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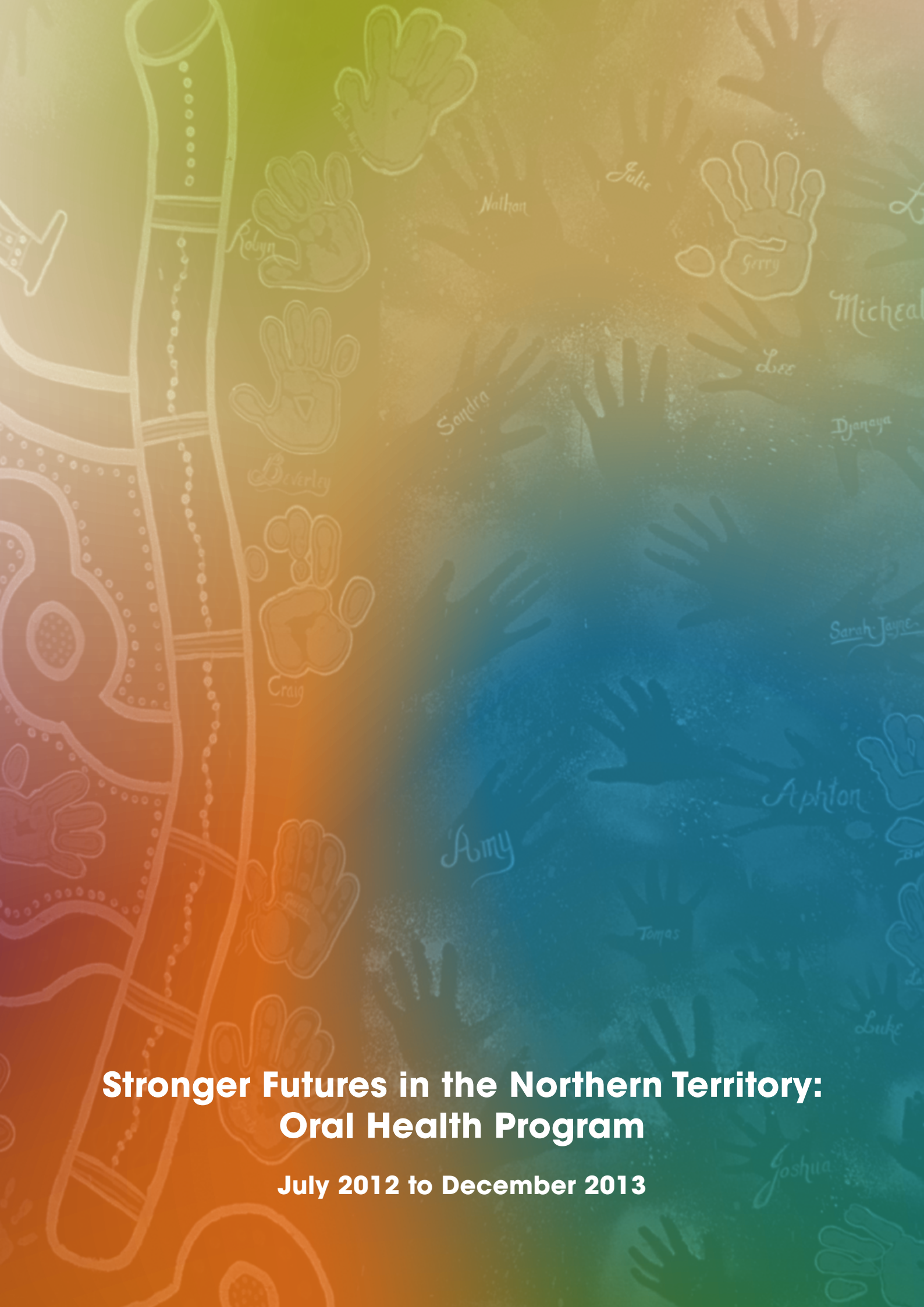
Stronger Futures in the Northern Territory: Oral Health Program

July 2012 to December 2013



Stronger Futures in the Northern Territory: Oral Health Program

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Australian Institute of Health and Welfare

Board Chair
Dr Mukesh C Haikerwal AO

Director
David Kalisch

Any enquiries about or comments on this publication should be directed to:

Digital and Media Communications Unit
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Tel: (02) 6244 1000
Email: info@aihw.gov.au

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Abbreviations

ACCHO	Aboriginal Community Controlled Health Organisation
AIHW	Australian Institute of Health and Welfare
CHCI(CtG)	Child Health Check Initiative/Closing the Gap program
dmft	decayed, missing or filled deciduous teeth
DMFT	decayed, missing or filled permanent teeth
FV	(full-mouth) fluoride varnish
HRN	hospital registration number
HSDA	Health Service Delivery Area
IP	Implementation Plan
NPA	National Partnership Agreement
NTER	Northern Territory Emergency Response
OHS-NT	Oral Health Services Northern Territory
RAHC	Remote Area Health Corps
SFNT OHP	Stronger Futures in the Northern Territory Oral Health Program
SiC	Significant Caries Index

Symbols

—	nil or rounded to zero
. .	not applicable
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

This report describes the services delivered under the National Partnership Agreement on Stronger Futures in the Northern Territory (SFNT) Health Implementation Plan (IP) Oral Health Program (OHP) from July 2012 to December 2013. Data are presented on the children who participated in the Stronger Futures in the Northern Territory Oral Health Program (SFNT OHP), the services they received, and their oral health status. This program replaced and expanded upon the Child Health Check Initiative/Closing the Gap program —CHCI(CtG)— that ran from August 2007 to June 2012.

