator measures immunisation as a measure of program performance at age ranges of six months to less than one year (immunisations due at birth, two and four months), one year to less than two years (immunisations due by six and 12 months), and two to less than six years (immunisations due at 18 months and four years). These enable a period for children to complete primary and booster phases according to the vaccination schedule.
The challenge with using age range milestones is that deficiencies in the timeliness may be masked, particularly in early years where delays have been reported and there is the highest risk of disease (47). Immunisation is considered timely when received at the earliest possible age, and age-appropriate immunisation is generally defined as within 30 days of the recommended age (61). In acknowledgement of the importance of immunisation timeliness, KPI 1.4.2 was developed to assess timeliness in children between one to less than 12 months, applying a more stringent criteria. This indicator is currently under development to expand the age range, redefine the vaccination delay period and categorise outcome immunisation measures.

The Northern Territory Immunisation Register records all immunisations in the NT and provides the data to the ACIR, the national primary data immunisation source. There are well recognised challenges in accurately recording the immunisation status of Aboriginal children in PHC settings due to migration, data quality and absence of a centralised electronic information system. The 2014 national KPIs report included results reported by the ACIR due to issues with data validity and the large variation among jurisdictions in the proportion of children recorded as being fully immunised. Caution is required when comparing the NT AHKPI results with the ACIR due to the differences in age cohorts and counting rules. For quarter ending December 2013, the ACIR reported 92% of NT Aboriginal infants aged 12 to less than 15 months were fully immunised. From quarter ending December 2014, 87% aged 24 to less than 27 months and 95% aged 60 to less than 63 months were fully immunised (62).

Aboriginal children aged six months to 23 months had lower immunisation coverage. Coverage varied across health districts and between age groups; the greatest difference between districts was seen in Aboriginal children aged 12 to 23 months **(Figure 1.4.1.2)**.

Figure 1.4.1.3 shows that smaller organisations reported the lowest levels of Aboriginal children immunised in the age groups six to 11 months and 24 to 71 months.

Figure 1.4.1.4: Distribution of percentage of fully immunised Aboriginal children aged 6 to 71 months by health service, 2014

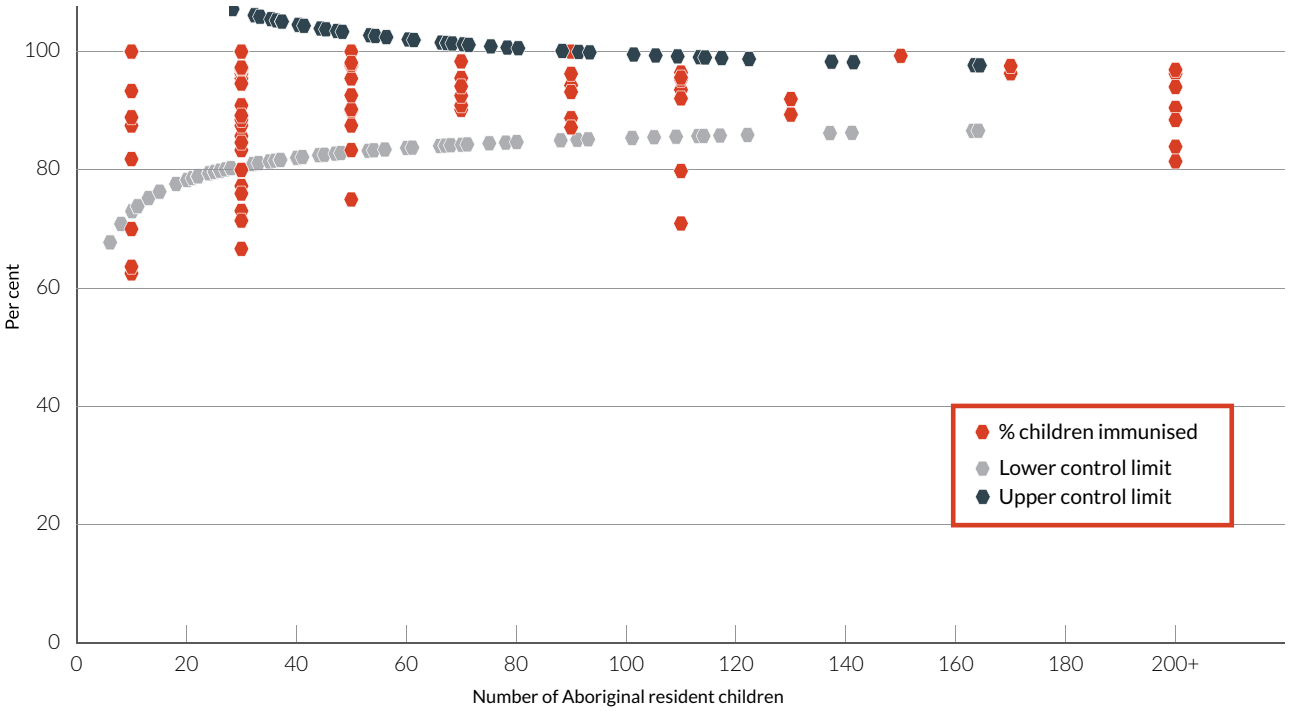


Note: n=82. Health services with < 5 Aboriginal resident children have been excluded.

In 2014:

- The median proportion of fully immunised children was 93%.
- The highest quartile, or top 25%, of health services recorded 97% or more of their resident Aboriginal children who received all age appropriate immunisations and lowest quartile or bottom health services recorded 85%.
- The majority of health services reported that the proportion of fully immunised Aboriginal children was within expected ranges. There were, however, a number of smaller health services that reported lower immunisation proportions than the lower control limit than expected. Variation in the proportion of Aboriginal children who received all age-appropriate immunisations ranged from 63% to 100% **(Figure 1.4.1.5)**.

Figure 1.4.1.5: Proportion of Aboriginal children aged 6 months to <6 years who received all age appropriate immunisations on time by health service, 2014



Note: n=82. Health services with < 5 Aboriginal resident children have been excluded.

KPI 1.4.2
TIMELINESS OF IMMUNISATIONS

This indicator assesses the timeliness of immunisations in infants aged one month to less than 12 months. The indicator provides additional information to KPI 1.4.1 to assist with improving immunisation timeliness in younger children who are at a high risk of adverse outcomes due to vaccine-preventable diseases. Data for this indicator has been available since 2013.

In 2014, 81% of Aboriginal children aged one to less than 12 months received all age-appropriate immunisations on time.

From 2013 to 2014, the proportion of infants who received all age-appropriate immunisations on time remained steady between 80% and 81%. There was considerable variation between health districts. Katherine reported the highest proportion across both years. Health services between 251 and 500 Aboriginal residents reported the highest immunisation proportions (86%) **(Figure 1.4.2.2).**

Figure 1.4.2.1: Proportion of Aboriginal children aged 1 to <12 months who received age-appropriate immunisations on time by health district, 2013 to 2014

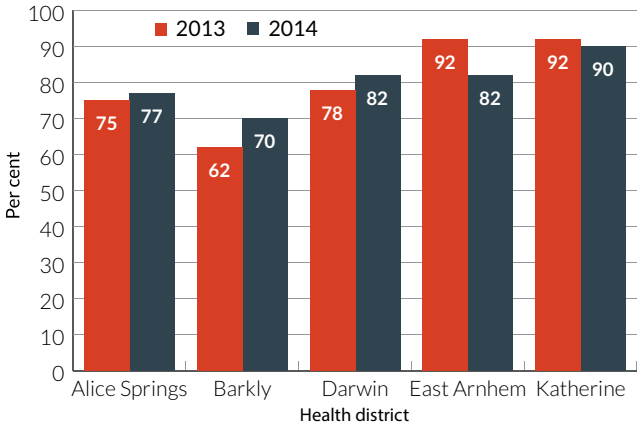
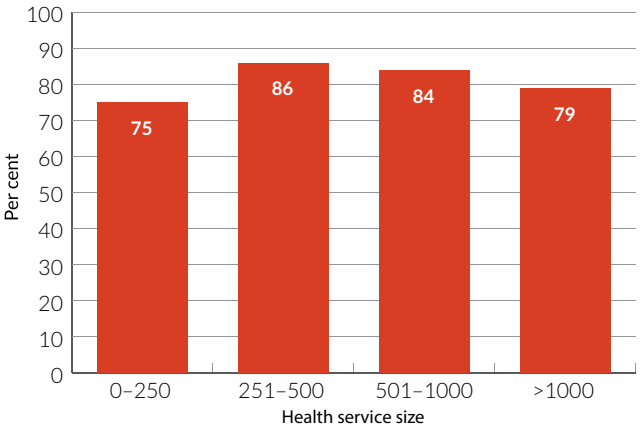


Figure 1.4.2.2: Proportion of Aboriginal children aged 1 to 12 months who received age-appropriate immunisations on time by health service size, 2014



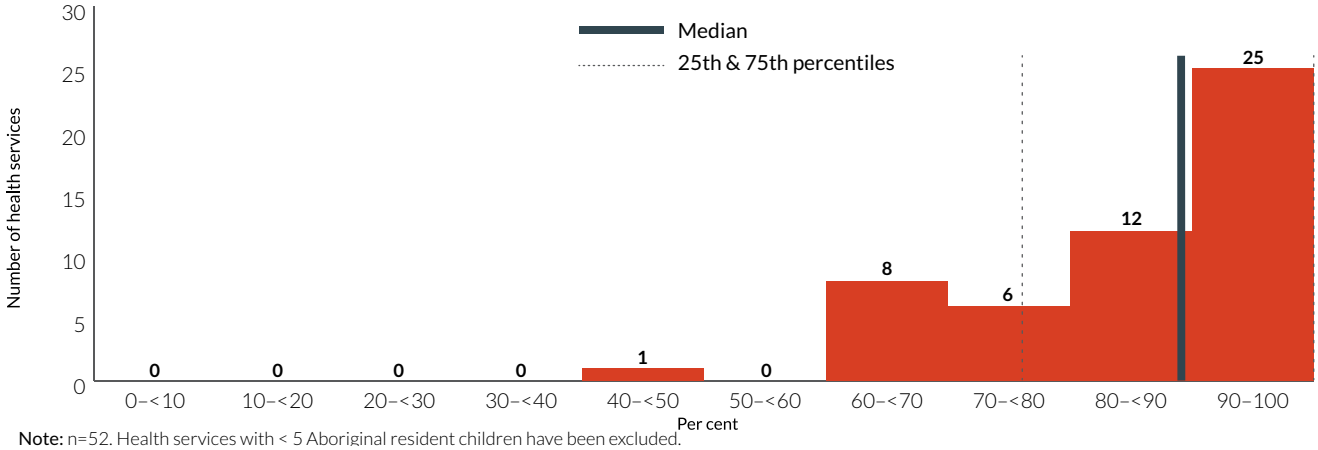
BOX 8. TIMELINESS OF IMMUNISATIONS

The timeliness of immunisations in Aboriginal children is considered the current benchmark of program effectiveness, given immunisation coverage improvements in recent years (63). This indicator measures timeliness between age one month to less than one year at four periods: ages one to less than three months (immunisations due at birth), three to less than five months (immunisations due at two months), five to less than seven months (immunisations due at four months) and seven to less than 12 months (immunisations due at six months). Data is collected at an aggregated level from health services only; further disaggregation by age groups may provide useful information to improve immunisation delivery, especially crucial for some vaccines delivered in infancy. Delayed immunisation, particularly in the first year of life, places Aboriginal children at increased risk of vaccine-preventable infections and must be addressed (63).

In 2014:

- The median proportion of Aboriginal children aged one to less than 12 months with all age-appropriate vaccinations was 89%.
- The highest quartile, or top 25%, of health services recorded 100% of their Aboriginal children with all age-appropriate vaccinations and the lowest quartile, or bottom 25%, of health services 76% or less.
- For one health service, 45% of Aboriginal children reported as having their age-appropriate vaccinations on time; this may be explained by location and children given vaccinations at other health services **(Figure 1.4.2.3)**.
- Thirty-seven per cent of health services had fewer than five or no resident Aboriginal children and were removed from this analysis.

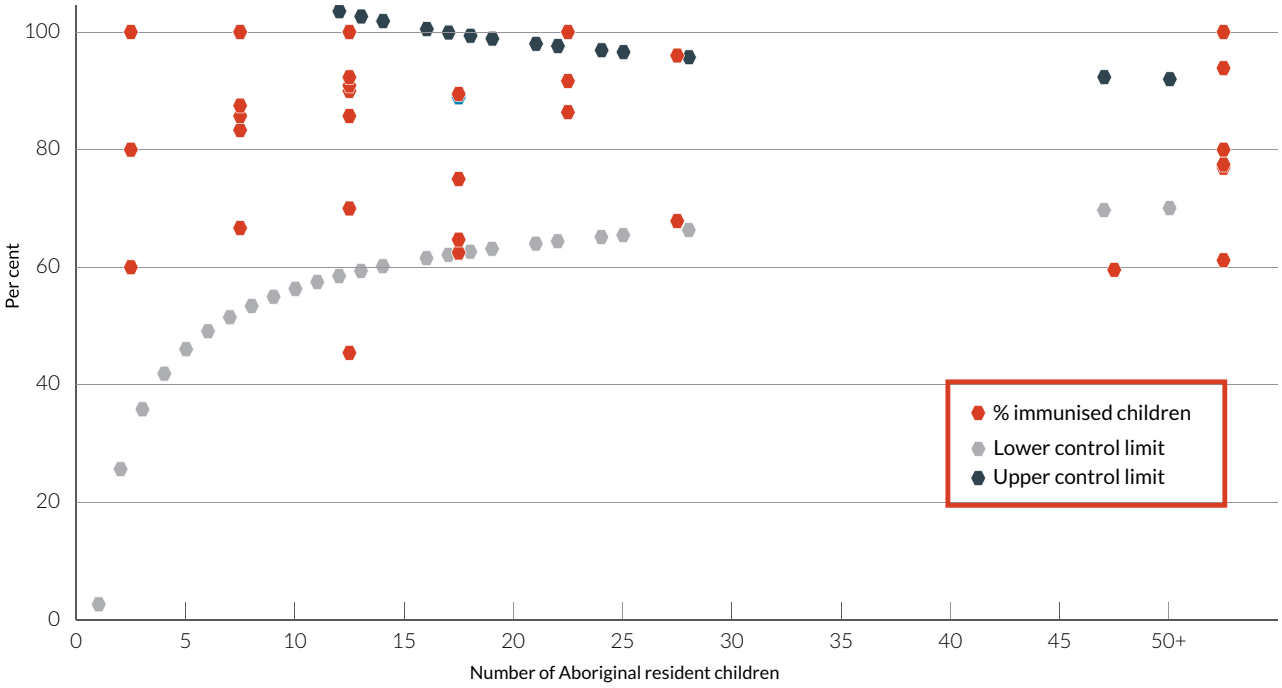
Figure 1.4.2.3: Distribution of percentage of Aboriginal children aged 1 to <12 months who received age-appropriate immunisations on time by health service, 2014



Note: n=52. Health services with < 5 Aboriginal resident children have been excluded.

- **Figure 1.4.2.4** shows that between health services, there was variation in the proportion of Aboriginal residents who received all age-appropriate immunisations on time even when there were similar denominators (or number of Aboriginal children per service). The minimum proportion reported was 45% and maximum, 100%.

Figure 1.4.2.4: Proportion of Aboriginal children aged 1 to <12 months who received age appropriate immunisations on time by health service, 2014



Note: n=52. Health services with < 5 Aboriginal resident children have been excluded.

KPI 1.5 UNDERWEIGHT CHILDREN

Infant and childhood under- and over -nutrition are associated with increased morbidity and mortality. Child growth is the most widely used measure of children's nutritional status. Being underweight may reflect wasting (e.g. low weight-for-height) indicating acute weight loss and/or stunting (64). Assessing weight in children is typically done using Z-scores (standard deviation scores), where the definition of underweight is a weight more than two standard deviations below the median weight for age (49). The target group for this indicator is resident children aged less than five years.

In 2014, 90% of Aboriginal infants and children had their weight recorded, and of those measured, 4% were underweight.

From 2010 to 2014, there was an increase in the number of Aboriginal children measured (from 83% to 90%) and a decrease in underweight Aboriginal children (from 8% to 4%) **(Figure 1.5.1)**.

Between health districts, there was some variation reported in the proportion of Aboriginal children measured for weight (between 88% and 95%) and reported as underweight (between 3% and 7%) **(Figure 1.5.2)**.

There was a decreasing trend between organisation size and Aboriginal children measured for weight. The inverse was reported between health service size and underweight Aboriginal children, although slight (from 3% to 5%) **(Figure 1.5.3)**.

Figure 1.5.1: Proportion of Aboriginal resident children aged <5 years measured for weight and reported as underweight, 2010 to 2014

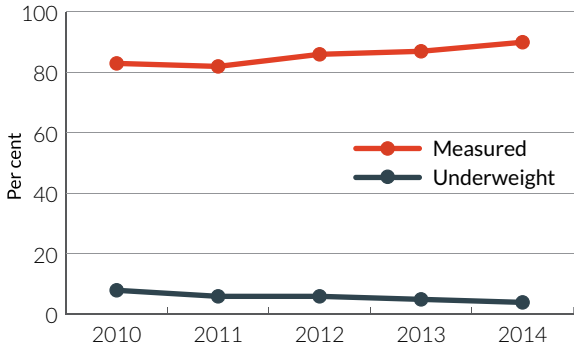


Figure 1.5.2: Proportion of Aboriginal resident children aged <5 years measured for weight and reported as underweight by health district, 2014

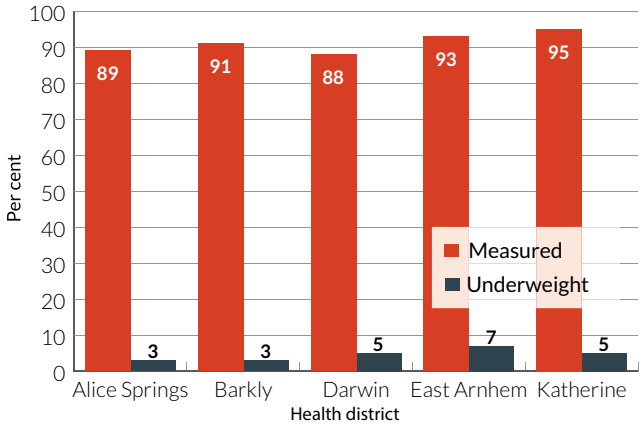


Figure 1.5.3: Proportion of Aboriginal resident children aged <5 years measured for weight and reported as underweight by health service size, 2014

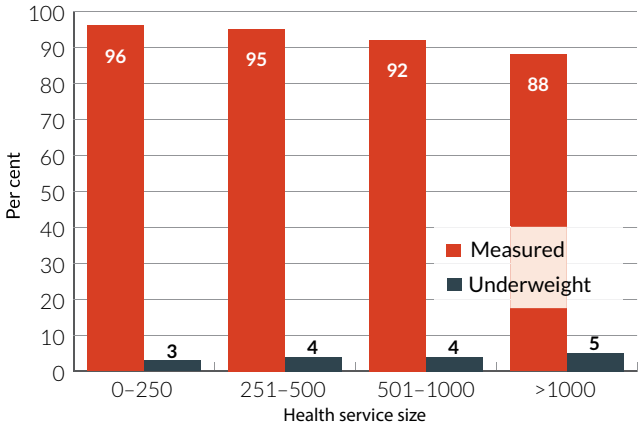
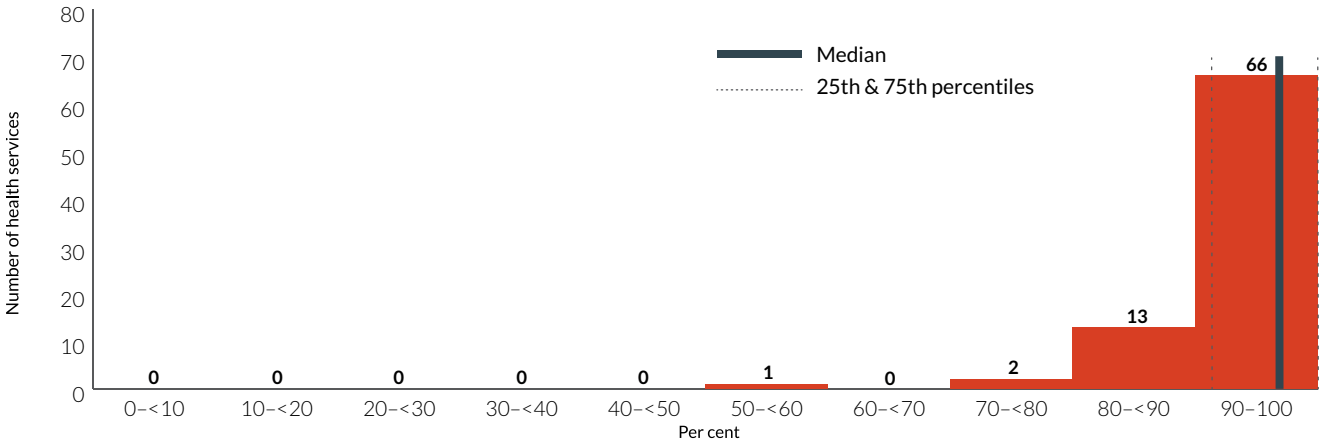
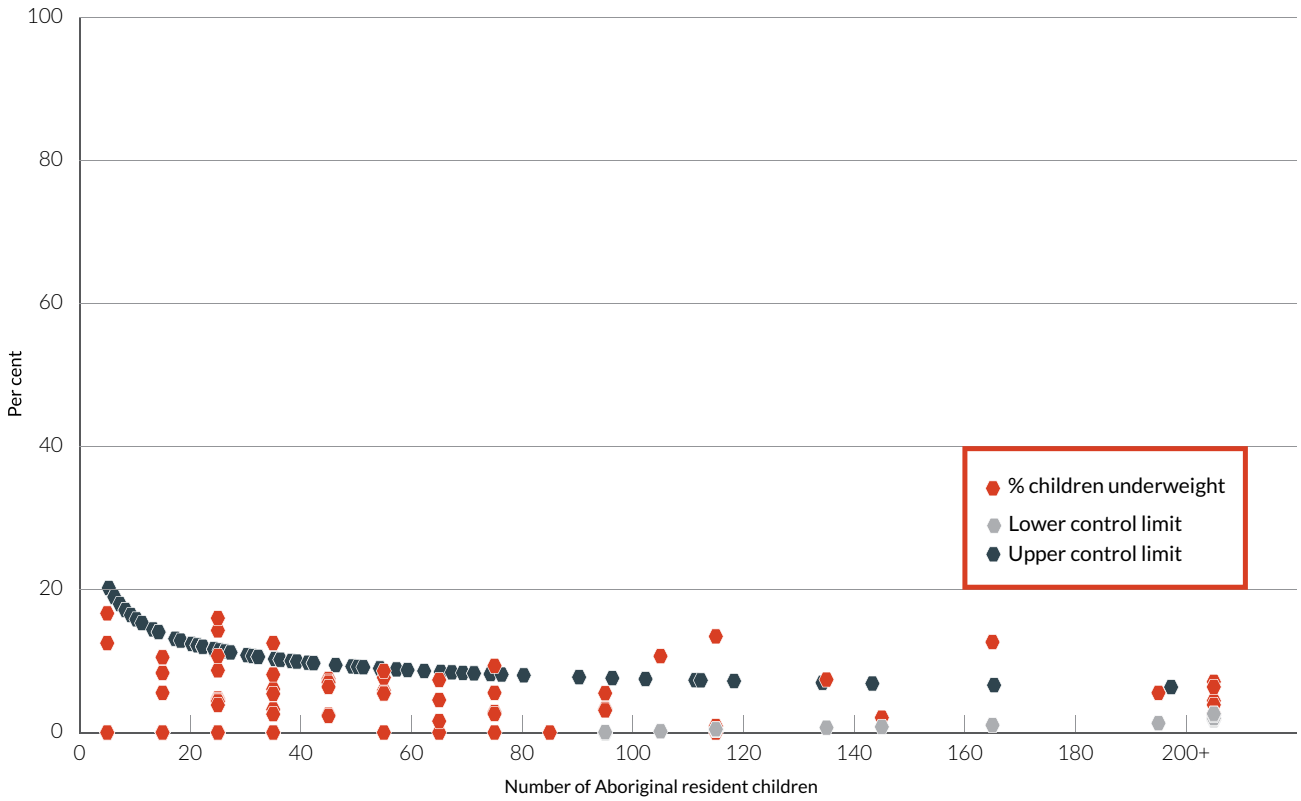


Figure 1.5.4: Distribution of percentage of Aboriginal children aged <5 years measured for weight, 2014



Note: n=82. Health services with < 5 Aboriginal resident children have been excluded.

Figure 1.5.5: Proportion of resident Aboriginal children aged <5 years underweight, by health service, 2014



Note: n=82. Health services with < 5 Aboriginal resident children have been excluded.

In 2014:

- The median proportion of Aboriginal children measured for weight was 96%.
- The highest quartile, or top 25%, of health services recorded 100% or more of their Aboriginal residents who were measured for weight, and the lowest quartile, or bottom 25%, of health services reported 92% **(Figure 1.5.4)**.
- The proportion of underweight Aboriginal children reported by health services ranged between 0% and 17% **(Figure 1.5.5)**. Thirty-four per cent of health services reported no underweight Aboriginal children. The average proportion of underweight Aboriginal children was 4%.

KPI 1.6
ANAEMIC CHILDREN

Haemoglobin (Hb) screening is recommended biannually from age six months until six years. Anaemia is diagnosed as less than 105 Hb (g/L) for children aged six to less than one year and 110 Hb (g/L) for children aged one to four years (52). The target group for this indicator is resident infants and children aged greater than or equal to six months to less than five years.

In 2014, 77% of resident Aboriginal infants and children had a haemoglobin measurement. Of those Aboriginal children measured, 22% were anaemic.

From 2010 to 2014, there was an improvement in the number of Aboriginal children measured (from 60% to 77%). The proportion of anaemic children decreased from 26% to 22% **(Figure 1.6.1)**.

Between health districts, there was variation reported in the proportion of Aboriginal children measured for anaemia (between 71% and 86%) and reported as anaemic (between 19% and 33%) **(Figure 1.6.2)**.

The proportion of Aboriginal children with a haemoglobin measurement and found to be anaemic varied by health service size. Health services between 251 and 500 Aboriginal residents reported the highest proportion of children measured (89%), and small organisations (fewer than 250 Aboriginal residents) reported the lowest proportion of anaemia (19%) **(Figure 1.6.3)**.

Figure 1.6.1: Proportion of Aboriginal children aged ≥6 months to <5 years measured for anaemia and reported as anaemic, 2010 to 2014

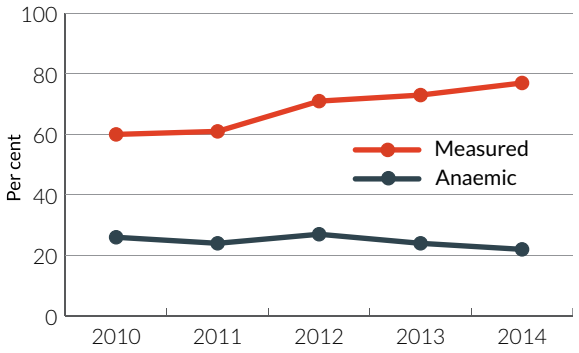


Figure 1.6.2: Proportion of Aboriginal children aged ≥6 months to <5 years measured for anaemia and reported as anaemic by health district, 2014

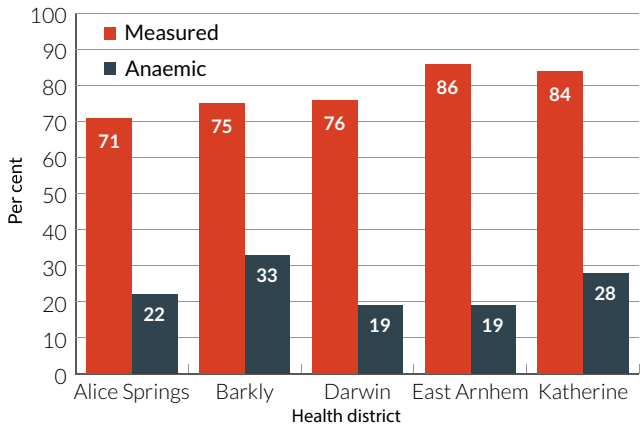


Figure 1.6.3: Proportion of resident Aboriginal children aged ≥6 months to <5 years measured for anaemia and reported as anaemic by health service size, 2014

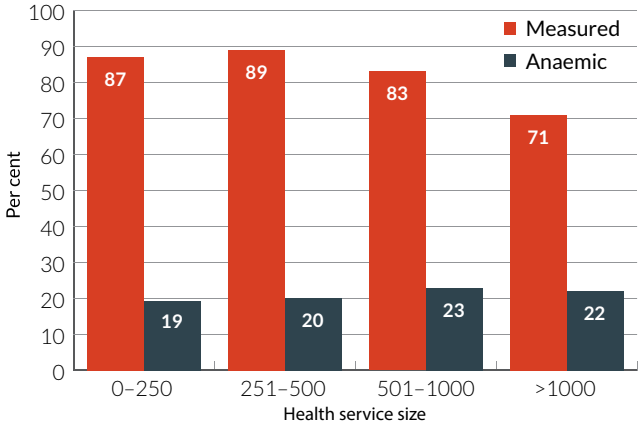
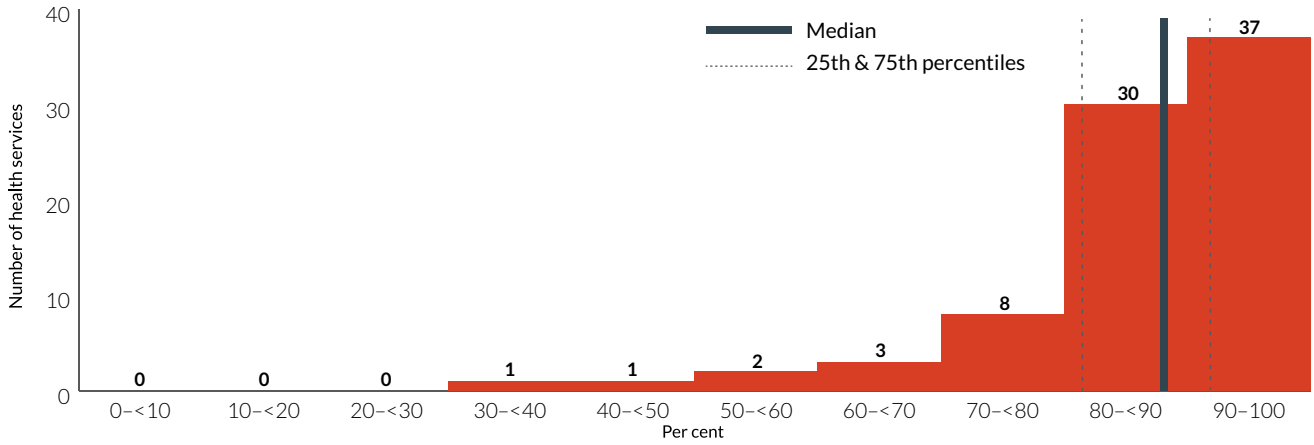


Figure 1.6.4: Distribution of percentage of resident Aboriginal children aged ≥6 months to <5 years measured for anaemia, 2014



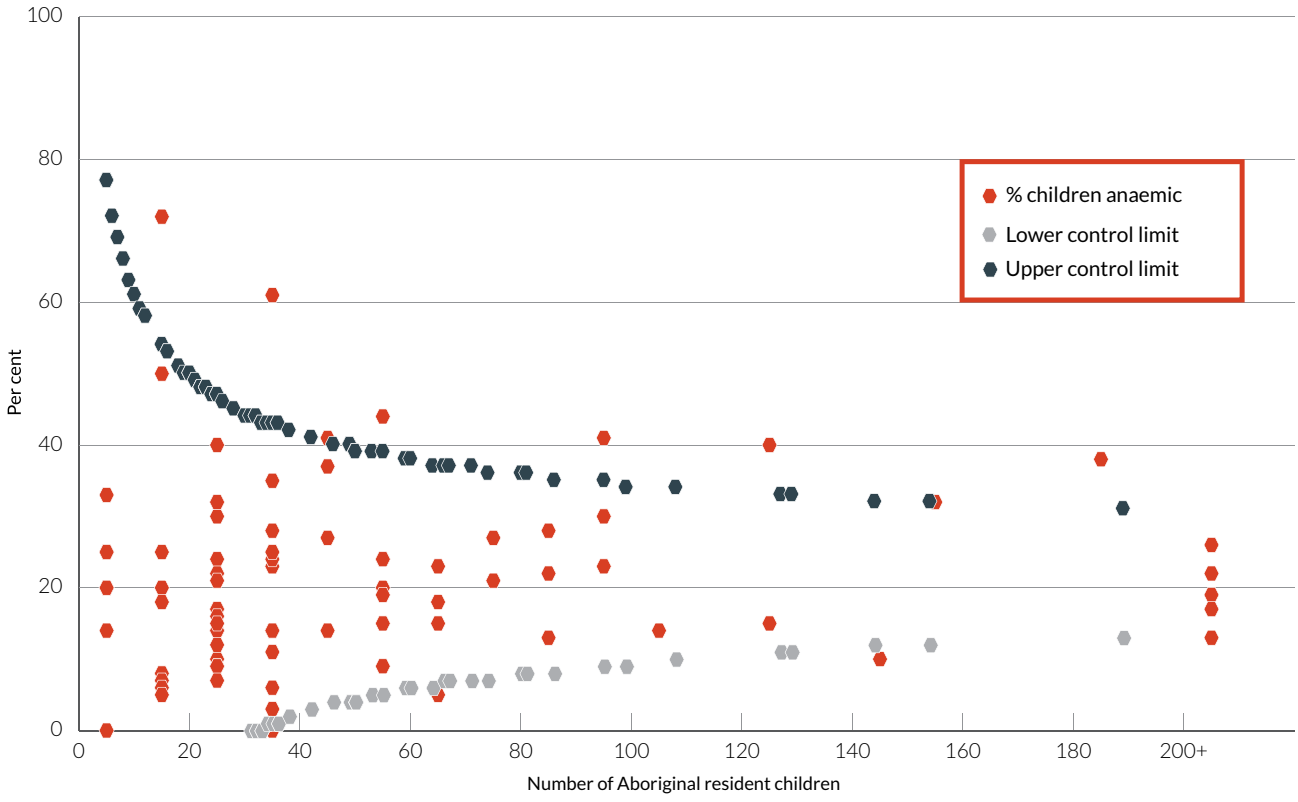
Note: n=82. Health services with < 5 Aboriginal resident children have been excluded.

In 2014:

- The median proportion of Aboriginal children measured for anaemia was 88%.
- The highest quartile, or top 25%, of health services recorded 92% or more of their Aboriginal resident children as measured for anaemia, and lowest quartile, or bottom 25%, of health services 81% **(Figure 1.6.4)**.
- There was considerable variation in the proportion of reported anaemic Aboriginal children between health services, including between health services reporting similar numbers of Aboriginal children. Variation between health services ranged from 0% to 72%, with the majority of health services reporting anaemia in less than 30% of their Aboriginal children **(Figure 1.6.5)**.

3

Figure 1.6.5: Proportion of anaemic resident Aboriginal children aged ≥6 months to <5 years, by health service, 2014



Note: n=81. Health services with < 5 Aboriginal resident children have been excluded.

CHRONIC DISEASE MANAGEMENT

These indicators relate to the prevention and management of chronic diseases in Aboriginal populations, including: number of chronic disease management plans, adult health assessments, measurement of risk factors such as blood pressure and glycated haemoglobin levels (HbA1c), cervical cancer screening, uptake of angiotensin converting enzyme (ACE) inhibitors and/or angiotensin II receptor blockers (ARB), and rheumatic heart disease (RHD) secondary prophylaxis.

Aboriginal people experience a greater burden, lower age of onset and higher associated mortality from chronic diseases than non-Aboriginal people, estimated to contribute to about 70% of the life expectancy health gap Australia-wide (3) and 77% in the NT (65). Chronic diseases share common underlying risk factors, which increase with age and interact to amplify mortality risk. Chronic diseases are expensive and complex to manage and result in serious complications (e.g. blindness, renal failure, lower limb amputations, heart disease and stroke) requiring long-term interventions (46). Prevention, early diagnostic measures and prompt management are effective strategies to improve health outcomes and quality of life and reduce acute complications, avoidable hospital admissions and associated chronic disease health care costs (66). Central, up-to-date and high-quality health data is required for systematic surveillance of risk factors and existing interventions to inform ongoing management by service providers (67).

Chronic disease management requires an integrated and comprehensive PHC approach that involves partnerships between the client, their families, carers and health providers; effective use of available Medicare items; and uptake of appropriate services. Medicare health assessments (Item 715) were introduced as a tool to support the detection of chronic disease risk factors, identify new diagnoses, and prompt preventative health interventions (68). Aboriginal people of any age found to have a chronic disease (or terminal illness) may then be offered a structured plan to coordinate and provide their health care. The approach to identify and address chronic disease in PHC settings is supported by Medicare items including general practitioner management plans (GPMP), team care arrangements (TCA) for allied health services, and follow-up services by nurses, Aboriginal health practitioners and workers (69).

Effective control of blood glucose is fundamental to the management of diabetes (70). Best-practice guidelines recommend the use of HbA1c tests between three and six months, or as needed on an individual basis, as part of ongoing diabetes care and control (71). The HbA1c levels reflect the mean glycaemia over several months and have strong predictive value for diabetes complications, including neuropathic and microvascular conditions (70) (72).

Hypertension is common in patients with type 2 diabetes, and the coexistence of the two conditions increases the risk of all vascular complications, including ischaemic heart disease (IHD), cerebrovascular disease (CVD), peripheral vascular disease (PVD), diabetic retinopathy, nephropathy and neuropathies (73). The assessment and management of blood pressure is well recognised as important in diabetes care and to improve health outcomes. Therapeutic strategies to slow the decline in kidney function and incidence of cardiovascular disease include aggressive blood pressure reduction to a treatment goal of equal to or less than 130/80mmHg (74) (75).

Elevated levels of albumin in the urine are an early clinical marker of vascular dysfunction in the kidney, risk of progression to end stage kidney disease (ESKD), cardiovascular disease in patients with hypertension and diabetes, and non-renal mortality (76). High rates of albuminuria have been reported in Aboriginal populations in Australia with and without diabetes (77) and are at higher levels than non-Aboriginal Australians and in remote compared with urban communities (76). End-stage kidney disease is one of the most common, expensive and serious complications of diabetes with dialysis or transplantation having negative social effects on Aboriginal people (78). The use of angiotensin converting enzyme (ACE) inhibitors and/or angiotensin II receptor blockers (ARBs) to reduce albuminuria and slow kidney function decline is an important pharmacological intervention to reduce morbidity, mortality and health care expenditure associated with kidney disease (79).

Cervical cancer is the result of persistent exposure to the human papillomavirus infection and a largely preventable disease. Aboriginal women in the NT have higher age-standardised incidence (19.8 compared with 9.7 per 100 000) and mortality rates (7 compared with 5 per 100 000) of cervical cancer compared with non-Aboriginal

women (80). Despite significant improvements since the introduction of the National Cervical Screening Program[17], age-standardised incidence and advanced cervical cancer diagnosis remains higher for Aboriginal women (82) (83) (84). Cervical screening programs have established a reduction in individual risk and incidence of cervical cancer in Australia (81). The success, however, is dependent on the recruitment of women, and participation rates in these programs for NT Aboriginal women remain lower than those in Australia, especially in remote areas (83). Monitoring and increasing the uptake of cervical screening is important in reducing the higher incidence rates of cervical cancer in Aboriginal women.

In the NT, acute rheumatic fever (ARF) and rheumatic heart disease (RHD) are almost exclusively restricted to Aboriginal populations, who have the highest documented rates in the world. Acute rheumatic fever is an autoimmune consequence of infection with group A streptococci (GAS); RHD is the involvement and damage to the mitral and/or aortic cardiac valves. Rheumatic heart disease primarily results from recurrent episodes of ARF. Best-practice guidelines recommend benzathine penicillin G (BPG) secondary prophylaxis in people with a history of ARF or established RHD to prevent progression of RHD (85). Acute rheumatic fever and RHD primarily affect younger populations. Monitoring and management of BPG adherence is important to reduce future episodes of ARF, premature morbidity and mortality (85).

INDICATOR CONSIDERATIONS

- Health services operate in diverse communities with considerable variation in the population characteristics, remoteness and socio-economic disadvantage.
- High medical and nursing staff turnover presents challenges to the sustainability of any chronic disease program. The availability of GPs and allied health providers may be limited in remote areas, making it difficult and of lesser importance for health services to provide, refer and claim Medicare items, such as TCAs.
- Delivery of comprehensive core PHC services requires a balance between the delivery of preventative PHC programs and meeting acute care requirements.
- Targets may be useful as an overview of performance in populations, but assessment and treatment of the individual patient is influenced by many factors, including age, overall risk, complications, side effects, and personal patient preferences (73).
- Some services have structured care planning arrangements that are effective at meeting the patient need, but do not meet the criteria for an MBS claim, and so will not be counted. Chronic disease management plans are focussed on type 2 diabetes and CHD. The items may be used for patients complaining of other chronic conditions (e.g. asthma, cancer, musculoskeletal conditions and stroke). The figures may under-represent the true utilisation of the Medicare items across the NT for other preventable chronic diseases among Aboriginal people.
- Medicare rebates for providing preventative care may have less effect in motivating practitioners working in remote communities in salaried positions. Items may be completed but not entered as a clinical item, which means they are recorded without the rebate claimed.
- Small denominators may result in significant and unrepresentative proportion changes following a small change in the numerator.
- Service uptake facilitators and barriers vary by indicator. For example, barriers to cervical screening for Aboriginal women include cultural, linguistic, residence and socioeconomic status influences (84), as well as the local availability of a credentialed practitioner to provide the service.
- Delivery of effective chronic disease programs requires culturally appropriate services and meaningful employment of Aboriginal community members within a PHC team. Involving community members in implementing strategies to increase uptake of screening and deliver programs has been shown to improve participation (86).
- A difference in performance may reflect improvements in data entry rather than the nature of the clinical services themselves.

[17] The NCSP was introduced in 1991 as an organised approach aimed at detecting and treating high-grade cervical abnormalities. The incidence and mortality of cervical cancer halved between the introduction of the NCSP and year 2002 (81).

KPI 1.7
CHRONIC DISEASE MANAGEMENT PLANS

General practitioner management plans

Individuals who have a chronic (or terminal) medical condition are eligible for a general practitioner management plan (GPMP), recommended two yearly with a six-monthly review. This indicator presents the number of Aboriginal residents aged 15 years and over with type 2 diabetes and/or CHD with a GPMP, within the previous one- and two-year reporting periods[18].

In 2014, Aboriginal residents with type 2 diabetes (68%), CHD (69%) and both chronic diseases (75%) had a GPMP (Figure 1.7.1.1). Fifty per cent of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a GPMP provided within the past two years, nationally as at December 2014 (56)[19].

From 2010 to 2014, there was an increase in the proportion of Aboriginal residents with type 2 diabetes and/or CHD who had a GPMP. Aboriginal residents with type 2 diabetes reported the largest increase (from 44% to 68%) **(Figure 1.7.1.1)**.

Aboriginal residents aged 65 years and over with type 2 diabetes and/or CHD were more likely to have a GPMP (75%) than younger age groups **(Figure 1.7.1.2)**[20]. The proportion of Aboriginal residents with a GPMP varied between health districts; Darwin and Katherine region provided GPMPs for over 70% of their residents with type 2 diabetes and/CHD **(Figure 1.7.1.3)**.

Figure 1.7.1.1: Proportion of Aboriginal residents aged ≥15 years with a GPMP in the previous 2 years, by chronic disease, 2010 to 2014

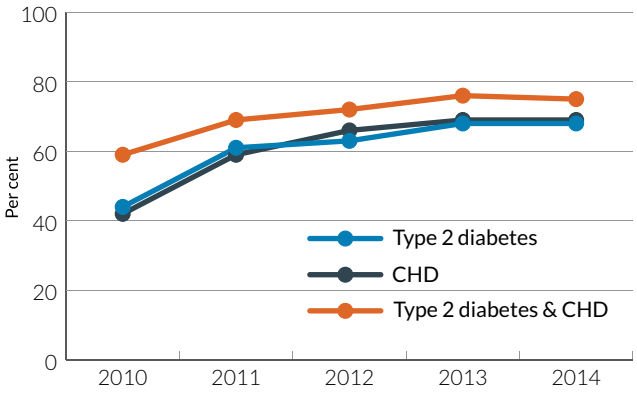
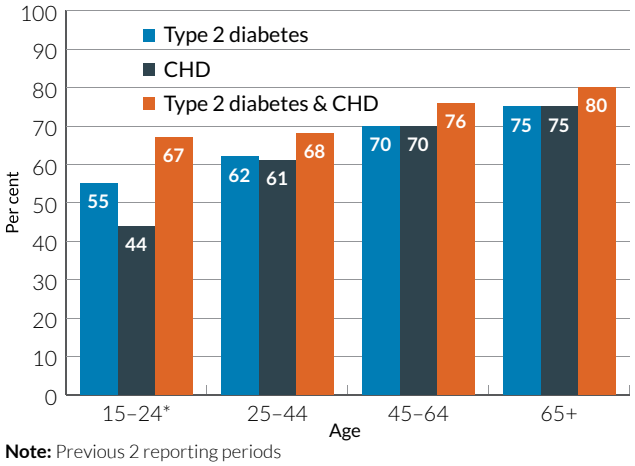
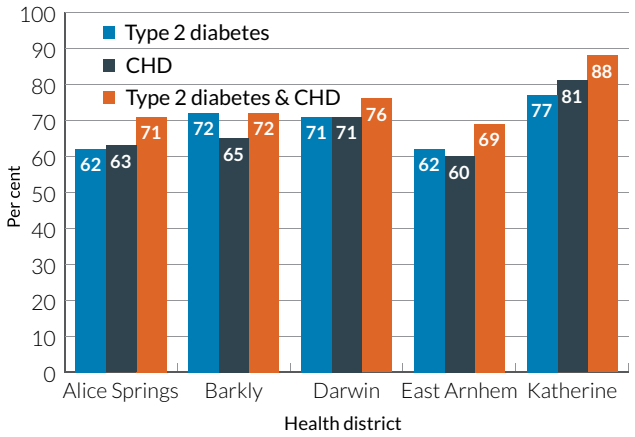


Figure 1.7.1.2: Proportion of Aboriginal residents with a GPMP by age group and chronic disease, 2014



Note: Previous 2 reporting periods

Figure 1.7.1.3: Proportion of Aboriginal residents aged ≥15 years with a GPMP by health district and chronic disease, 2014



Note: Previous 2 reporting periods

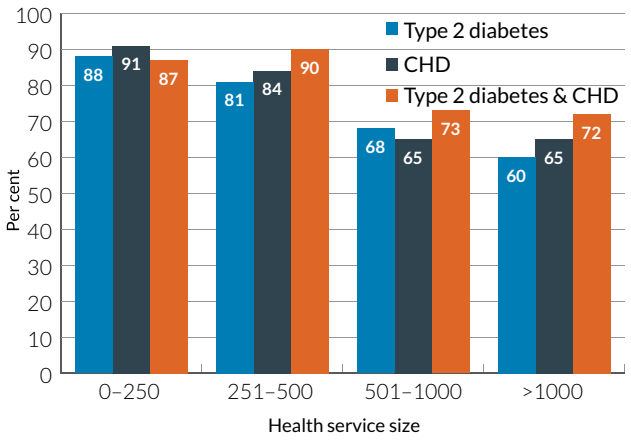
[18] The previous two-year reporting period has been selected as the focus for this indicator. Data from the previous one-year reporting period is available from 2013 only and will become more valuable in future reports.