Preventive services

- The SFNT preventive program includes the application of full-mouth fluoride varnish (FV) and fissure sealants. From July 2012 to December 2013, a total of 3,670 Indigenous children received 4,046 services where full-mouth FV was applied, and 2,062 children received 2,263 services where fissure sealants were applied.

Clinical services

- A total of 4,717 Indigenous children were provided with 6,544 occasions of clinical service (including tooth extraction under general anaesthetic). Of the 349 children who were provided with extractions, 226 were treated at a dental visit with topical or local anaesthetic, while 126 were treated in hospital under general anaesthetic.

Oral health status of children

- 41% of Indigenous children who received a clinical service in 2013 were treated for dental caries.
- From July 2012 to December 2013, the mean number of decayed, missing or filled deciduous teeth (dmft) for 6 year olds was 5.3, and the mean number of decayed, missing or filled permanent teeth (DMFT) for 12 year olds was 2.1.

Changes over time

- Among children who participated in the CHCI(CtG) and SFNT programs (from August 2007 to December 2013), the proportion treated for at least 1 oral health problem decreased from 48% at their last CHCI(CtG) course of care to 45% at their last SFNT course of care. The proportion with untreated caries, however, increased slightly from 40 to 44%.
- Of the children who participated in both programs between August 2007 and December 2013, 467 were treated for untreated caries at their last CHCI(CtG) course of care and most (53%) were free of the condition at their last SFNT course of care. All children who had mouth infections or mouth sores at their last CHCI(CtG) course of care (22) were without the condition at their last SFNT course of care.
- The proportion of children with caries experience (those with a dmft and DMFT score greater than 0) decreased for most age groups between 2009 and 2013. In particular, for 1–3 year olds, the proportion decreased from 73% in the period March to December 2009, to 56% in the period July 2012 to December 2013; and for 12 year olds the proportion decreased from 81% to 67% over the same period.

1 Introduction

This report presents information on the oral health services provided through the National Partnership Agreement on Stronger Futures in the Northern Territory (SFNT) Health Implementation Plan (IP) Oral Health Program (OHP). Funded by the Australian Government and implemented by the Northern Territory Government, the Stronger Futures in the Northern Territory Oral Health Program (SFNT OHP) aims to reduce the prevalence, incidence, severity and impact of oral health problems in the Northern Territory by developing an integrated oral health program for Indigenous children under 16 across the continuum of care. SFNT funds are designed to enhance existing public dental services, to provide a coordinated oral health program and to allow greater access to dental services for all Indigenous children throughout the Northern Territory (Standing Council on Federal Financial Relations 2013).

In particular, the program is working with primary health services to deliver preventive oral health programs including:

- fissure sealants and full-mouth fluoride varnish (FV) applications
- 'joined up' service delivery that ensures children receive appropriate services across the continuum of care, and
- appropriate dental clinical services, including, in the first 3 years of the program, services under general anaesthetic.

The oral health services examined in this report include a program of clinical services (including tooth extraction under general anaesthetic), as well as preventive services involving the application of fissure sealants and full-mouth FV. Information is provided on the services delivered as well as on the oral health of the Indigenous children who received these services. This report provides a level of accountability for health service delivery in an area of critical need for Indigenous children in the Northern Territory, and helps build the evidence needed for program monitoring and evaluation.

1.1 Background

Child oral health in Australia

'Good oral health' refers to a standard of health of oral and related tissues that enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment and that contributes to general wellbeing (UK Department of Health, cited in Chrisopoulos & Harford 2013). Some of the most common conditions leading to poor oral health include dental caries or tooth decay; periodontal (gum) disease; oral infectious diseases; and trauma from injuries (WHO 2012).

Australian children experience relatively good oral health. One international comparison undertaken by the World Health Organization in 2004 found that Australian children had amongst the lowest levels of tooth decay. The mean number of decayed, missing or filled permanent teeth (DMFT: see Section 3.2) of 12 year olds was less than 1.2, similar to countries such as the United Kingdom, Spain, Sweden, the Netherlands, China and South Africa (Peterson et al. 2005).

The 2009 Australian Child Dental Health Survey captures information on children (Indigenous and non-Indigenous) who accessed a school dental health service, in all Australian states and territories except New South Wales and Victoria. The mean score for deciduous teeth (dmft) of children aged 5 was 2.32, and the mean DMFT score of children aged 15 was 2.63. There was much variation, however, between states and territories, with children in the Northern Territory having the highest dmft and DMFT scores (2.68 for children aged 5–6 and 1.88 for children aged 12) (Ha et al. 2013).