[19] Caution is required when comparing figures with the nKPIs. The national KPIs include Aboriginal regular clients less than 15 years of age; the AHKPIs report the proportion of GP Management Plans for Aboriginal residents aged 15 years and over. The AHKPI system also records alternative GP Management Plans.

[20] In Figure 1.7.1.2, fewer than 20 Aboriginal residents aged 15 to 24* years had type 2 diabetes and CHD. Caution must be used with the interpretation of this proportion (67%).

Smaller organisations (fewer than 250 Aboriginal residents) provided GPMPs for more than 85% of their residents with type 2 diabetes and/or CHD within the past two years.

Figure 1.7.1.4: Proportion of Aboriginal residents aged ≥15 years with a GPMP by health service size and chronic disease, 2014

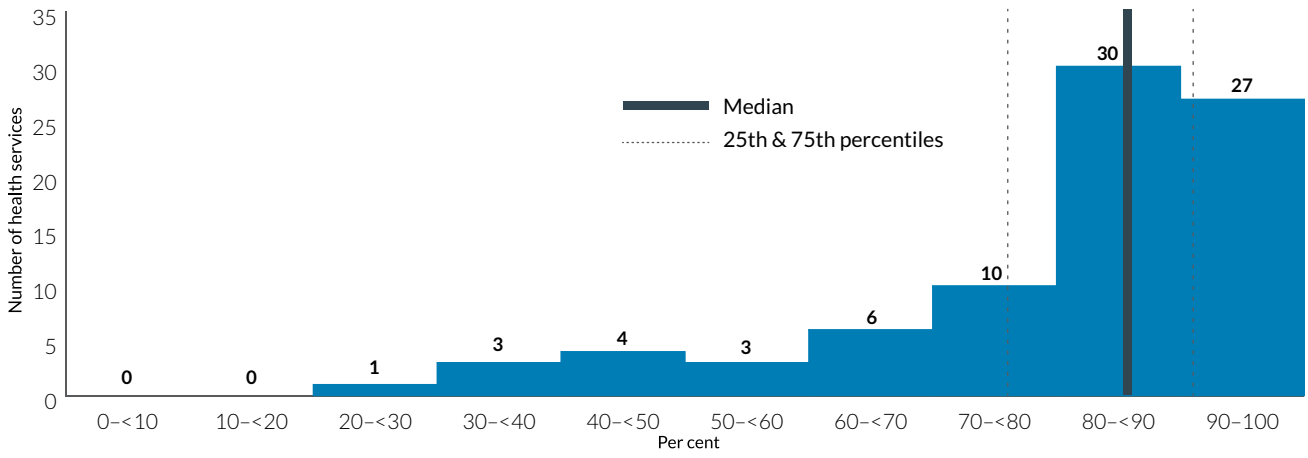


Note: Previous 2 reporting periods

BOX 9. GENERAL PRACTITIONER MANAGEMENT PLANS

The GP management plans (Item 721) are documented plans developed by the GP and the client where payments are made for development and structured reviews of the plan. To claim the Medicare rebate, a medical practitioner must review the client and prepare a comprehensive written plan outlining mutually agreed goals, intended services and care to be provided (71). Other health professionals, including a practice nurse, AHP and AHW, may assist by performing clinical assessments under the plan before the GP sees the patient (e.g. identification of patient needs and making arrangements for services). It is best practice for clients with a chronic disease to be reviewed annually; significant improvements in process and clinical outcomes for patients on a GP management plan and TCA when followed up by regular reviews have been reported (87). If health professionals undertake mandatory items without the involvement of a GP, this may be recorded as an alternative GPMP in the NT AHKPI system. From 2010 to 2014, only 3% and 6% were alternative GP management plans provided for type 2 diabetes and/or CHD; GP management plans (Item 721) and alternative GPMP data is aggregated to reflect the chronic disease workload undertaken by health services. There has been a concerted effort by health services to ensure clients are placed on GPMPs, as reflected by an increase between 2010 and 2014. Improvement in data entry by health service staff may also be a contributing factor.

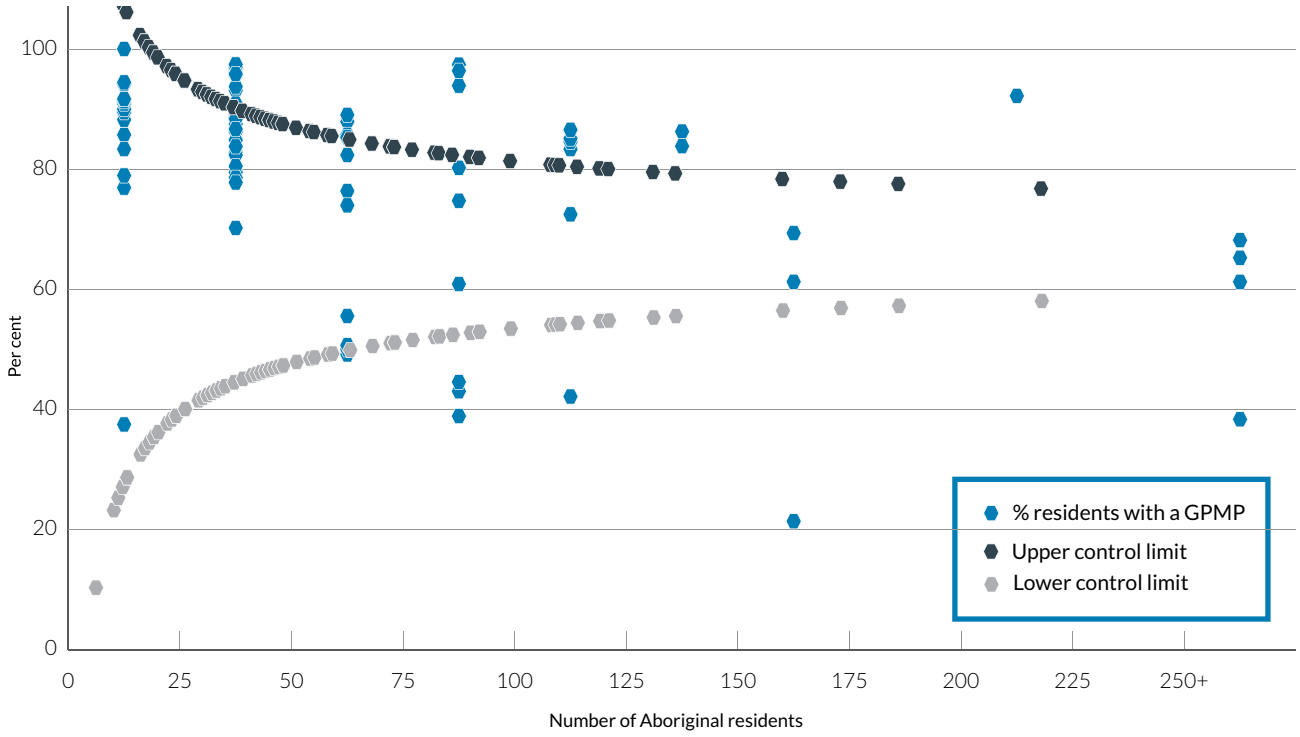
Figure 1.7.5: Distribution of percentage of Aboriginal residents with type 2 diabetes with a GPMP by health service, 2014



In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes and a GPMP within the previous two reporting periods was 86%.
- The highest quartile, or top 25%, of health services reported 91% or more of their Aboriginal residents with type 2 diabetes had a GPMP, and the lowest quartile, or bottom 25%, of health services reported 76% **(Figure 1.7.5)**.
- Overall, the proportion of eligible Aboriginal residents with type 2 diabetes and a GP management plan was high; there were a number of health services with higher and lower proportions than expected. The minimum proportion was 21% and maximum, 100% **(Figure 1.7.1.6)**.

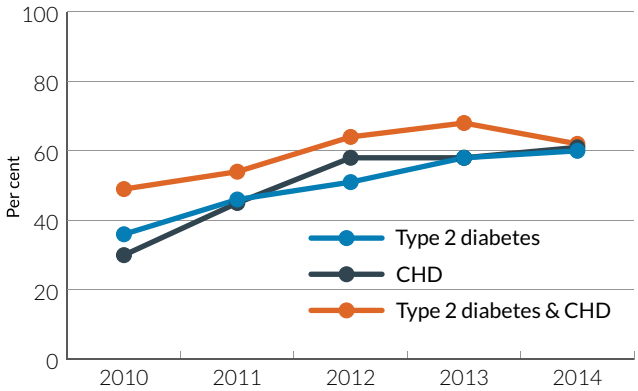
Figure 1.7.1.6: Proportion of Aboriginal residents with type 2 diabetes and a GPMP by health service, 2014



Team Care Arrangements (TCA)

Team Care Arrangements (Item 723) are expansion of the GPMPs that detail allied healthcare workers and other members of the team who implement any part of the GPMP (87). The service is coordinated by a GP and involves two or more other health care providers. Patients may be eligible for both a GPMP and TCA; however, each service can be provided independently. An alternative TCA is recorded if practice nurses, AHP or AHWs are involved in their development in the absence of a GP[21]. From 2010 to 2014, between 0% and 2% were alternative TCAs; TCAs and alternative TCA data is combined. The target group for this indicator is Aboriginal residents aged 15 years and over with type 2 diabetes and/or CHD.

Figure 1.7.2.1: Proportion of Aboriginal residents aged ≥15 years with a TCA in the previous 2 years by chronic disease , 2010 to 2014



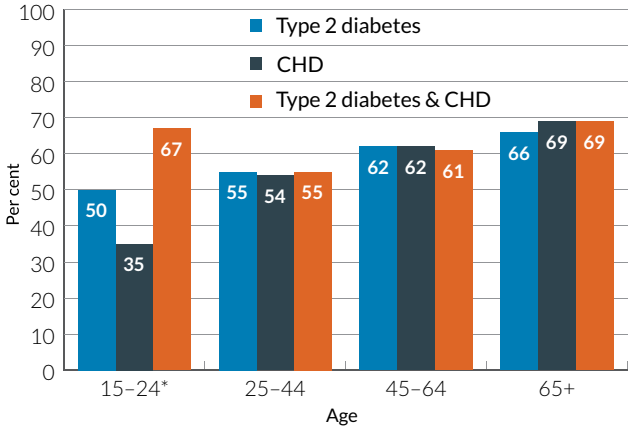
In 2014, Aboriginal residents had a TCA provided for type 2 diabetes (60%), CHD (61%) and both chronic diseases (62%) within the past 2 years. Nationally, 47% of Aboriginal and Torres Strait Islander clients with type 2 diabetes had a TCA (56)[22].

From 2010 to 2014, there was an increase in the proportion of Aboriginal residents with type 2 diabetes and/or CHD who were provided with a TCA. Aboriginal residents with CHD reported the largest increase (from 30% to 61%) **(Figure 1.7.2.1)**.

Aboriginal residents aged 65 years and over with type 2 diabetes and/or CHD were more likely to have a TCA than younger age groups **(Figure 1.7.2.2)**[23]. Darwin and Katherine reported TCAs for more than or equal to 59% of their Aboriginal residents with type 2 diabetes and/or CHD **(Figure 1.7.2.3)**.

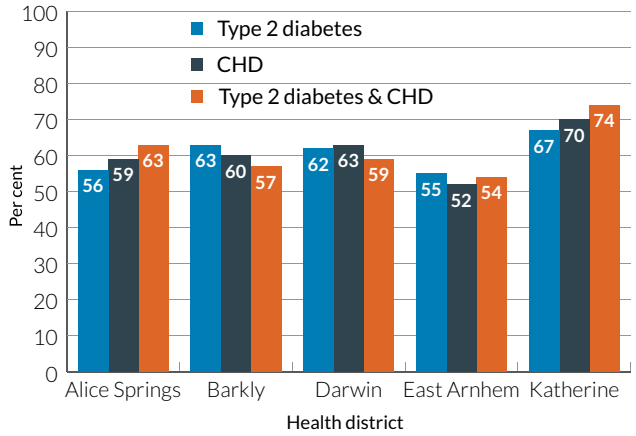
Health services between 251 and 500 Aboriginal residents reported TCAs for type 2 diabetes and/or CHD for more than 70% of their Aboriginal resident clients **(Figure 1.7.2.4)**.

Figure 1.7.2.2: Proportion of Aboriginal residents with a TCA by age and chronic disease, 2014



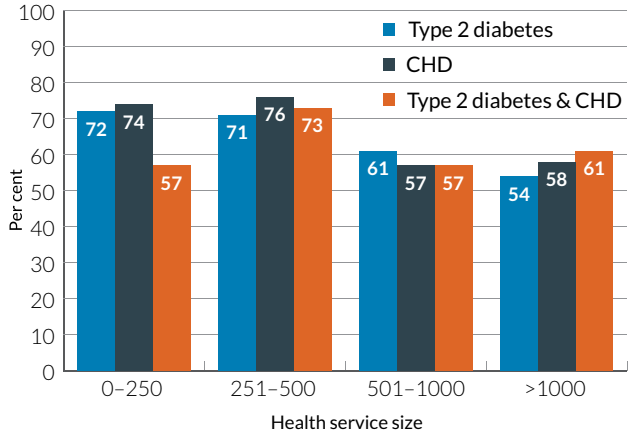
Note: Previous 2 reporting periods

Figure 1.7.2.3: Proportion of Aboriginal residents aged ≥15 years with a TCA by health district and chronic disease, 2014



Note: Previous 2 reporting periods

Figure 1.7.2.4: Proportion of Aboriginal residents aged ≥15 years with a TCA by health service size and chronic disease, 2014



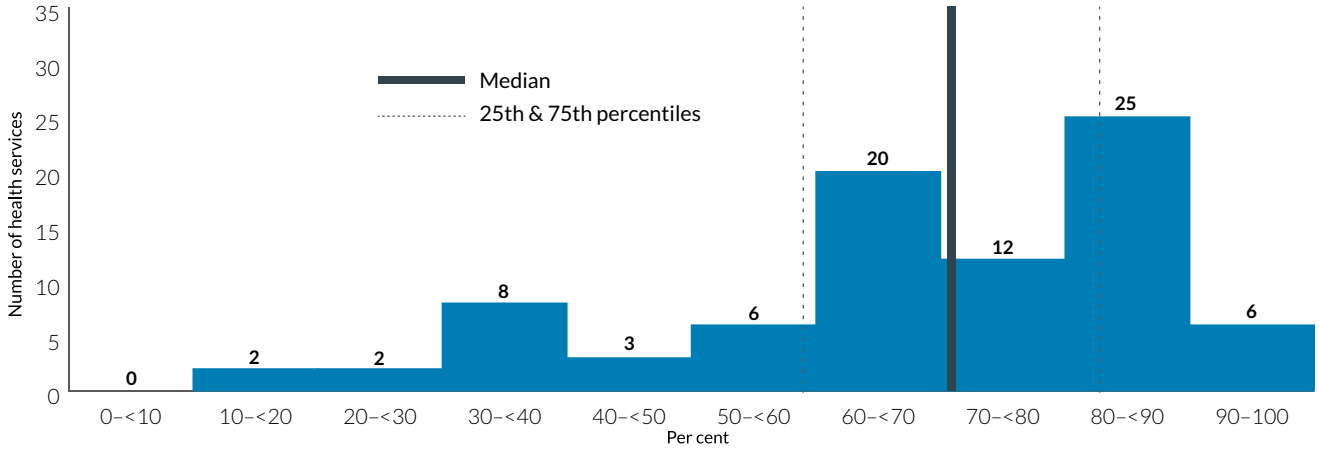
Note: Previous 2 reporting periods

[21] Alternative TCAs mandatory items include: patient discussion in which treatment/service providers should be asked to collaborate with the GP; securing patient agreement to share relevant information about their medical condition, history, diagnoses, GPMP etc. with providers, contracting and collaboration with providers to discuss potential treatment/services, documentation; and provision of relevant inform to collaborating providers. Alternative TCAs, however, do not allow for allied health care MBS referrals.

[22] Caution is required when comparing figures with the nKPIs. The national KPIs include Aboriginal regular clients less than 15 years of age; the AHKPIs report the proportion of TCAs for Aboriginal residents aged 15 years and over. The AHKPI system also records alternative TCAs.

[23] In Figure 1.7.2.2, fewer than 20 Aboriginal residents aged 15 to 24 years had type 2 diabetes and CHD. Caution must be used with the interpretation of this proportion (67%).

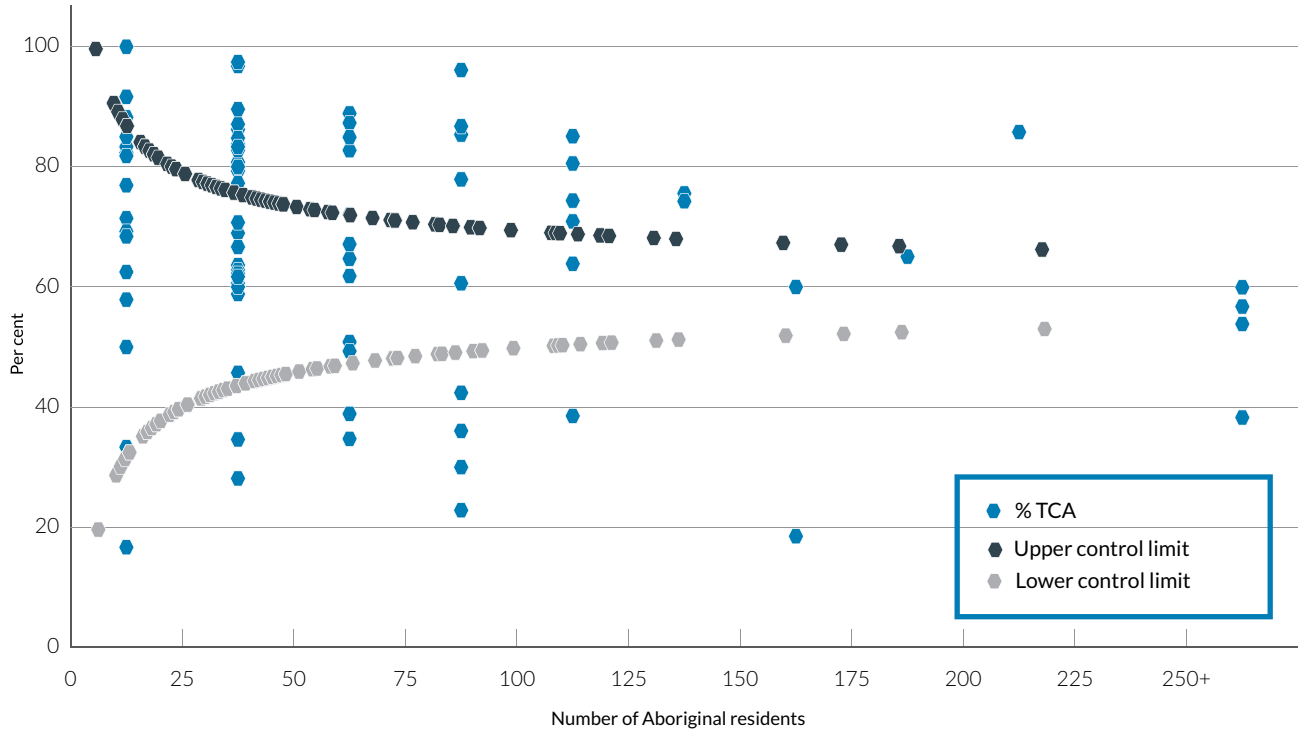
Figure 1.7.2.5: Distribution of percentage of Aboriginal residents with type 2 diabetes with a TCA by health service, 2014



In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes and a TCA within the previous two reporting periods was 71%.
- The highest quartile, or top 25%, of health services reported 83% or more of their Aboriginal residents with type 2 diabetes had a TCA, and the lowest quartile, or bottom 25%, of health services reported 59% or less had a TCA **(Figure 1.7.2.4)**.
- Overall, the proportion of eligible Aboriginal residents with type 2 diabetes and a TCA was lower than the number of GP management plans; there were a number of health services with higher and lower proportions of TCA than expected **(Figure 1.7.2.5)**.
- The majority of health services had greater than 70% of their eligible Aboriginal residents with type 2 diabetes with a TCA. Variation showed the minimum proportion was 17% and maximum, 100% **(Figure 1.7.2.6)**.

Figure 1.7.2.6: Percentage of Aboriginal residents with type 2 diabetes and a TCA by health service, 2014



KPI 1.8 GLYCATED HAEMOGLOBIN TESTING

The failure to control high blood glucose in patients with type 2 diabetes is associated with an increased risk of complications caused by damage to small and large blood vessels (70). Any improvement in glycaemic control is likely to reduce the risk of existing and future diabetic complications, especially for individuals with higher glycaemic levels (88). This indicator measures the proportion of Aboriginal residents aged 15 years and over with type 2 diabetes who had their HbA1c measurement within the past six and 12 months and a result recorded within the previous 12 months. Measurement data has been available since 2010 and result data since 2013.

In 2014, 68% of Aboriginal residents with type 2 diabetes had an HbA1c measurement within the past six and 12 months, of which 35% had good glycaemic control within the past 12 months (HbA1c result ≤7%). Nationally, 68% of Aboriginal regular clients with type 2 diabetes had their HbA1c result recorded within the past 12 months, and 35% had an HbA1c result of less than or equal to 7% in the past 6 months (25)[24]

From 2010 to 2014, there was an increase in the proportion of Aboriginal residents with type 2 diabetes measured within the previous six and 12 months from 56% to 68% **(Figure 1.8.1)**. Between 2013 and 2014, there was a 3% increase in Aboriginal residents with a glycaemic result less than 7% within the previous 12 months (from 32% to 35%).

The proportion of HbA1c measurements for Aboriginal residents aged 25 and over ranged from 65% to 68%. There was an increasing trend between age (≥25 years) and good glycaemic control (HbA1c result ≤7%). Those aged 15 to 24 were most likely to have an HbA1c measurement (73%) and poor glycaemic control (HbA1c result ≥ 10%) (55%) **(Figures 1.8.2 & 1.8.3)**.

Figure 1.8.1: Proportion of Aboriginal residents ≥15 years with type 2 diabetes who have a HbA1c measurement recorded, by sex, 2010 to 2014

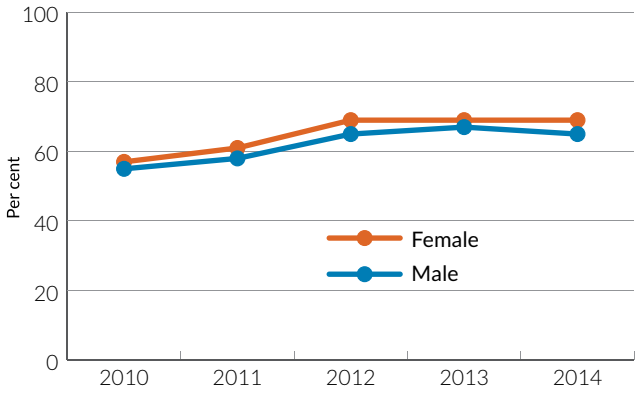


Figure 1.8.2: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes who have a HbA1c measurement recorded by age, 2014

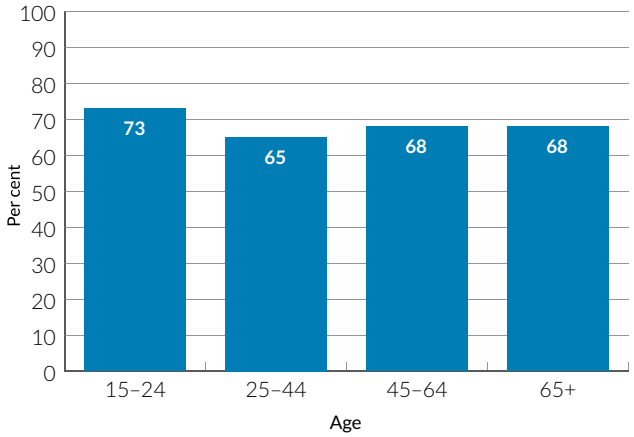
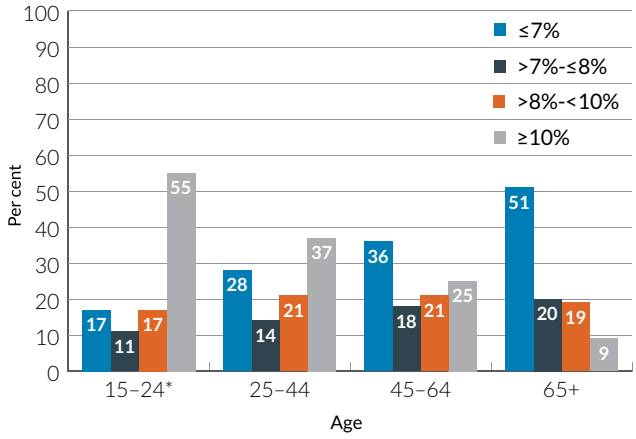


Figure 1.8.3: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and a HbA1c measurement by age and HbA1c result, 2014



[24] Caution is required when comparing figures with the nKPIs. The national KPIs include Aboriginal regular clients with type 2 diabetes less than 15 years of age. Furthermore, the HbA1c result is recorded in the past 6 months compared with a 12 month time frame for the AHKPIs.

BOX 10. NATIONAL HBA1C MEASUREMENT AND RESULTS

Nationally, 68% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had their HbA1c result recorded within the past 12 months, as reported in the 2014 national KPI report (56). National HbA1c results cannot be directly compared with the 2014 NT AHKPI results due to the difference in the time period (past six months compared with 12 months).

Between health districts, the proportion of Aboriginal residents with a HbA1c measurement ranged from 62% to 76% and good glycaemic control from 32% to 41% **(Figures 1.8.4 & 1.8.5)**. There was a decreasing trend between health service size and HbA1c measurement; health services with fewer than 250 residents recorded HbA1c measurements for 84% of their clients **(Figure 1.8.6)**. Organisations with more than 1000 Aboriginal residents reported the lowest proportion of measurements (62%) and highest proportion of an HbA1c result of less than or equal to 7% (39%) **(Figure 1.8.7)**.

Figure 1.8.4: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes who have a HbA1c measurement recorded by health district, 2014

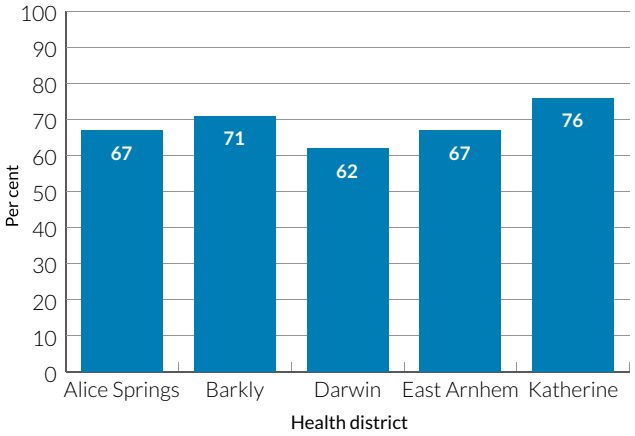


Figure 1.8.5: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and HbA1c measurement by health district and HbA1c result, 2014

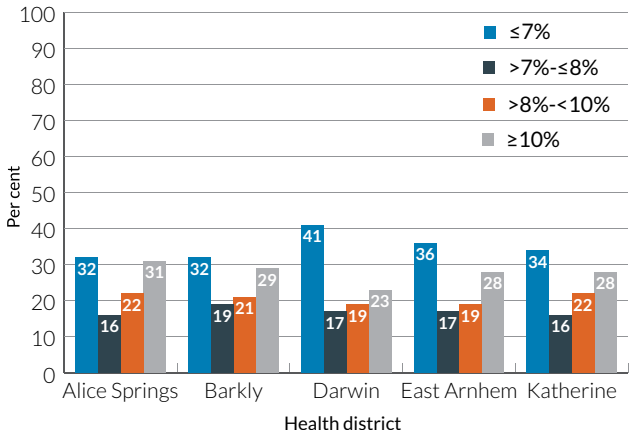


Figure 1.8.6: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes with a HbA1c measurement recorded by health service size, 2014

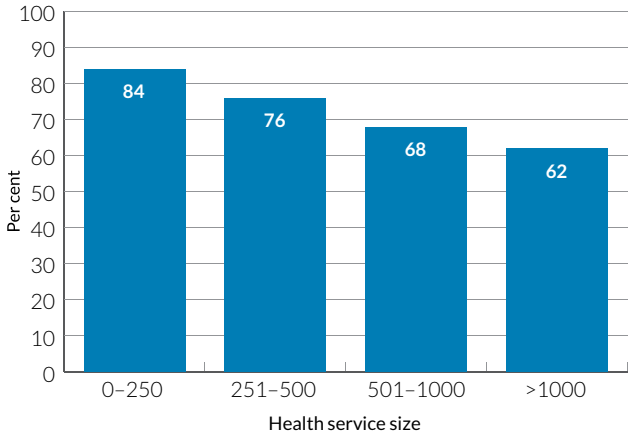


Figure 1.8.7: Proportion of Aboriginal residents ≥15 years with type 2 diabetes and a HbA1c measurement by organisation size and HbA1c result, 2014

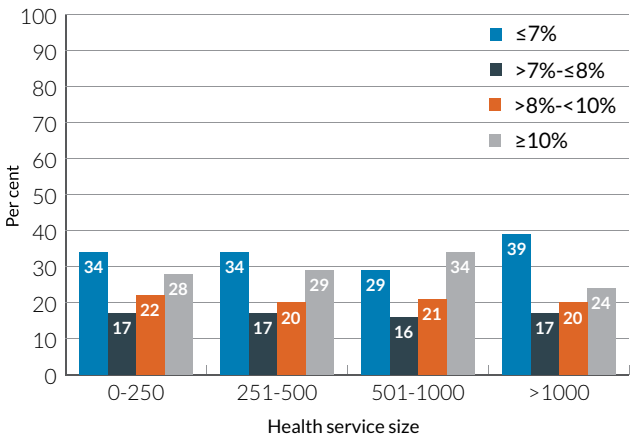
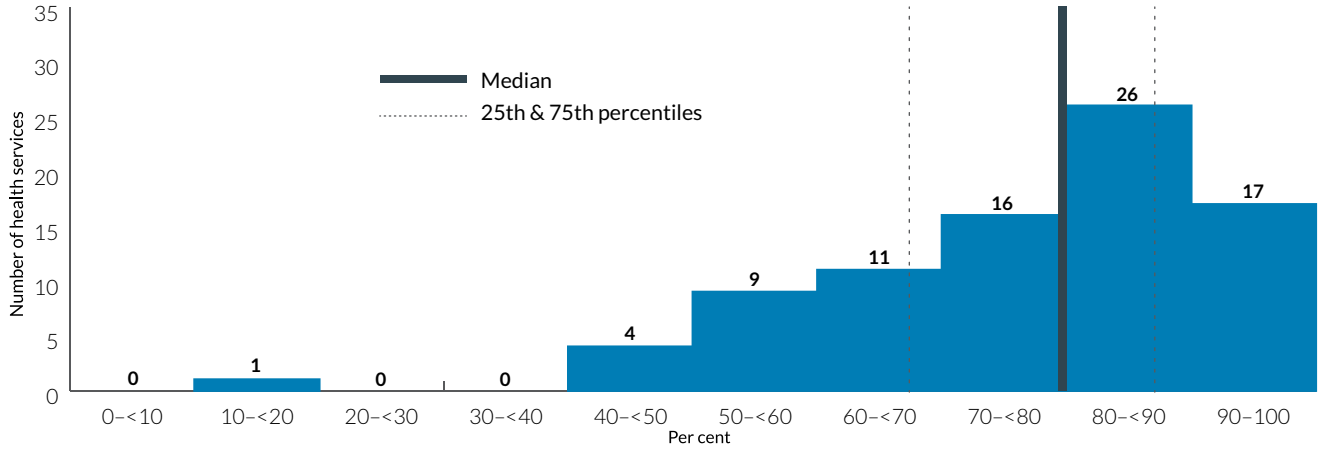


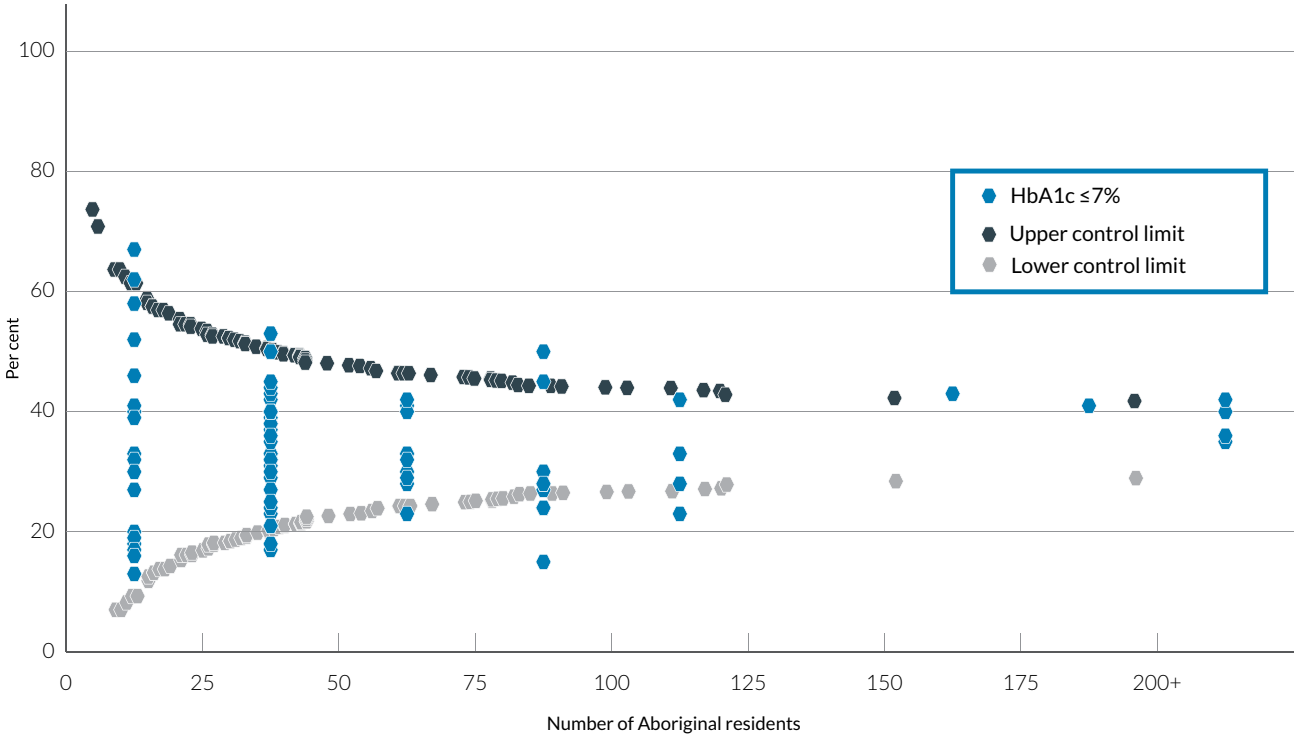
Figure 1.8.8: Distribution of percentage of Aboriginal residents aged ≥15 years with type 2 diabetes who have a HbA1c measurement recorded by health service, 2014



In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes and an HbA1c measurement recorded within the previous six and 12 months was 80%
- The highest quartile, or top 25%, of health services reported 87% or more of their Aboriginal residents with type 2 diabetes and an HbA1c measurement, and the lowest quartile, or bottom 25%, reported 67% **(Figure 1.8.8)**.
- The proportion of Aboriginal residents with an HbA1c result ≤7% ranged between health services, especially among smaller health services. The minimum proportion of Aboriginal residents with an HbA1c result was 13% and maximum 67% **(Figure 1.8.9)**.

Figure 1.8.9: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and a HbA1c result ≤7% (53mmol/mol) by health service, 2014



KPI 1.9
ANGIOTENSIN CONVERTING ENZYME INHIBITORS AND/ OR ANGIOTENSIN II RECEPTOR BLOCKER

Elevated levels of albumin in the urine are an early clinical marker of vascular dysfunction in the kidney. Diabetes, hypertension and abdominal obesity are major contributors to high rates of albuminuria among Aboriginal people (78). This indicator measures the number of Aboriginal residents with type 2 diabetes and albuminuria prescribed angiotensin converting enzyme inhibitors (ACE) and/or angiotensin II receptor blockers (ARB), for the purpose of controlling hypertension and preventing renal disease. The target age group includes Aboriginal residents aged 15 years and over.

In 2014, of the Aboriginal residents with type 2 diabetes and albuminuria, 77% were prescribed ACE inhibitors, 15% ARBs and 86% prescribed an ACE inhibitor and/or ARB.

From 2010 to 2014, there was an increase in the proportion of Aboriginal residents with type 2 diabetes and albuminuria prescribed ACE inhibitors (from 63% to 77%) and ACE and/or ARBs (from 67% to 86%). There was a decrease in the proportion of ARBs prescribed (from 18% to 15%) and combination ACE inhibitors and ARBs therapy (from 14% to 6%) **(Figure 1.9.1)**.

Aboriginal residents with type 2 diabetes and albuminuria aged 45 years and over were more likely to be prescribed ACE inhibitors and/or ARBs than younger age groups **(Figure 1.9.2)**. Variation between health districts and prescribed ACE inhibitors and/or ARBs was low **(Figure 1.9.3)**.

Figure 1.9.1: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/or ARB by medication, 2010 to 2014

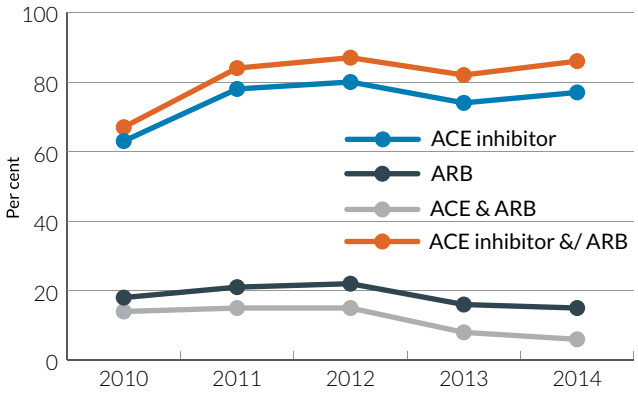


Figure 1.9.2: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/or ARB by age, 2014

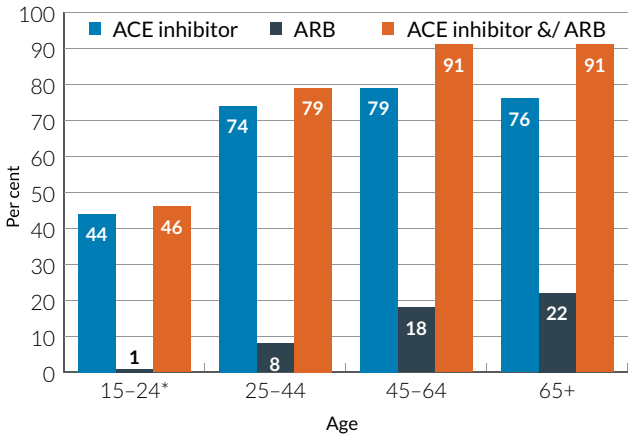


Figure 1.9.3: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/or ARB by health district, 2014

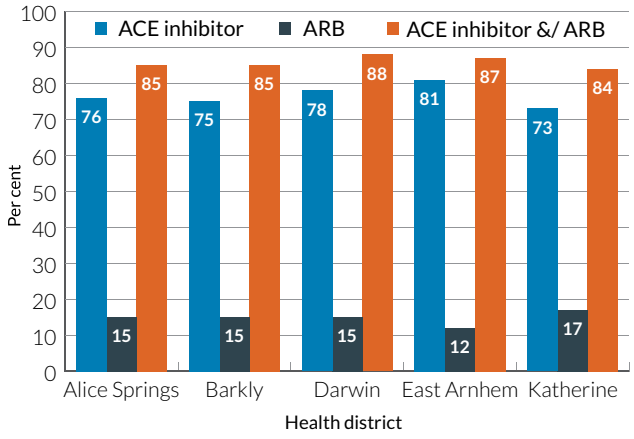
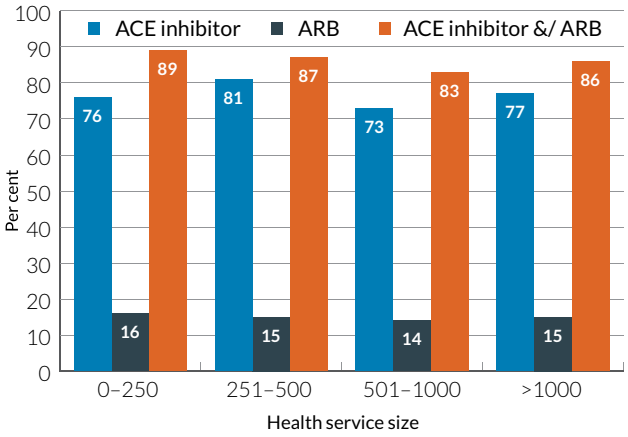


Figure 1.9.4: Proportion of Aboriginal residents aged ≥15 years with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/or ARB by health service size, 2014



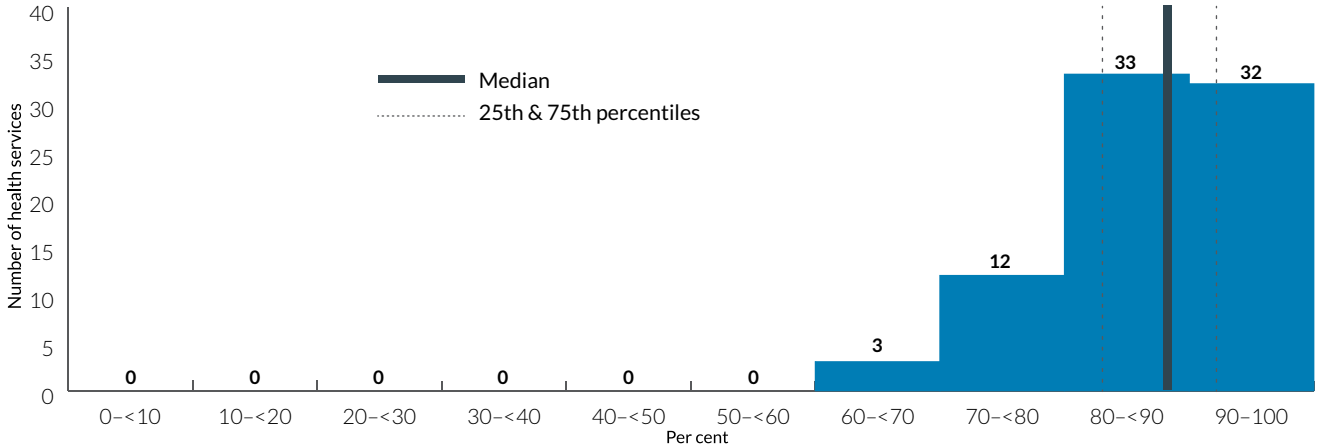
BOX 11. ACE INHIBITOR AND ARB COMBINATION THERAPY

The results show that there has been a positive decrease in the use of combination ACE inhibitor and ARB therapy. Recent studies indicate that the use of combination therapy in patients with proteinuric diabetic kidney disease does not provide an overall clinical benefit and is associated with an increased risk of adverse events, including hyperkalaemia and acute kidney injury (89) (90).

In 2014:

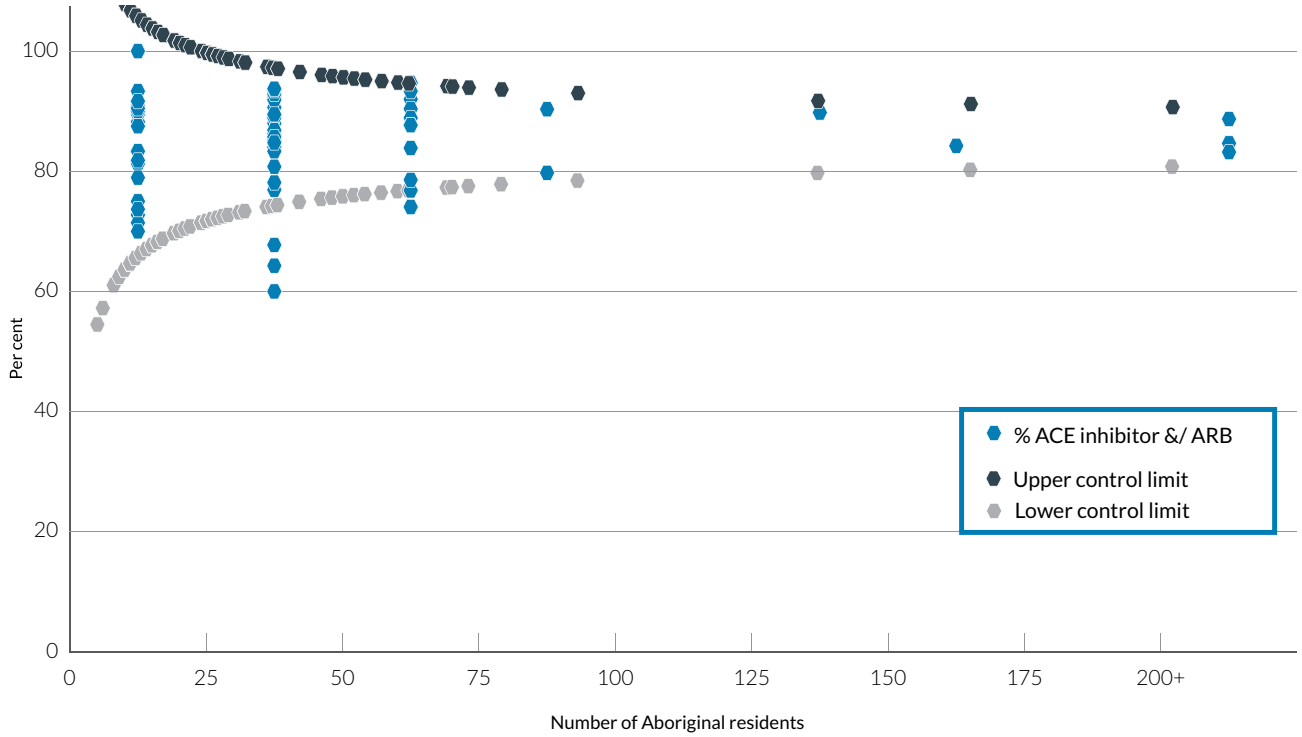
- The median proportion of Aboriginal residents with type 2 diabetes and albuminuria prescribed ACE inhibitors and/or ARBs was 88%.
- The highest quartile, or top 25%, of health services reported 92% or more of their Aboriginal residents with type 2 diabetes and a HbA1c result, and the lowest quartile, or bottom 25%, of health services reported 83% or less **(Figure 1.9.5)**.
- Variation was low, with the majority of health services reporting more than 80% of their Aboriginal residents prescribed ACE inhibitors and/or ARBs **(Figure 1.9.6)**.

Figure 1.9.5: Distribution of percentage of Aboriginal residents aged ≥15 years with type 2 diabetes and albuminuria prescribed an ACE inhibitor and/or ARB by health service, 2014



Note: n=80. Health services with < 5 Aboriginal residents have been excluded.

Figure 1.9.6: Proportion of Aboriginal residents 15 years and over with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/or ARB by health service, 2014



Note: n=80. Health services with < 5 Aboriginal residents have been excluded.

KPI 1.10
ADULT HEALTH CHECK (15 TO 54 YEARS)

The Aboriginal and Torres Strait Islander people health assessment supports health promotion and preventative care in primary care settings for Aboriginal people by encouraging early disease detection, diagnosis and intervention[25]. The MBS health assessment (Item 715) is an annual service that provides reimbursement for medical officers to evaluate an Aboriginal client's physical, psychological and social function, maximise disease prevention, health care and education (91).

In the NT AHKPI system, if core assessments are performed by a practice nurse, AHP or AHW, the assessment may be recorded as an alternative adult health assessment. Research shows that uptake of adult health checks is facilitated where practice nurses undertake information-gathering components and recording assessments performed by practice nurses, AHP and AHW acknowledges collaborative efforts to reduce chronic disease by all health service staff, and the reduced availability of GPs in remote areas (92). For the purpose of this report, the MBS Aboriginal health assessments and alternative health assessment data are combined. Aboriginal residents aged 15 to 54 years are the target group of this indicator.

In 2014, 50% of Aboriginal residents aged 15 to 54 years received an adult health check within the previous two years. Forty per cent of Aboriginal residents received a MBS health assessment and 10% an alternative adult health assessment. Forty-four per cent of Aboriginal and Torres Strait Islander regular clients aged 25 years and over received a MBS health assessment nationally in the past two years, as reported in the national KPI report (56). In comparison, 47% of NT Aboriginal residents aged 25 years and over received a MBS health assessment.

Figure 1.10.1: Proportion of Aboriginal residents aged 15 to 54 years who had an adult health check by age, 2010 to 2014

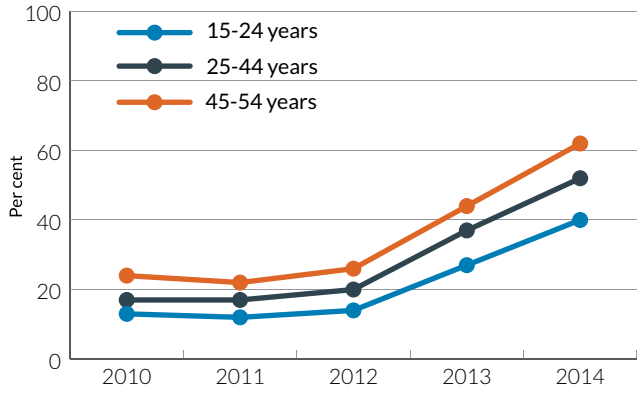


Figure 1.10.2: Proportion of Aboriginal residents aged 15 to 54 years who had an adult health check by health district, 2014

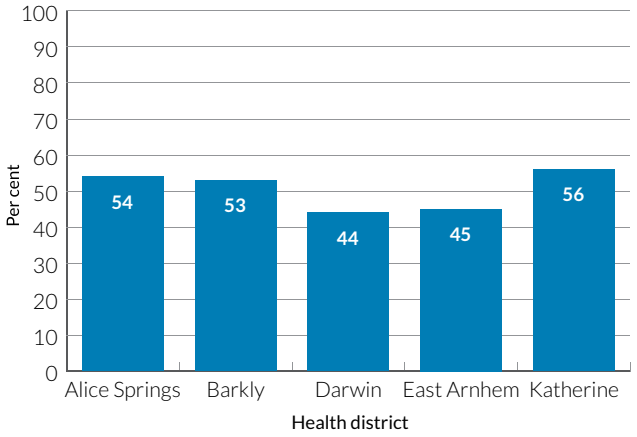
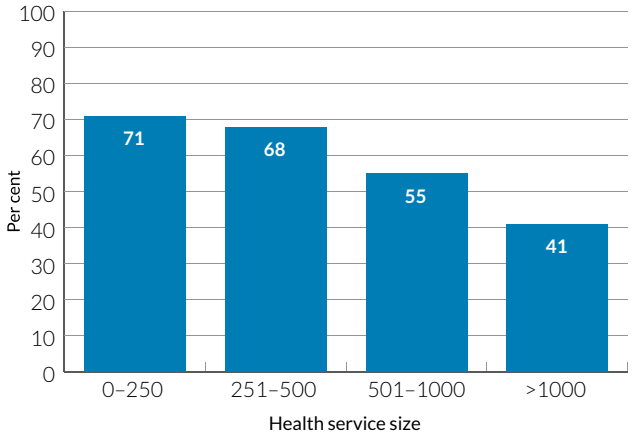


Figure 1.10.3: Proportion of Aboriginal residents aged 15 to 54 years who had an adult health check by health service size, 2014



[25] A MBS Health Assessment may include information collection; an overall assessment; recommendations of appropriate interventions; provision of advice and information; documentation of the health assessment for the individual and carer if appropriate.

From 2010 to 2014, there was a linear increase in the proportion of Aboriginal residents who received an adult health check, with use increasing from 17% to 50%. This included an increase in alternative adult health checks, from 1% in 2010 to 10% in 2014.

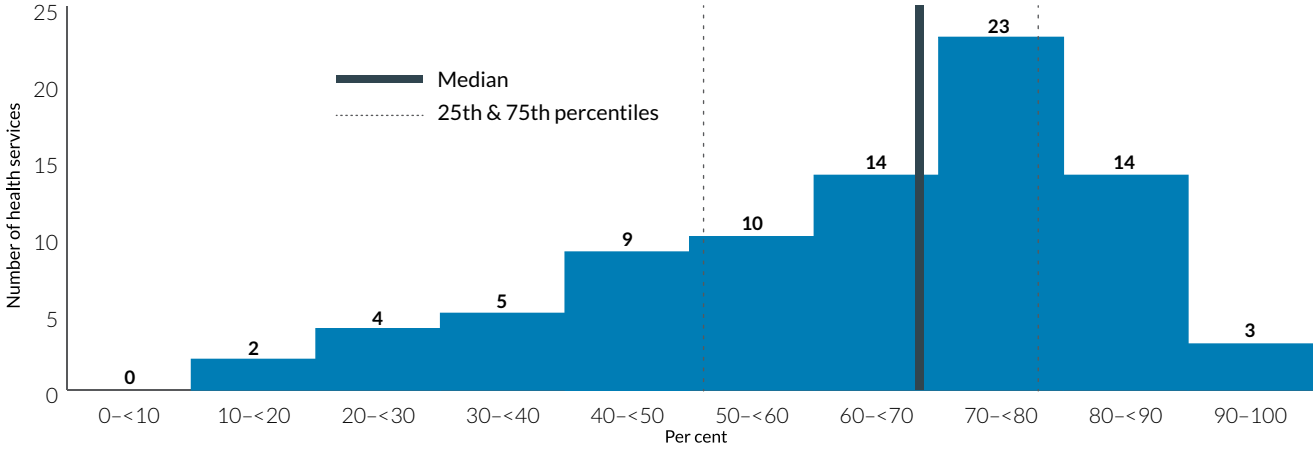
There was an increasing trend between age and the proportion of Aboriginal residents who received an adult health check. Results showed residents aged 45 to 54 years (62%) were more likely to have a health assessment than younger age groups **(Figure 1.10.1)**. Females were slightly more likely to have an adult health check (52%).

There was variation between the proportion of Aboriginal residents with an adult health check and health district, with Katherine district reporting the highest proportion (56%) **(Figure 1.10.2)**. The highest proportion of completed adult health checks was reported by smaller health services (with fewer than 250 residents) (71%), compared with large health services (more than 1000 residents) (41%) **(Figure 1.10.3)**.

BOX 12. INDICATOR INTERPRETATION AND RESULTS

Caution is required with data and result interpretation. In 2013, the indicator reporting period was changed from one year to two years, as recommended in the CARPA Standard Treatment Manual. This resulted in an increase in the proportion of adult health checks for Aboriginal residents between 2012 and 2013. The ability of a service to complete an adult health check is determined by multiple factors including resident population size, available resources and the capacity of the health service.

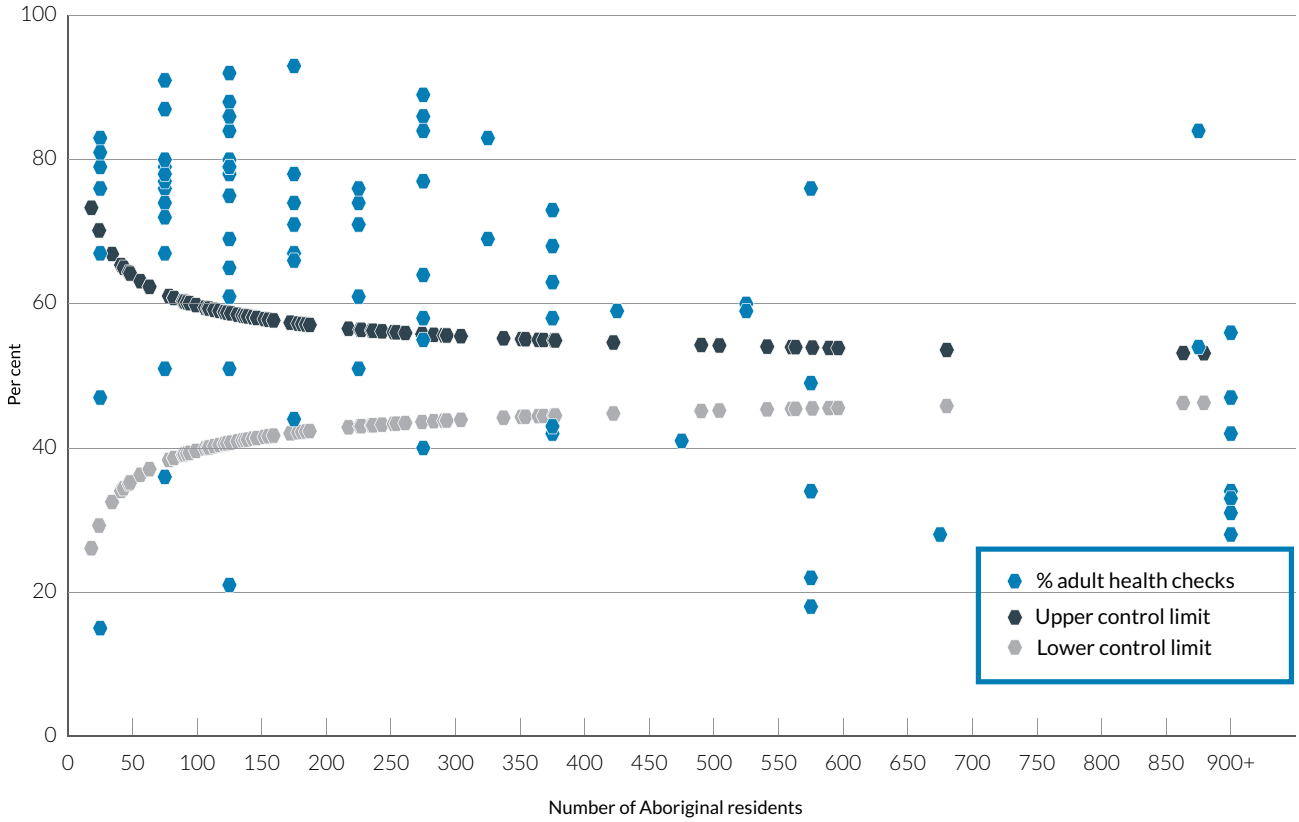
Figure 1.10.4: Distribution of percentage of Aboriginal residents aged 15 to 54 years who had an adult health check by health service, 2014



In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes who had an adult health check within the previous 12 months was 68%.
- The highest quartile, or top 25%, of health services reported 78% or more of their Aboriginal residents with type 2 diabetes had an adult health check, and the lowest quartile, or bottom 25%, reported 51% **(Figure 1.10.4)**.
- A large number of health services reported higher proportions of Aboriginal residents who had an adult health check than expected. While the median was 68%, the average proportion of Aboriginal residents who had an adult health check was 50%. Some larger health services reported lower proportions of health checks, reducing the overall rate and control limits. This may help explain why a number of health services lie above the upper control limit, indicating that their performance is different and above the overall proportion **(Figure 1.10.5)**.

Figure 1.10.5: Proportion of Aboriginal residents aged 15 to 54 years who had an adult health check by health service, 2014



KPI 1.11
ADULT HEALTH CHECK (55 YEARS AND OVER)

The target group for this indicator is Aboriginal residents aged 55 years and over. In 2013, the reporting period was changed from one to two years, influencing trends and total counts. This indicator records the number of MBS health assessment items and alternative adult health assessments undertaken[26]. Data includes both the MBS health check item and alternative adult health checks combined.

In 2014, 71% of eligible Aboriginal residents aged 55 years and over received an adult health check within the previous two years. Fifty-nine per cent of Aboriginal residents received a MBS health assessment and 12% received alternative adult health check.

From 2010 to 2014, there was an increase in the proportion of Aboriginal residents aged 55 years and over who received a health assessment (from 19% to 59%) **Figure 1.11.1** shows the number of adult health checks across all age groups, including 15 to 54 years (AHKPI 1.10). Alternative adult health checks increased from 1% in 2010 to 12% in 2014.

Health districts reported a variation between 66% and 81% of Aboriginal residents who had health checks **(Figure 1.11.2)**. There was a decreasing linear trend between organisation size and proportion of health checks undertaken; smaller health services (fewer than 250 residents) reported 87% of their residents had health checks compared to 65% of larger health services (more than 1000 Aboriginal residents) **(Figure 1.11.3)**.

Figure 1.11.1: Proportion of Aboriginal residents aged ≥15 years who had an adult health check by age, 2010 to 2014

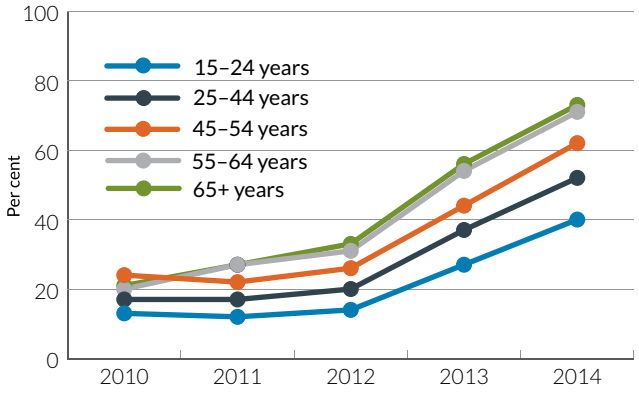


Figure 1.11.2: Proportion of Aboriginal residents aged ≥55 years who had an adult health check by health district, 2014

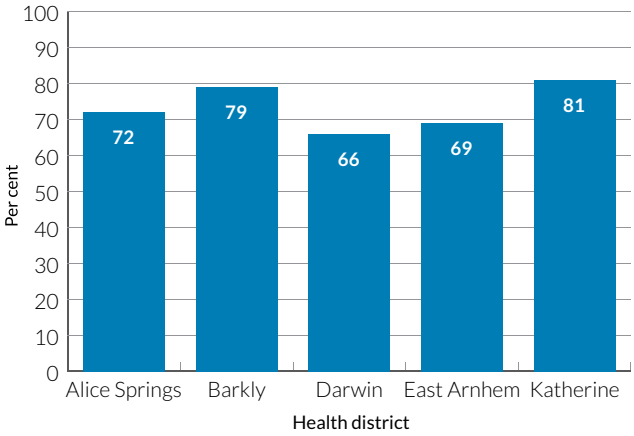
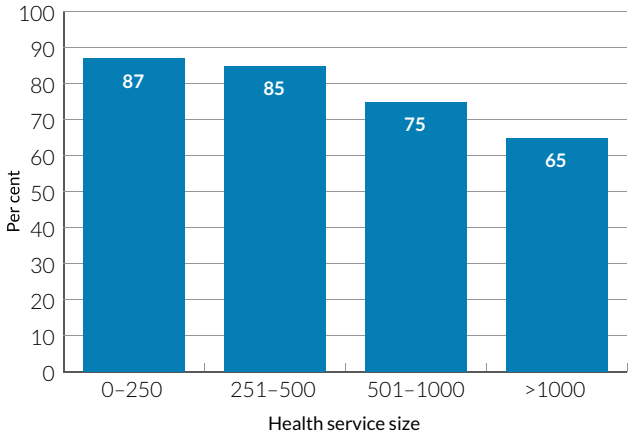
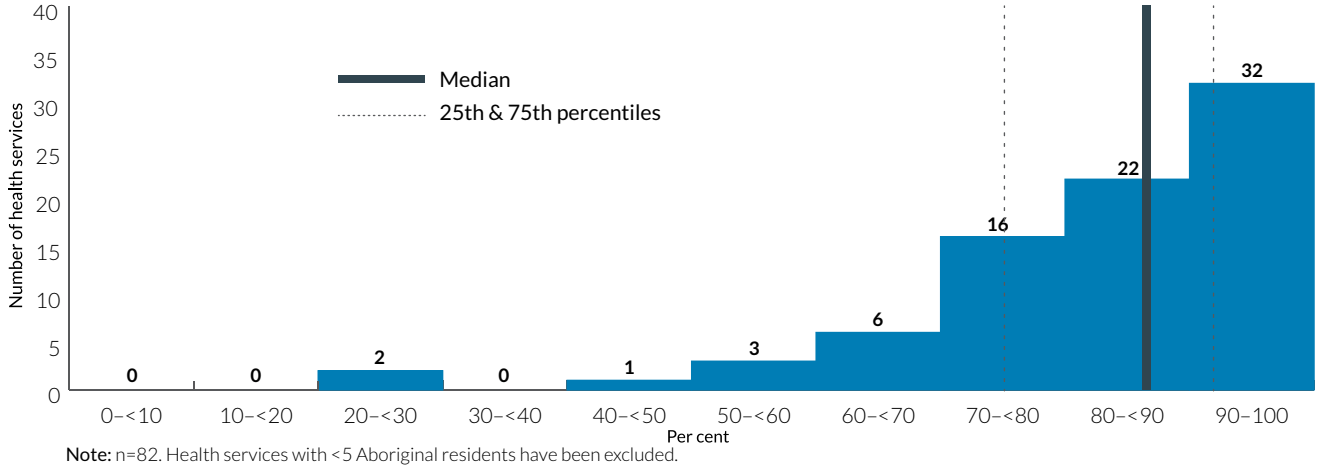


Figure 1.11.3: Proportion of Aboriginal residents aged ≥55 years who had an adult health check by health service size, 2014



[26] Alternative Aboriginal Adult Health Check (55 years and over) includes: patient medical history; patient examination (e.g. medication review, immunisation status, urinalysis, Trichiasis check, skin examination, reproductive and sexual health examination, physical function, falls assessment, psychological function, cognition, mood); and social function (e.g. adequacy of paid/unpaid work when required, carers status).

Figure 1.11.4: Distribution of percentage of Aboriginal residents aged ≥55 years who had an adult health check by health service, 2014

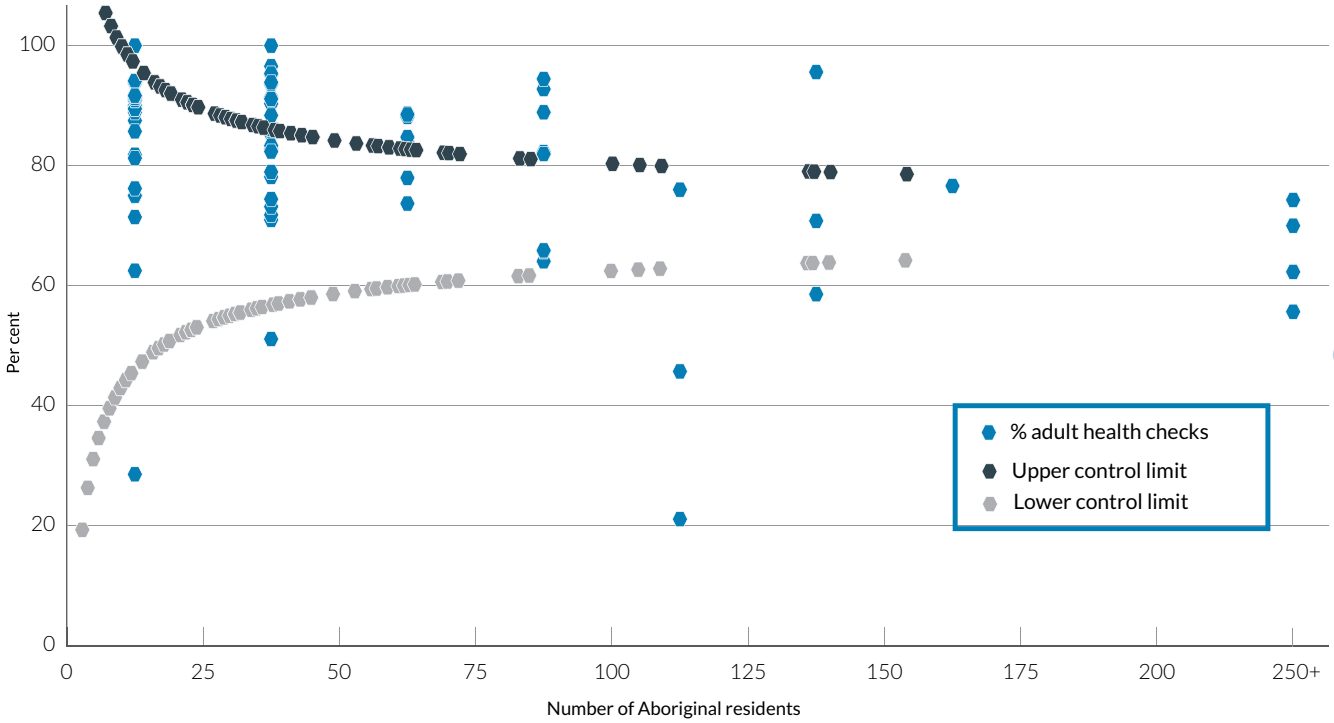


Note: n=82. Health services with <5 Aboriginal residents have been excluded.

In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes and an adult health check was 87%.
- The highest quartile, or top 25%, of health services reported 92% or more of their Aboriginal residents with type 2 diabetes had an adult health check, and the lowest quartile, or bottom 25%, reported 75% **(Figure 1.11.4)**.
- Thirty-two health services reported over 90% of Aboriginal residents aged 55 years and over had adult health checks. There were a number of health services that completed less than expected **(Figure 1.11.5)**.

Figure 1.11.5: Proportion of Aboriginal residents aged ≥55 years who had an adult health check by health service, 2014



Note: n=82. Health services with <5 Aboriginal residents have been excluded.

KPI 1.12
CERVICAL CANCER SCREENING

The National Cervical Screening Program recommends all women aged between 18 and 20 years have a Papanicolaou smear, or 'Pap' test, every two years to prevent cervical cancer. The purpose of the test is to measure pre-cancerous abnormalities in the cells of the cervix for further diagnostic testing. Cervical screening may cease at the age of 70 years for women who have had two normal Pap tests within the last two years (84). This indicator measures the number of resident women aged 20 to 69 years with a completed cervical cancer screening test during the previous two-, three- and five-year reporting periods. Data for the previous three and five-year reporting periods was available from 2013 following updated recommendations.

In 2014, 46% of Aboriginal female residents had a Pap test within the two-year reporting period, 58% within the three-year reporting period and 66% within the five-year reporting period. The proportion of Aboriginal resident women who had a Pap test within the two-year reporting period was higher than the 2014 national KPI result (31%) (56).

From 2010 to 2014, there was an increase in Aboriginal residents who had a completed Pap test within the previous two reporting periods (from 28% to 46%) **(Figure 1.12.1)**.

The highest proportion of completed Pap tests across all reporting periods was reported in the Katherine region **(Figure 1.12.2)**. Similarly, small health services (fewer than 250 residents) reported the highest proportion of Aboriginal residents with a Pap test **(Figure 1.12.3)**.

Figure 1.12.1: Proportion of Aboriginal resident women aged 20 to 69 years who reported at least one Pap test by reporting period, 2010 to 2014

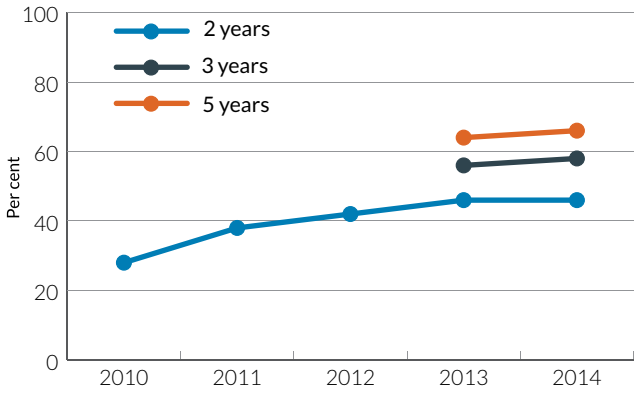


Figure 1.12.2: Aboriginal resident women aged 20 to 69 years who reported at least one Pap test by health district, 2014

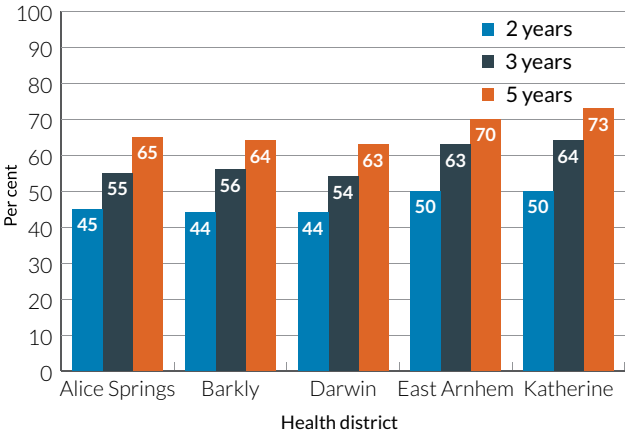
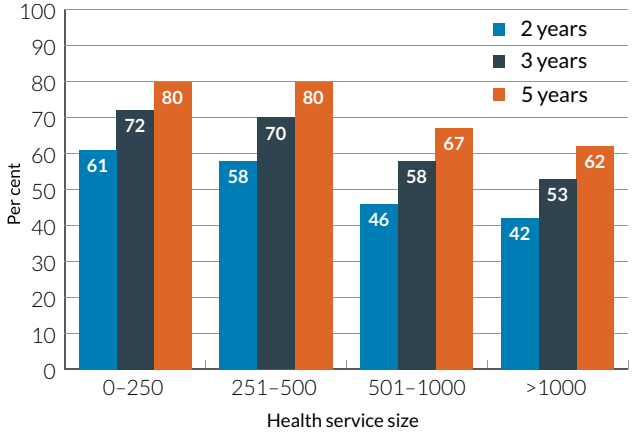


Figure 1.12.3: Aboriginal resident women aged 20 to 69 years who reported at least one Pap test by health service size, 2014

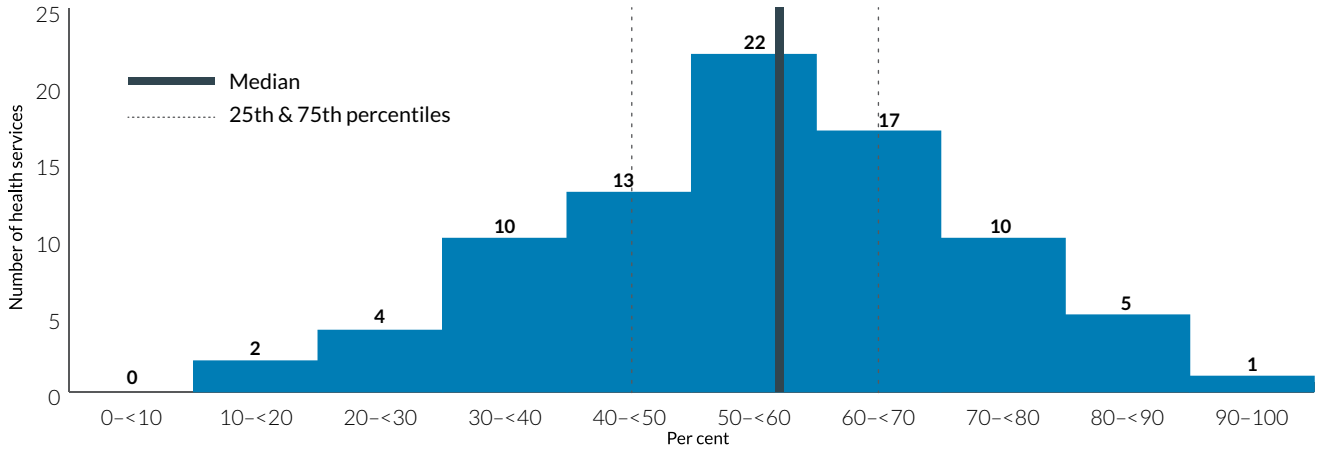


BOX 13. CERVICAL SCREENING IN ABORIGINAL WOMEN

In 2012 to 2013, 58% of all Australian women aged 20 to 69 participated in cervical screening (81). Aboriginal women in the NT have lower cervical screening participation rates, as indicated in NT AHKPI data between 2012 and 2014 (Figure 1.11.1). To reduce cervical cancer incidence, morbidity and mortality, high participation in cervical screening is required. The benefits from a reduced cervical cancer burden will not be shared if some population groups do not equally participate in available screening (81). Additional attention to the causes of the barriers to the uptake of cervical screening among Aboriginal women may be necessary to achieve the potential benefits associated with these items.

Reported barriers to cervical screening in Aboriginal women include provider and patient knowledge, workforce challenges (e.g. accessibility of training and staff turnover), system issues (e.g. data extraction and overwhelming recall systems), economic, logistic and various cultural barriers (e.g. language/literacy, negative cultural perceptions of disease, shame and fatalistic attitudes towards cancer). Strategies including Aboriginal community involvement in the planning and delivery of programs, employment and training of Aboriginal people, gender sensitive provision of culturally appropriate and holistic health services, flexible appointments, transport assistance, enhancement of staff skills and ongoing training, and opportunistic screening have been shown to facilitate greater uptake of Pap tests and cervical screening (86) (93).

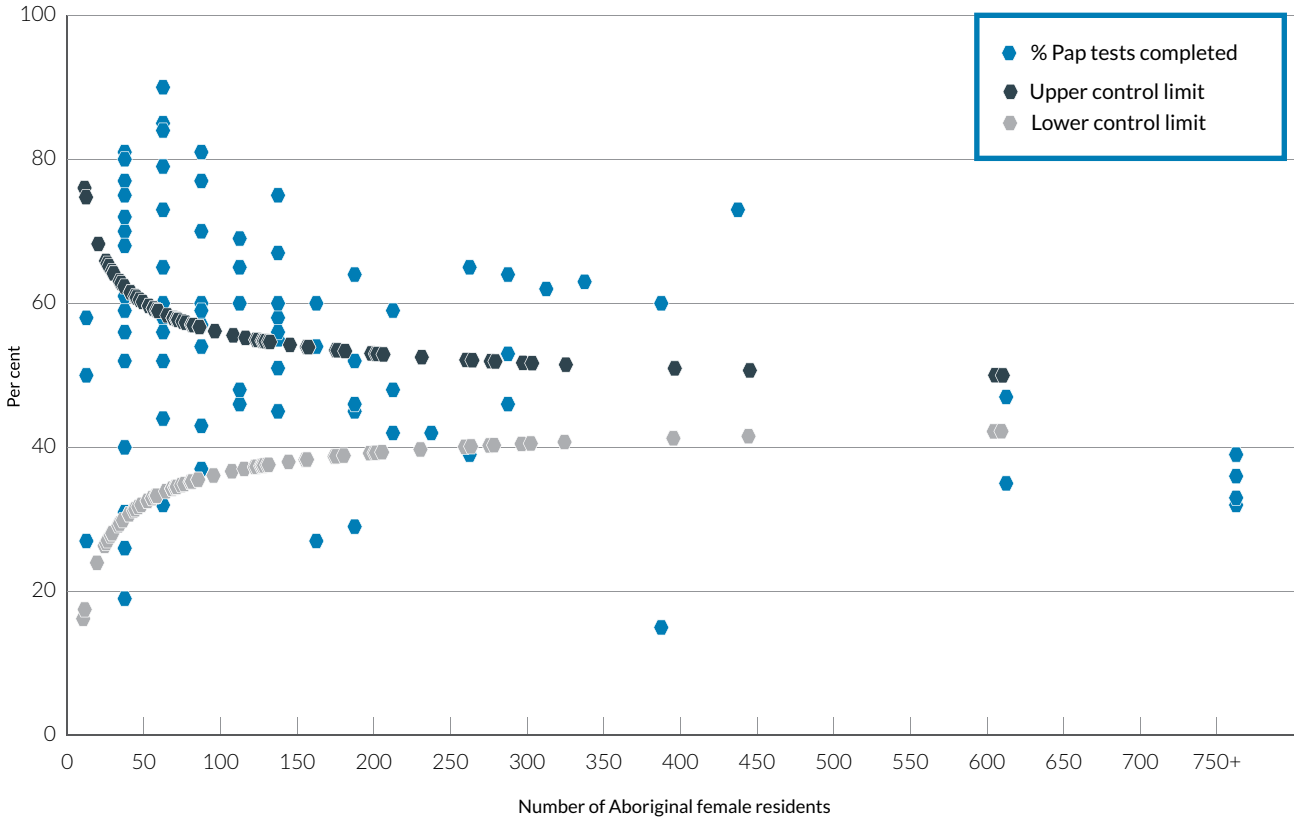
Figure 1.12.4: Distribution of percentage of Aboriginal resident women aged 20 to 69 years with completed Pap smear tests within the previous 2 years, 2014



In 2014:

- The median proportion of Aboriginal resident women with recorded Pap tests was 57%.
- The highest quartile, or top 25%, of health services reported 65% or more of their clients with a completed Pap test, and the lowest quartile, or bottom 25%, of health services reported 45% or less **(Figure 1.12.4)**.
- Variation between health services was large, with most health services reporting proportions between 30% and 80%. There were a number of health services that reported proportions higher than expected **(Figure 1.12.5)**.

Figure 1.12.5: Proportion of Aboriginal resident females aged 20 to 69 years with completed Pap tests in the previous 2 years by health service, 2014



KPI 1.13
BLOOD PRESSURE CONTROL

This indicator measures the proportion of Aboriginal residents with type 2 diabetes who had their blood pressure measured within the past six months and a result of equal to or less than 130/80 mmHg. High blood pressure is a major risk factor for CHD, stroke, heart failure, peripheral vascular disease and renal failure, with an increased risk as the level of blood pressure increases (94). Data for this indicator was available since 2014.

In 2014, 81% of Aboriginal residents with type 2 diabetes had their blood pressure measured, of which 51% had a result of less than or equal to 130/80 mmHg. Nationally, 68% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a blood pressure result recorded in the past six months, of which 44% had a result of less than or equal to 130/80 mmHg, as reported in the 2014 national KPI report (56)[27].

Higher numbers of Aboriginal female residents had their blood pressure measured than males (83% compared with 79%), and a result of less than or equal to 130/80 mmHg (54% compared with 46%). This trend could be observed across all age groups. The proportion of residents with their blood pressure measured increased with age; a result of less than or equal to 130/80 mmHg decreased with age **(Figure 1.13.1)**.

Between health districts, the proportion of Aboriginal residents with type 2 diabetes, measured blood pressure (from 76% to 91%) and a result of less than or equal to 130/80 mmHg varied (from 45% to 60%) **(Figure 1.13.2)**. There was a decreasing linear trend between health service size and blood pressure measurement. The inverse occurred between organisation size and a blood pressure result of less than or equal to 130/80 mmHg, although to a lesser extent **(Figure 1.13.3)**.

Figure 1.13.1: Proportion of Aboriginal residents with type 2 diabetes who had their BP measured and a result ≤130/80 mmHg by age, 2014

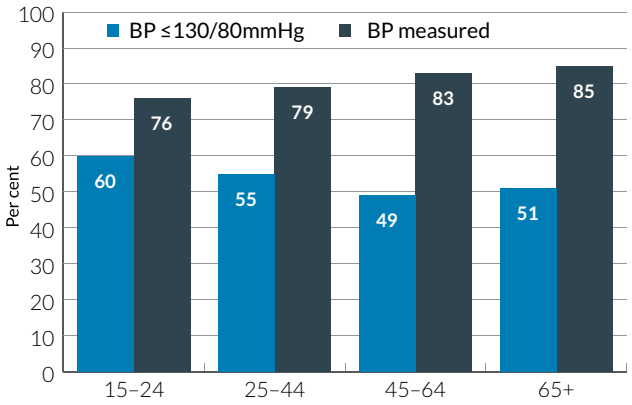


Figure 1.13.2: Proportion of Aboriginal residents with type 2 diabetes who had their BP measured and a result ≤130/80 mmHg by health district, 2014

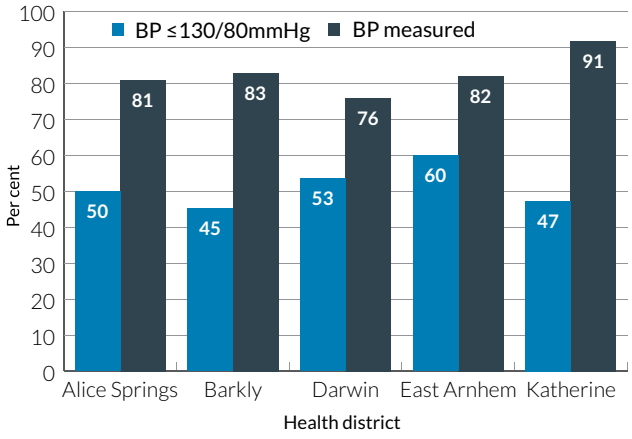
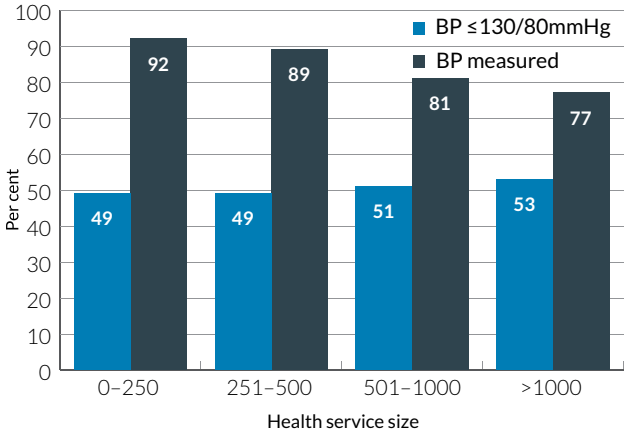
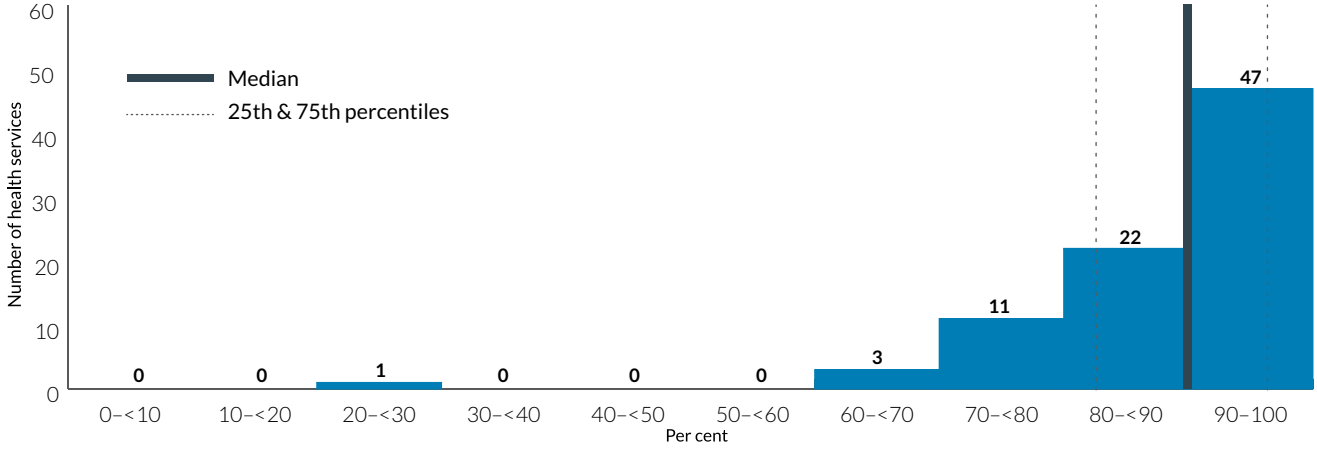


Figure 1.13.3: Proportion of Aboriginal residents with type 2 diabetes who had their BP measured and a result ≤130/80 mmHg by health service size, 2014



[27] Caution is required when comparing figures with the nKPIs. The nKPIs include Aboriginal regular clients with type 2 diabetes less than 15 years of age.

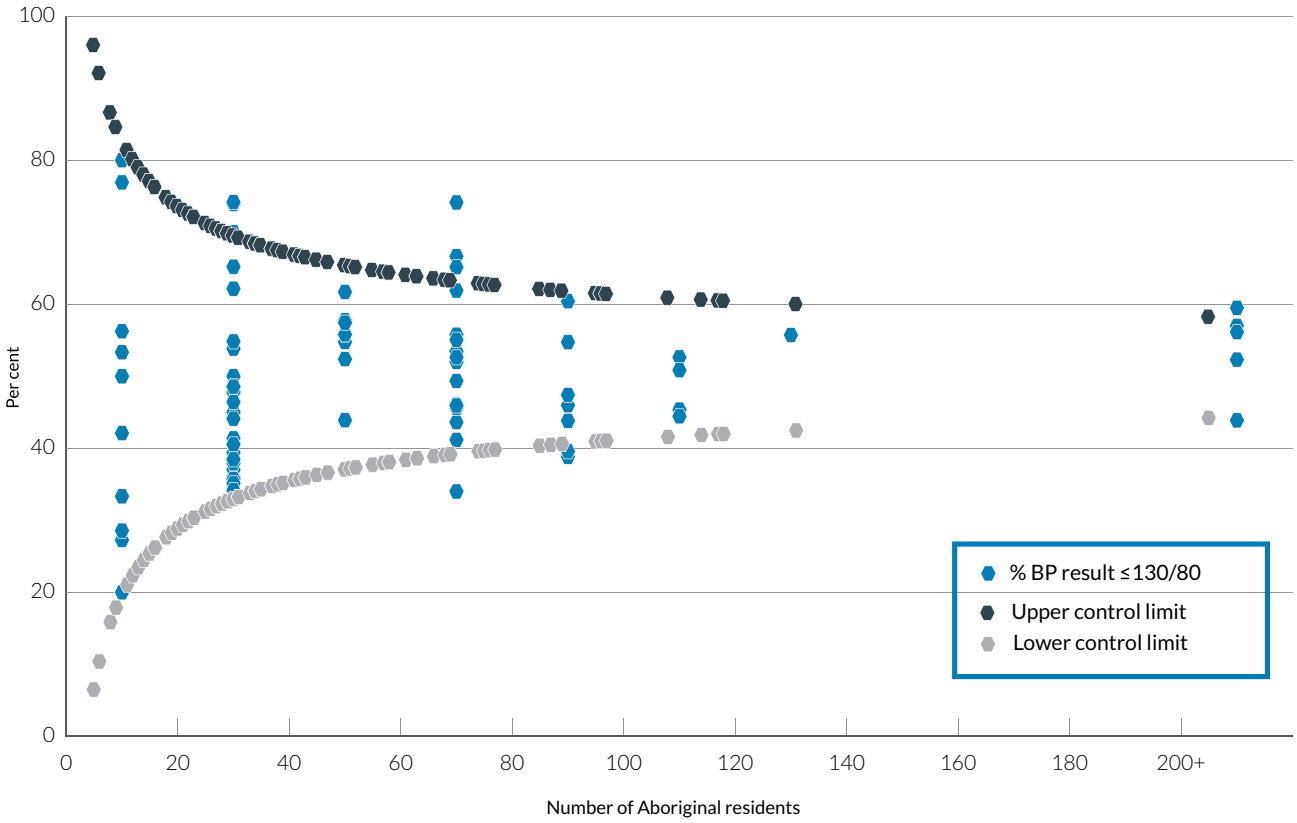
Figure 1.13.4: Distribution of percentage of Aboriginal residents with type 2 diabetes and a blood pressure measurement, 2014



In 2014:

- The median proportion of Aboriginal residents with type 2 diabetes and a blood pressure measurement within the previous 12 months was 90%.
- The highest quartile, or top 25%, of health services reported 96% or more of their Aboriginal residents with type 2 diabetes and a blood pressure measurement, and the lowest quartile, or bottom 25%, of health services reported 83% or less **(Figure 1.13.4)**.
- The proportion of Aboriginal residents with a blood pressure result less than or equal to 130/80 mmHg reported by health services ranged between 20% and 80%. **(Figure 1.13.5)**.

Figure 1.13.5: Percentage of Aboriginal residents with type 2 diabetes and a blood pressure result ≤130/80 mmHg by health service, 2014



KPI 1.15
RHEUMATIC HEART DISEASE

This indicator measures the proportion of Aboriginal residents with diagnoses of acute rheumatic fever (ARF) or rheumatic heart disease (RHD) indicated for benzathine penicillin G (BPG) secondary prophylaxis and who received greater than or equal to 80% of scheduled doses in the previous calendar year.

In 2014, 40% of eligible Aboriginal residents received equal to or greater than 80% of scheduled BPG doses. This represented an increase from 30% in the previous year. There was an increasing linear trend from those aged 15 years and over between age and proportion of received scheduled BPG doses. Residents aged 65 years and over received the highest proportion (57%) **(Figure 1.15.1)**.

Considerable variation in scheduled BPG doses (between 7% and 55%) was reported between health districts in 2013 and 2014 **(Figure 1.15.2)**. Larger health services (more than 1000 residents) reported the highest proportions of BPG scheduled doses (43%) **(Figure 1.1.5.3)**.

BOX 14. INDICATOR CONSIDERATIONS

Young Aboriginal people are particularly mobile. Scheduled doses may be provided at multiple health services and not recorded at a client's resident health service. Data may show reduced compliance and underestimate actual treatment. Care must also be exercised in the interpretation of this result due to low total numbers. In 2014, this indicator was altered to measure the proportion of people indicated for BPG secondary prophylaxis who received less than 50%, 50% to 79%, and 80% and over scheduled BPG doses in the previous calendar year, as per the Australian RHD guidelines.

Figure 1.15.1: Aboriginal residents with ARF/RHD provided ≥80% scheduled BPG doses, by age, 2013 to 2014

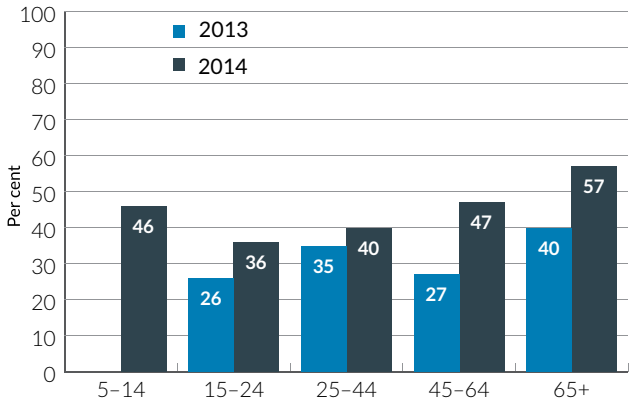


Figure 1.15.2: Aboriginal residents with ARF/RHD provided ≥80% scheduled BPG doses, by health district, 2013 to 2014

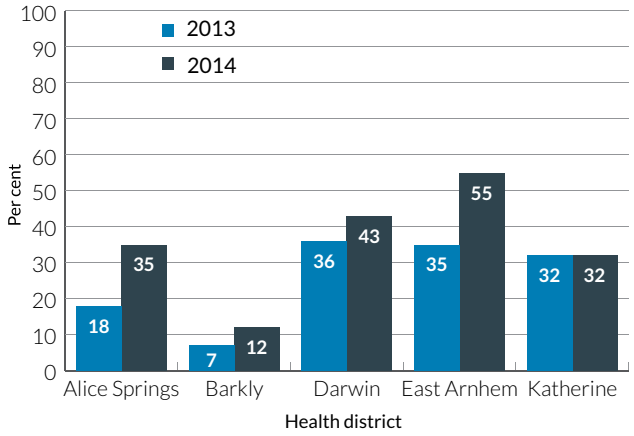


Figure 1.15.3: Aboriginal residents with ARF/RHD provided ≥80% scheduled BPG doses, by health service size, 2013 to 2014

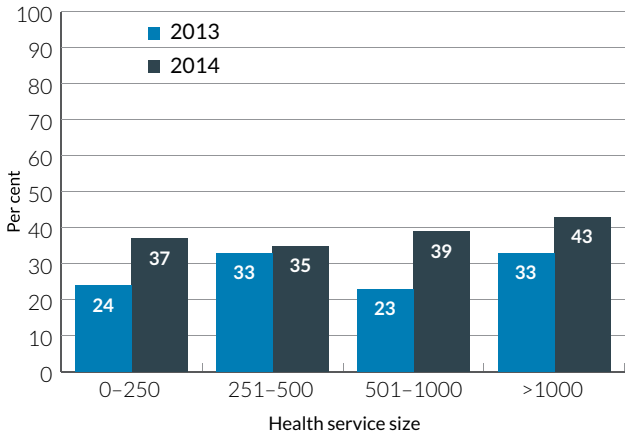
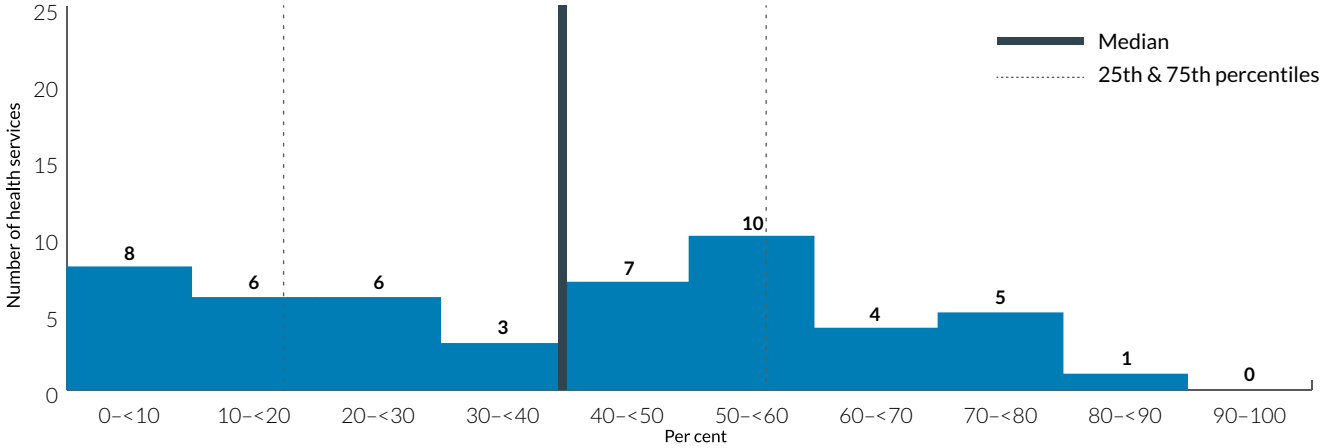


Figure 1.15.4: Distribution of percentage of Aboriginal residents with ARF/RHD provided ≥80% scheduled BPG doses, by health service, 2014

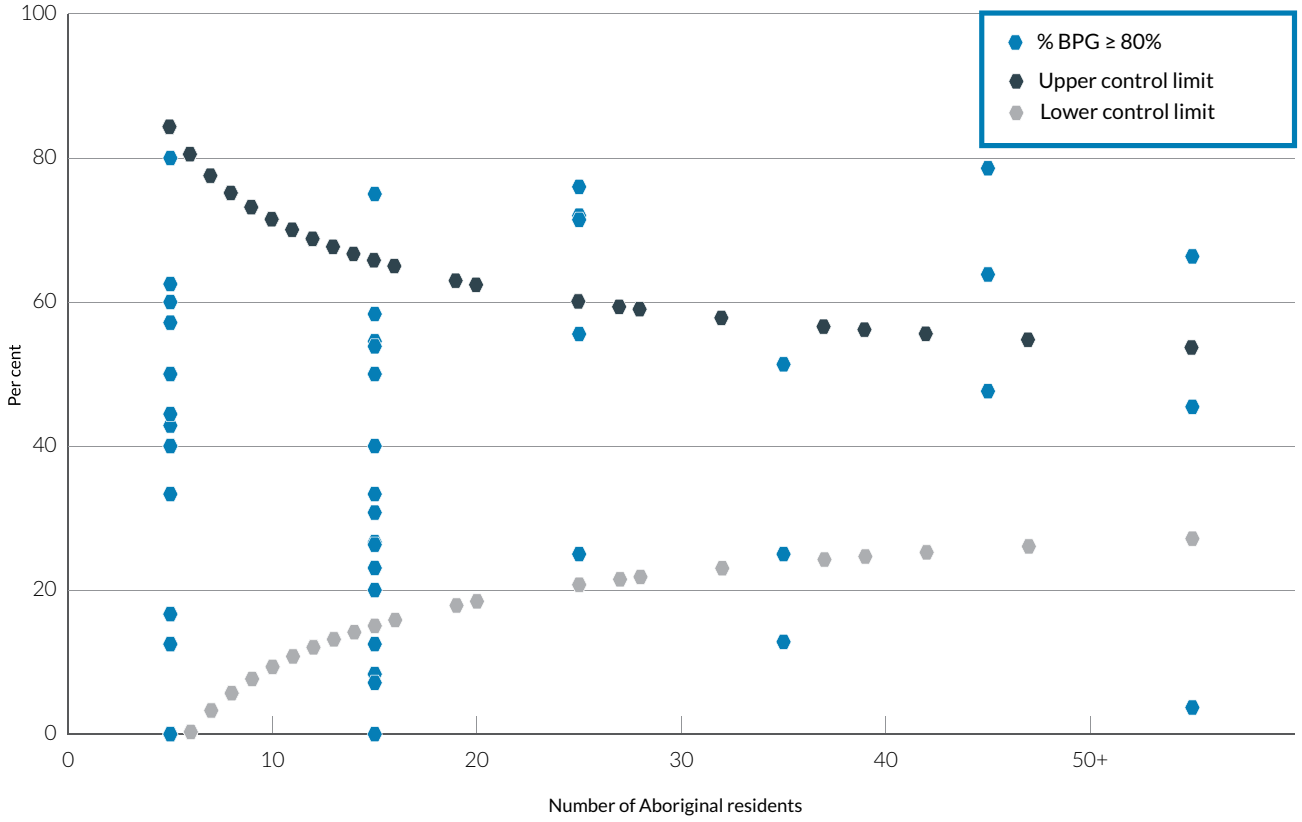


Note: n=50. Health services with <5 Aboriginal residents have been excluded.

In 2014:

- The median proportion of Aboriginal residents with ARF/RHD and prescribed equal to or greater than 80% of their scheduled BPG doses was 40%.
- The highest quartile, or top 25%, of health services reported 56% or more of their Aboriginal residents with ARF/RHD prescribed equal to or greater than 80% of their scheduled BPG doses, and the lowest quartile, or bottom 25%, of health services reported 17% or less **(Figure 1.15.4)**.
- There was variation between health services and proportion of administered BPG doses equal to or greater than 80%, even among those health services with similar numbers of Aboriginal residents. The minimum proportion was 0% and maximum, 80% **(Figure 1.15.5)**.

Figure 1.15.5: Aboriginal residents with ARF or RHD provided with 80% or more scheduled BPG doses by health service, 2014



Note: n=50. Health services with <5 Aboriginal residents have been excluded.

DISCUSSION

The NT AHKPI information and reporting system represents a well-established and continuous quality improvement process in Aboriginal health. It may be used for practical purposes to support health service providers and have implications in the future planning of new programs at regional and Territory level.

The results showed varying levels of improvement across the majority of indicators from 2010 to 2014. This includes improvements in health outcomes and adherence to best-practice guidelines. A higher number of Aboriginal people are receiving health assessments and chronic disease management plans and being measured for and have greater management of blood pressure, glycated haemoglobin levels, and rheumatic heart disease.

The delivery of PHC is complex, resource intensive and complicated by a range of competing health priorities in Aboriginal communities. Indicator results may be influenced by multiple factors beyond the immediate control of individual health services, including social, economic, education and lifestyle influences, as well as available funding, health practitioners, infrastructure and remoteness. (2) (95). Attempts to modify health and risk behaviours without altering socioeconomic disadvantage will have limited success, because these behaviours are often embedded within disadvantage, which in turn reinforces the risk behaviours themselves (95). The indicators presented in this report signal an important opportunity for further health gains; however, careful consideration of the social determinants and service delivery context is important.

Monitoring Aboriginal health trends and PHC performance is one component that will contribute to long-term and effective improvements in Aboriginal health. Aboriginal people have disproportionally higher rates of chronic disease, complicated by acute manifestations (67).

Primary health care systems in remote areas may be overworked by the large acute health care workload, leaving them inadequately resourced to deal with chronic and preventative health (10). As both chronic disease prevalence and life expectancy continue to increase, service workload will increase. The indicators may also be used to inform planning to ensure that preventative health and early diagnostic activities are maintained and balanced with acute care demand.

The indicator system has resulted in an improved availability of reliable Aboriginal health data and an opportunity to better understand the challenges of delivering PHC in Aboriginal communities. Indicator systems and performance monitoring in isolation are not sufficient to improve service quality and Aboriginal health outcomes. Organisational change and acknowledgement of limitations are required to stimulate improvement, as well as ongoing investment in continuous quality improvement and the NT AHKPI system development.

While significant improvements in the NT AHKPI system have occurred since implementation, ongoing development remains a priority and performance indicators will continue to be reviewed and updated. Effective information systems are important in planning and evaluating health interventions. It is anticipated as the dataset matures, it will become increasingly valuable and contribute to enhancing PHC services and improving Aboriginal health outcomes in the NT.

CHAPTER 5

APPENDIX 1

Table A contains the indicators included in this report, indicators added to the NT AHKPI information system in 2014, indicators which received approval and endorsement for future collection and indicators currently under development[28].

Table A: NT AHKPIs, their description and development status.

AHKPI	INDICATOR	DESCRIPTION	STATUS
DOMAIN 1 Health Services			
Service utilisation			
1.1	Episodes of health care and client contacts	Number of episodes of care and client contacts during the reporting period.	Data available from 2010.
	Resident population	Number of individuals identified as a regular clients of the health service, who usually reside in the community serviced by the health centre, been present in the community for at least 6 months, had some contact with the health service in the previous 2 years and who has recently moved to the community and intends to stay there.	Data available from 2014.
Maternal and child health			
1.2	First antenatal care visit	Number and proportion of regular clients who are residents, who gave birth to Aboriginal babies during the reporting period and timing of first the antenatal visit categorised as <13 weeks, 13-19 weeks, ≥20 weeks, did not attend antenatal visit and not recorded.	Data available from 2010.
1.3	Birthweight	Number and proportion of Aboriginal babies born live to resident women and categorised as low (< 2500 grams), normal (2500 to <4500 grams) and high (4500 grams and over) weight.	Data available from 2010.
1.4.1	Fully immunised children	Proportion of resident Aboriginal children aged 6 to <12 months, 1 to <2 years and 2 to <6 years, and who received all age appropriate immunisations as per the NT immunisation schedule during the reporting period.	Data available from 2010.
1.4.2	Timeliness of immunisations	Proportion of children aged 1 to <12 months and who received all age appropriate immunisations on time during the reporting period.	Data available from 2013. Indicator currently under further development.

[28] Indicators (or their specifications) under development may change between the time of writing and publication of this report.

AHKPI	INDICATOR	DESCRIPTION	STATUS
DOMAIN 1 Health Services			
1.5	Underweight children	Number and proportion of resident children aged <5 years measured for weight and who are less than -2 standard deviations (Z scores) away from the mean weight for age.	Data available from 2010.
1.6	Anaemic children	Number and proportion of resident children aged between 6 and <12 months and whose haemoglobin is less than 105 g/L, and resident children aged ≥12 months and <5 years and who haemoglobin is <110g/L.	Data available from 2010.
Chronic disease management			
1.7	Chronic disease management plan General practice management plan	Number and proportion of resident clients aged 15 years and over, diagnosed with type 2 diabetes and/or CHD and who have a GPMP or alternative GPMP at the end of the 1 and 2 year reporting period.	Data available from 2014 (2 years reporting period) and 2013 (1 year reporting period).
	Chronic disease management plan Team care arrangement	Number and proportion of resident clients aged 15 years and over with type 2 diabetes and/or CHD and who have a TCA or alternative TCA at the end of the 1 and 2 year reporting period.	Data available from 2014 (2 years reporting period) and 2013 (1 year reporting period).
1.8.1	HbA1c test	Number and proportion of resident clients aged 15 years and over, who have been diagnosed with type 2 diabetes and have an HbA1c measurement result recorded within the previous 6 and 12 months.	Data available from 2010.
1.8.2	HbA1c result	Number and proportion of resident clients aged 15 years and over, who have been diagnosed with type 2 diabetes and have an HbA1c measurement result recorded within the previous 12 months.	Data available from 2013.
1.9	ACE inhibitor &/ ARB	Number and proportion of Aboriginal residents aged 15 years, and who have been diagnosed with type 2 diabetes with albuminuria (urine ACR>3.4) and who are on an ACE inhibitor and/or ARB during the reporting period.	Data available from 2010.
1.10	Adult Aged 15-54 Health Check	Number of resident clients aged 15 years to <55 years with a completed MBS Aboriginal health assessment (Item 715) or alternative Aboriginal adult health check.	Data available from 2010.

AHKPI	INDICATOR	DESCRIPTION	STATUS
DOMAIN 1 Health Services			
1.11	Adult health check (aged 55 years and over)	Number of Aboriginal resident clients aged 55 years and over with a completed MBS health assessment (Item 715) or alternative Aboriginal adult health check.	Data available from 2010.
1.12	Cervical cancer screening	Number and proportion of resident women aged 20 to 69 years who have had one Pap test during the previous 2, 3 and 5 years reporting periods.	Data available from 2014 (2 years reporting period) and 2013 (3 and 5 years reporting periods).
1.13	Blood pressure measurement / result	Number and proportion of residents aged 15 years and over who have type 2 diabetes, and a blood pressure measurement and good control (≤130/80 mmHg).	Data available from 2014.
1.14	Chronic kidney disease	Number and proportion of Aboriginal residents aged 31 years and over screened for renal disease according to the CARPA guidelines during a two year period and proportion of results suggestive of kidney disease.	Approved data available in 2015.
1.15	Rheumatic heart disease	Number and proportion of Aboriginal residents with a diagnosis of ARF or RHD who are prescribed as requiring 4 weekly BPG penicillin injections over a 12 month period and receive injections (adherence).	Data available from 2013.
1.16	Tobacco use	Number and proportion of Aboriginal clients aged 15 years and over whose smoking status has been recorded at the PHC service.	Approved data available in 2015.
1.17	Sexually transmitted disease	Number and portion of residents aged 15–<35 years who tested positive for chlamydia and/or gonorrhoea and who were tested for syphilis and HIV in the reporting period.	Approved data available in 2015.
1.18	Cardiovascular risk assessment	Number and proportion of resident Aboriginal clients aged 20 years and over who have had a cardiovascular risk assessment recorded within the previous 2 years and risk categorised.	Approved data available in 2015.
1.19	Diabetic retinopathy	Number of adult residents with type 1 or type 2 diabetes who had retinal screening in the previous 1 and 2 years.	Approved data available in 2015.
	Ear disease	Number and proportion of Aboriginal clients aged 3 months to <6 years who have had an otoscopy examination during the reporting period and the proportion of children examined who have ear discharge.	Currently under development.

AHKPI	INDICATOR	DESCRIPTION	STATUS
DOMAIN 1 Health Services			
	Anaemia in pregnancy	Number and proportion of residents who gave birth to Aboriginal babies during the reporting period and whose haemoglobin ≤110g/L in the first 19 weeks of pregnancy, or less than 105 g/L ≥20 weeks of pregnancy.	Currently under development.
	Hepatitis B	Number and proportion of Aboriginal residents aged 15–18 years with a Hepatitis B serostatus result recorded.	Currently under development.
	Respiratory disease management	Number and proportion of Aboriginal residents who have been diagnosed with asthma, COPD and/or bronchiectasis, and who have a respiratory action plan documented or reviewed in the last 24 months.	Currently under development.
DOMAIN 2 Management and support services			
2.1	Unplanned staff turnover	Qualitative report on unplanned staff turnover.	Approved since 2009. Unavailable.
2.2	Recruits completed orientation training	Qualitative report on established processes to ensure recruits complete orientation and induction program over previous 12 months.	Approved since 2009 Unavailable.
2.3	Overtime workload	Clinic overtime workload past 12 months, including number and proportion of after hour episode of health care outside standard operating hours and comments.	Approved since 2009 Unavailable.
2.4	Quality improvement	Qualitative annual report on quality assurance processes including development of procedures manual and systems for audit and review of health services.	Approved since 2009 Unavailable.
DOMAIN 3 Linkage, policy and advocacy			
3.1	Service activities	Qualitative report on the following activities: published papers; collaborative meetings and services, policy submissions, participation in research projects, and community meetings and consultation.	Approved since 2009. Unavailable.
DOMAIN 4 Community involvement			
4.1	Community involvement in determining health priorities	Qualitative annual report on strategies and practices for community involvement in health planning.	Approved since 2009. Unavailable.
4.2	Evidence of appropriate report to community	Qualitative annual report on evidence of information sharing with communities on progress against health performance indicators during a calendar year.	Approved since 2009. Unavailable.

APPENDIX 2

Table B: NT AHKPI results summary, 2014

AHKPI	DESCRIPTION	NUMERATOR	DENOMINATOR	MEAN (%)	MINIMUM	MAXIMUM
1.1	Episodes of health care	892 157	-	-	324	128 455
	Client contacts	1 120 333	-	-	358	157 479
	Aboriginal resident population	60 975	-	-	34	8383
1.2	First antenatal visit <13 weeks	535	1088	49	0	72
1.3	Birthweight result recorded as low	131	1058	12	0	11
1.4.1	Fully immunised children (aged 6 - <72 months)	6613	7269	91	1	914
1.4.2	Timeliness of immunisations (aged 1 - <12 months)	904	1116	81	0	110
1.5	Measured for weight (aged <5 years)	6190	6863	90	1	668
	Underweight children	274	6190	4	0	23
1.6	Measured for anaemia (aged 6 months - <5 years)	4954	6412	77	1	396
	Anaemic children	1083	4954	22	0	93
1.7	Chronic disease management plan - GPMP (2 year reporting period)- type 2 diabetes	4951	7310	68	6	552
	Chronic disease management plan - GPMP (2 year reporting period)- CHD	1564	2281	69	0	240
	Chronic disease management plan - GPMP (2 year reporting period)- type 2 diabetes & CHD	868	1151	75	0	133
	Chronic disease management plan - TCA (2 year reporting period)- type 2 diabetes	4370	7310	60	2	480
	Chronic disease management plan - TCA (2 year reporting period)- CHD	1391	2281	61	0	205
	Chronic disease management plan - TCA (2 year reporting period)- type 2 diabetes & CHD	710	1151	62	0	121
1.8	HbA1c measurement	4913	7278	68	3	608
	HbA1c result ≤7%	2126	6032	35	2	286
1.9	ACE inhibitor &/ ARB	2878	3353	86	2	292
1.10	Adult health check (aged 15 – 54 years)	17 610	35 477	50	7	2063
1.11	Adult health check (aged 55 years and over)	4036	5652	71	2	590
1.12	Cervical cancer screening (2 year reporting period)	8451	18 348	46	3	1086
1.13	Blood pressure measurement	5926	7279	81	5	799
	Blood pressure result ≤130/80mmHg	3036	5926	51	2	418
1.15	RHD/AFR ≥80% BPG	419	1037	40	0	67

APPENDIX 3

The following section provides a breakdown of results per indicator, depending on availability of data.

Health service provision and activity

AHKPI 1.1: Episodes of health care, client contacts and resident population

Table 1.1: Total episodes of health care and client contacts, 2010 to 2014

Health care	2010	2011	2012	2013	2014
Episodes of health care	784 100	767 004	826 656	836 339	892 157
Client contacts	942 573	934 866	1 014 275	1 046 262	1 120 333

Table 1.2: Number of episodes of health care by Indigenous and resident status, 2010 to 2014

Clients	2010	2011	2012	2013	2014
Aboriginal resident	631 576	597 033	642 694	646 585	695 933
Non-Aboriginal resident	64 905	58 743	62 458	55 897	57 775
Aboriginal visitor	66 864	90 860	100 195	108 614	115 067
Non-Aboriginal visitor	15 073	16 457	17 330	21 605	19 426
Total	**784 100**	**767 004**	**826 656**	**836 339**	**892 157**

Table 1.3: Number of resident episodes of health care by Indigenous status and sex, 2014

Indigenous status	Male	Female	Unknown	Total
Aboriginal	328 734	482 266	16	811 016
non-Aboriginal	40 843	36 358	2	77 203
Unknown status	1887	2069	27	3983
Total	**371 464**	**520 693**	**45**	**892 202**

Table 1.4: Proportion of residents by Indigenous status and age, 2014

Age	Aboriginal	non-Aboriginal	Not recorded	Total number
0–4 years	92	7	1	6929
5–14 years	93	6	0	14 549
15–24 years	92	7	1	12 405
25–44 years	83	16	1	21 667
45–64 years	73	26	2	13 311
65+ years	69	30	1	2930
Total	**85**	**14**	**1**	**71 791**

Maternal and child health

AHKPI 1.2: Timing of first antenatal visit

Table 2.1: Proportion of babies born to Aboriginal women who gave birth within the previous 12 months and timing of first antenatal visit, 2010 to 2014.

Timing of first antenatal visit	2010	2011	2012	2013	2014
<13 weeks	44	45	47	49	49
13–19 weeks	25	22	22	20	20
≥20 weeks	25	26	25	25	24
Unknown	1	2	1	1	0
No care	4	5	5	5	6

Table 2.2: Proportion of babies born to Aboriginal women who gave birth within the previous 12 months and timing of their first antenatal visit, 2014.

Maternal age	< 13 weeks	13–19 weeks	> 20 weeks	Not recorded	No care*
<20 years	37	23	36	0	4
20–34 years	53	20	20	1	7
≥35 years	51	11	30	0	8

*No care = total births – antenatal care – unknown/unrecorded

AHKPI 1.3: Birthweight

Table 3.1: Proportion of low, normal and high birthweight for babies born to Aboriginal women, 2014

Birthweight	2010	2011	2012	2013	2014
Low	14	16	12	14	12
Normal	84	82	86	85	87
High	1	2	1	1	1

Table 3.2: Proportion of low, normal and high birthweight for babies born to Aboriginal women by maternal age, 2014

Birthweight	0–19 years	20–34 years	≥35 years
Low	14	11	18
Normal	86	88	79
High	0	1	3

AHKPI 1.4: Infant and child immunisation status

Table 4.1: Proportion of Aboriginal children provided with all age-appropriate immunisations (aged 6 months to less than 6 years), 2010 to 2014

Age	2010	2011	2012	2013	2014
6–11 months	86	92	86	89	87
12–23 months	77	88	78	88	87
24–71 months	87	89	78	90	92
6–71 months	85	89	78	90	91

Table 4.2: Proportion of Aboriginal resident children provided with all age-appropriate immunisations on time (1–11 months), 2013 to 2014

Age	2013	2014
1–11 months	80	81

AHKPI 1.5: Underweight children (aged less than 5 years)

Table 5.1: Proportion of Aboriginal children (aged less than 5 years) measured for weight and reported as underweight, 2010 to 2014

Category	2010	2011	2012	2013	2014
Measured	83	82	86	87	90
Underweight	8	6	6	5	4

AHKPI 1.6: Anaemic children (aged 6 months to less than 5 years)

Table 6.1: Proportion of infants and children (aged 6 months to less than 5 years) measured for anaemia and reported as anaemic, 2014.

Category	2010	2011	2012	2013	2014
Measured	60	61	71	73	77
Anaemic	26	24	27	24	22

Management of chronic disease

AHKPI 1.7: Aboriginal residents (aged 15 years and over) with type 2 diabetes and/or chronic heart disease with a chronic disease management plan.

Table 7.1: Proportion of Aboriginal residents with a valid GPMP or TCA, by chronic disease, 2010 to 2014

Chronic disease	2010	2011	2012	2013	2014
GPMP					
Type 2 diabetes	44	61	63	68	68
CHD	42	59	66	69	69
Type 2 diabetes/CHD	59	69	72	76	75
TCA					
Type 2 diabetes	36	46	51	58	60
CHD	30	45	58	58	61
Type 2 diabetes/CHD	49	54	64	68	62

Table 7.2: Proportion of Aboriginal residents with a valid GPMP or TCA by chronic disease and age, 2014

Chronic disease	15–24	25–44	45–64	65+
GPMP				
Type 2 diabetes	55	62	70	75
CHD	44	61	70	75
Type 2 diabetes/CHD	67	68	76	80
TCA				
Type 2 diabetes	50	55	62	66
CHD	35	54	62	69
Type 2 diabetes/CHD	67	55	61	69

AHKPI 1.8.1: HbA1c measurement

Table 8.1: Proportion of Aboriginal residents (aged 15 years and over) with type 2 diabetes and HbA1c measurement, 2014

HbA1c	2010	2011	2012	2013	2014
Measured	56	60	68	68	68

AHKPI 1.8.2: HbA1c result

Table 8.2: Proportion of Aboriginal residents (aged 15 years and over) with type 2 diabetes and HbA1c result, 2013 to 2014

HbA1c result	2013	2014
≤ 7%	32	35
7% - ≤8%	16	17
8% - <10%	22	21
≥ 10%	30	28

Table 8.3: Proportion of Aboriginal residents (aged 15 years and over) with type 2 diabetes and HbA1c result, 2014

Age	≤ 7%	7% - ≤8%	8% - <10%	≥ 10%
15–24 years	17	11	17	55
25–44 years	28	14	21	37
45–64 years	36	18	21	25
65 + years	51	20	19	9

AHKPI 1.9: ACE inhibitor and/or ARB

Table 9.1: Proportion of Aboriginal residents aged 15 years and over with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/ ARB, 2010 to 2014

Medication	2010	2011	2012	2013	2014
ACE inhibitor	63	78	80	74	77
ARB	18	21	22	16	15
ACE inhibitor &/ ARB	67	84	87	82	86

Table 9.2: Proportion of Aboriginal residents with type 2 diabetes and albuminuria prescribed an ACE inhibitor &/ ARB by age group, 2014

Age	ACE inhibitor	ARB	ACE inhibitor &/ ARB
15–24 years	44	1	46
25–44 years	74	8	79
45–64 years	79	18	91
65 + years	76	22	91

AHKPI 1.10: Adult aged 15–54 health check

AHKPI 1.11: Adult aged 55 years and over health check

Table 10.1: Proportion of Aboriginal residents provided with an adult health assessment by age group, 2010 to 2014

Age	2010	2011	2012	2013	2014
KPI 1.10					
15–24 years	13	12	14	27	40
25–44 years	17	17	20	37	52
45–54 years	24	22	26	44	62
KPI 1.11					
55–64 years	20	27	31	54	71
65 + years	21	27	33	56	73

AHKPI 1.12: Cervical cancer screening

Table 12.1: Proportion of Aboriginal females (aged 20 to 69 years) with cervical cancer screening in the previous two, three and five years, 2010 to 2014

Timing	2010	2011	2012	2013	2014
2 year	28	38	42	46	46
3 year	N/A	N/A	N/A	56	58
5 year	N/A	N/A	N/A	64	66

AHKPI 1.13 Blood pressure measurement and control

Table 13.1: Proportion of Aboriginal residents (aged 15 years and over) with type 2 diabetes and blood pressure measurement and result ≤130/80 mmHg, 2014

Age	Measured	≤130/80 mmHg
15–24 years	76	60
25–44 years	79	55
45–64 years	83	49
65 + years	85	51
Total	**81**	**51**

AHKPI 1.15 Rheumatic heart disease

Table 15.1 Proportion of Aboriginal residents with a diagnosis of ARF/RHD indicated for BPG prophylaxis provided ≥ 80 % scheduled doses, by age group, 2013 to 2014

Age	2013	2014
0–14 years	N/A	46
15–24 years	26	36
25–44 years	35	40
45–64 years	27	47
65 + years	40	57
Total	**30**	**40**

APPENDIX 4

These communities contributed data under the NT AHKPI system and governance structure.

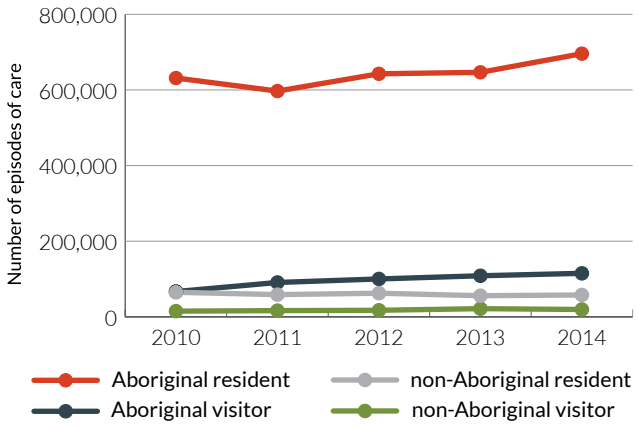
Community	Governance
DARWIN REGION	
Adelaide River	NT Department of Health
Darwin (Bagot Community)	Bagot Health Service
Batchelor	NT Department of Health
Belyuen	NT Department of Health
Darwin (Yilli Rreung Region)	Danila Dilba Health Service
Gunbalanya (Oenpelli)	NT Department of Health
Jabiru	NT Department of Health
Maningrida	NT Department of Health
Milikapiti (Snake Bay)	NT Department of Health
Minjilang (Croker Island)	NT Department of Health
Nauiyu (Daly River)	NT Department of Health
Nganmarriyanga (Palumpa)	NT Department of Health
Peppimenarti	Peppimenarti Association Incorporated
Pirlangimpi (Garden Point)	NT Department of Health
Wadeye (Port Keats)	NT Department of Health
Warruwi (Goulburn Island)	NT Department of Health
Wurrumiyanga (Nguiu)	NT Department of Health
EAST ARNHEM REGION	
Alyangula	NT Department of Health
Angurugu	NT Department of Health
Bickerton Island (Milyakburra)	NT Department of Health
Galiwin'ku (Nkalkanbuy)	Miwatj Health Aboriginal Corporation
Gapuwiyak	NT Department of Health
Gunyangara	Miwatj Health Aboriginal Corporation
Laynhapuy	Laynhapuy Health Service
Marthakal	Marthakal Homelands Health Service
Milingimbi	NT Department of Health
Nhulunbuy	Miwatj Health Aboriginal Corporation
Numbulwar	NT Department of Health
Ramingining	NT Department of Health
Umbakumba	NT Department of Health
Yirrkala	Miwatj Health Aboriginal Corporation
KATHERINE REGION	
Barunga	Sunrise Health Service
Binjari	Binjari Health Services
Borroloola	NT Department of Health
Bulman	Sunrise Health Service
Kalkaringi	Katherine West Health Board
Jilkminggan (Duck Creek)	Sunrise Health Service
Katherine urban	Wurli-Wurlinjang Health Service
Lajamanu	Katherine West Health Board
Manyallaluk (Eva Valley)	Sunrise Health Service
Mataranka	Sunrise Health Service

Minyerri (Hodgson Downs)	Sunrise Health Service
Ngukurr (Roper River)	Sunrise Health Service
Pine Creek	NT Department of Health
Robinson River	NT Department of Health
Timber Creek	Katherine West Health Board
Wugularr (Beswick)	Sunrise Health Service
Yarralin	Katherine West Health Board
BARKLY REGION	
Ali Curung	NT Department of Health
Alpurrurulam (Lake Nash)	NT Department of Health
Tennant Creek (Anyinginyi)	Anyinginyi Health Aboriginal Corporation
Canteen Creek	NT Department of Health
Elliott	NT Department of Health
Epenarra	NT Department of Health
Tara (Neutral Junction)	NT Department of Health
ALICE SPRINGS REGION	
Amoonguna	Amoonguna Health Service Central Australian Aboriginal Congress Inc
Ampilatwatja	Ampilatwatja Health Centre Aboriginal Corporation
Aputula (Finke)	NT Department of Health
Areyonga	Utju Health Service Aboriginal Corporation (Areyonga)
Atitjere (Harts Range)	NT Department of Health
Alice Springs	Central Australian Aboriginal Congress Incorporated
Docker River (Kaltukatjara)	NT Department of Health
Engawala (Alcoota)	NT Department of Health
Haasts Bluff (Ikuntji)	NT Department of Health
Hermannsburg (Ntaria)	NT Department of Health Western Aranda Health Aboriginal Corporation
Imanpa	NT Department of Health
Kings Canyon (Watarrka)	NT Department of Health
Kintore (Pintupi)	Pintupi Homelands Health Service
Laramba (Napperby Station)	NT Department of Health
Mt Liebig (Amunturrngu)	NT Department of Health
Mutitjulu (Uluru)	Central Australian Aboriginal Congress Inc
Nyrippi	NT Department of Health
Orrtipa-thurra (Bonya)	NT Department of Health
Papunya	NT Department of Health
Pmara Jutunta (Ti Tree 6 Mile)	NT Department of Health
Santa Teresa (Ltyentye Apurte)	Mpwelarre Health Aboriginal Corporation Central Australian Aboriginal Congress Inc
Ti Tree (Nturiya)	NT Department of Health
Titjikala (Maryvale)	NT Department of Health
Urapuntja	Urapuntja Health Service Aboriginal Corporation
Wallace Rockhole	NT Department of Health Western Aranda Health Aboriginal Corporation
Willowra	NT Department of Health
Wilora (Stirling)	NT Department of Health
Yuelamu (Mt Allen)	NT Department of Health
Yuendumu	NT Department of Health

APPENDIX 5

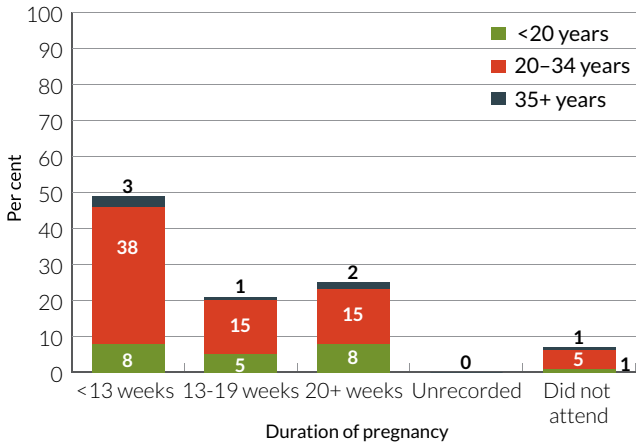
Explanation of figures and graphs

Figure 1.1.A1: Number of episodes of care by Aboriginal and resident status, 2010 to 2014



This figure shows the general pattern and direction of data over multiple reporting periods. For the majority of indicators, trends are available between 2010 and 2014.

Figure 1.2.2: Duration of pregnancy at first antenatal visit for Aboriginal women by maternal age, 2014

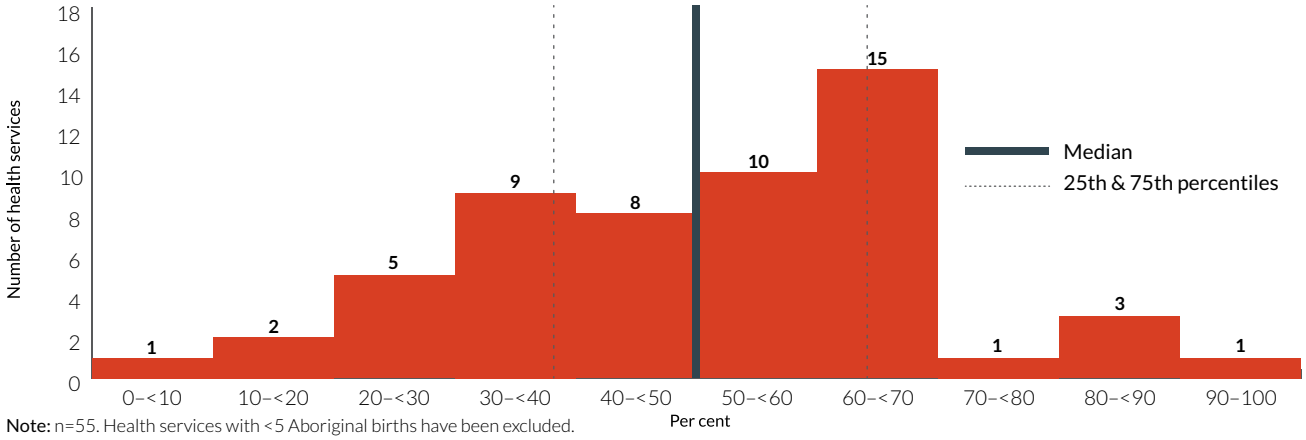


The vertical stacked bars represent the percentage of clients who had a health care process or outcome by characteristics and variables (e.g. age, sex, health region, and health service size).

This figure shows the proportion of Aboriginal women by timing of first antenatal visit and maternal age in 2014.

It shows that of the 49% of Aboriginal women who had their first antenatal visit within the first trimester, the majority (38%) were aged 20 to 34 years, 8% fewer than 20 years and 3% greater than 35 years.

Figure 1.2.5: Distribution of percentage of Aboriginal women's' first antenatal care visit within the first trimester by health service, 2014



Note: n=55. Health services with <5 Aboriginal births have been excluded.

The histograms show the distribution of health services by their performance or health outcome per indicator.

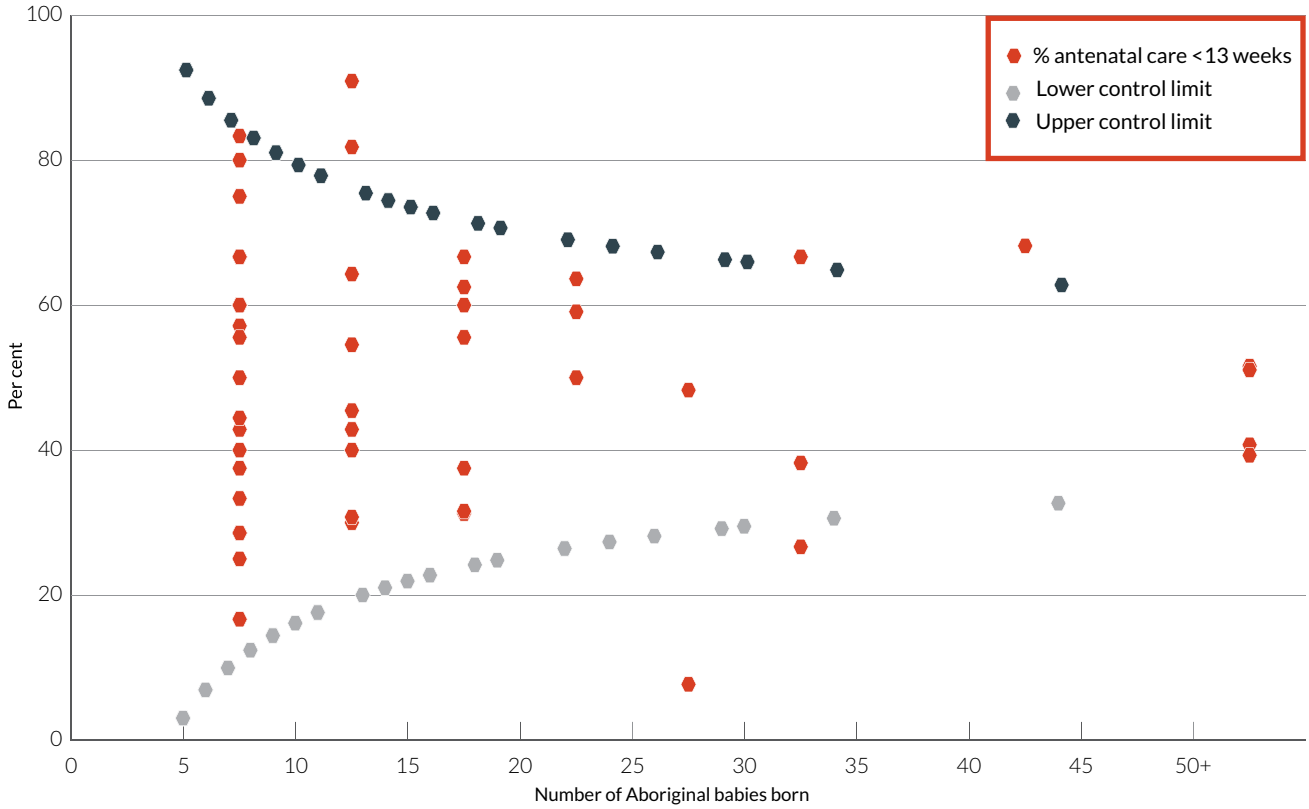
This figure shows the distribution of health services by the percentage of Aboriginal women who had their first antenatal visit within the first trimester (AHKPI 1.2). The total number of health services per percentage category is shown in the number above.

The figure helps audience understand how health service performance and outcome varies per indicator. The median refers to the midway value; half of the distribution lies below the median and half above it. The interquartile range figures include the lower (25th) and upper quartile (75th) of the distribution. The percentage distribution is divided into four equally sized groups, allowing the audience to understand how far above or below the median health services are performing and the range of proportions.

In this histogram, the median proportion of Aboriginal women who had their first antenatal visit within the first trimester was 50%. The interquartile range (IQR 25th, 75th) shows that the highest quartile of health services (75th percentile) reported 64% or more of their Aboriginal residents who had their first antenatal visit within the first trimester. The lowest quartile (25th percentile) shows 25% of health services reported 38% or less of Aboriginal residents who had their first antenatal visit within the first trimester. The figure shows that there were 30 health services where 50% or more resident Aboriginal women had their first antenatal visit within the first trimester.

Small changes in the numerator of health services with small denominators may significantly affect the overall proportion. In these figures, health services with fewer than five Aboriginal residents per denominator are removed from analysis. The text box informs the audience the number of health services presented in the figure. If the number is not stated, all health services have been included in the analysis.

Figure 1.2.6: Proportion of Aboriginal women with the first antenatal visit within the first trimester of pregnancy by health service, 2014



Note: n=55. Health services with <5 Aboriginal births have been excluded.

The funnel plots contain two parts: the scatter plot and funnel plot. Each dot in the scatter plot represents a health service result or proportion against the denominator size.

The funnel plot contains an upper and lower limit. The control limits take into account the indicator denominator and overall average. The funnels represent 2 standard deviations from the average and are equal to a 95% confidence limit. Health services inside the funnel have results within an expected variation, according to their denominator size. Health services that lie outside the upper and lower control limits report a health outcome or performance that is significantly different from the overall proportion or result.

To avoid identification, health services are further aggregated into denominator categories. In the example shown, the denominator categories are the number of Aboriginal babies born per health service: 5–9, 10–19, 20–29, 30–39, 40–49 and 50+. Small changes in the numerator of health services with small denominators may significantly affect the overall proportion. Therefore, health services with fewer than five Aboriginal residents have been excluded. The text box informs the number of health services presented in the figure. If the number is not stated, all health services have been included in the analysis.

In this figure, health services with more than 50 Aboriginal babies have been reported together to avoid identification of larger health services. The category size and maximum denominator number reported varies per indicator; the reader may be guided by the x-axis per figure.

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