A comparison of the oral health status of Indigenous and non-Indigenous children has been published in the 2012 *Aboriginal and Torres Strait Islander Health Performance Framework* (AIHW 2013). This analysis is based on data from the Child Dental Health Survey for New South Wales (2007), South Australia (2008), Tasmania (2008) and the Northern Territory (2008). For these states combined, the mean dmft of Indigenous 6 year olds was almost 2 times as high as that of non-Indigenous children of the same age (3.20 for Indigenous children, compared with 1.62 for non-Indigenous children). The estimate for Indigenous children, however, must be treated with caution, as it is based on a relatively small number of children. In relation to permanent teeth, for New South Wales, South Australia and the Northern Territory combined, the mean DMFT score for Indigenous 12 year olds was 1.4, compared with 0.82 for non-Indigenous 12 year olds (AIHW 2013).

Oral health of Indigenous children in the Northern Territory

As stated above, children in the Northern Territory have higher levels of tooth decay than in other states and territories. It is also the case that Indigenous children in the Northern Territory are much more likely than non-Indigenous children to experience decay. Results from the 2002 Child Dental Health Survey for the Northern Territory showed that the mean dmft of Indigenous children aged 6 was 2.6 times as high as that of non-Indigenous children of the same age (3.96 and 1.53 respectively); and the mean DMFT of Indigenous 12 year olds was 1.6 times as high as non-Indigenous 12 year olds (1.10 and 0.67 respectively) (AIHW DSRU: Armfield 2007).

Another investigation found that, among a birth cohort of young Aboriginal adults (mean age of 18) in the Northern Territory, the mean number of decayed teeth was 8 times as high as that of age-matched participants in the National Survey of Adult Oral Health; the prevalence of moderate or severe periodontal disease was 10 times as high; and the prevalence of calculus, plaque and gingivitis was 1.9, 4.1 and 4.5 times as high, respectively (Jamieson et al. 2010).

The poor oral health of Indigenous children in the Northern Territory was reflected in data from the Child Health Check Initiative Closing the Gap program CHCI(CtG) which ran from August 2007 to June 2012 (Box 1). This program was directed at Indigenous children in prescribed communities of the Northern Territory and largely targeted children with a referral from the program of child health checks rolled-out through the Northern Territory Emergency Response (NTER) (see Appendix C for a map of prescribed communities). Although not a representative sample of Indigenous children in the Northern Territory, data from the CHCI(CtG) program for the period 1 January to 30 June 2012, revealed a mean dmft score of 7.1 for children aged 6, and a mean DMFT for 2.4 for 12 year olds (AIHW 2012).

Factors that influence oral health

A range of factors influence oral health. These include environmental factors, such as levels of fluoride in drinking water, socio-economic factors, remoteness and access to services. Diet and nutrition play an important role, in particular, carbohydrate intake (such as sugary foods and drinks) and exposure to dietary acids (Ha et al. 2013). Acid attacks occur every time food or drinks are consumed, leading to a breakdown of the tooth's surfaces. Knowledge and awareness of dental hygiene are also important factors, as well as health behaviours such as tooth brushing with fluoride toothpaste.

Box 1: The CHCI(CtG) program

The 'CHCI(CtG) program' refers to the Northern Territory Emergency Response Child Health Check Initiative (NTER CHCI) and the Closing the Gap in the Northern Territory National Partnership Agreement (CtG NT). The NTER CHCI was initiated in August 2007 and involved the roll-out of voluntary Child Health Checks targeting Indigenous children living in prescribed communities in the Northern Territory. The program of checks, which finished in June 2009, reached over 10,000 children. The most common conditions identified included ear disease, which affected 30% of children, and oral health problems, which affected 40% of children (AIHW 2012).

In response to this high level of need, the Australian Government initiated a program of follow-up services, including ear and oral health services, initially as part of the NTER CHCI and later through the CtG NT. Clinical dental services have been funded continuously over this time. The follow-up services targeted children who received a referral from their initial Child Health Check, however, other Indigenous children in need in the Prescribed Areas were also able to access these services.

The final report from the CHCI(CtG) program was published by the Australian Institute for Health and Welfare (AIHW) in 2012: *Northern Territory Emergency Response Child Health Check Initiative: follow-up services for oral and ear health: final report 2007–2012.*

1.2 SFNT Oral Health Program

In response to the high level of need for oral health services in the Northern Territory, as identified through the CHCI(CtG) program, the Australian Government has continued to fund the provision of oral health services to Indigenous children through the SFNT agreement. The SFNT OHP commenced in July 2012 and provides funding over a decade to 2021–22. The main features of the SFNT OHP are:

- expansion of the preventive program. While fissure sealants and full-mouth FV applications were provided through the CHCI(CtG), the focus was on Prescribed Areas in the Northern Territory (Appendix C). The SFNT has broadened service delivery to include all Indigenous children under 16 across the Northern Territory. The SFNT program also includes more detailed reporting of these services.
- continuation of a program of clinical services and the provision of tooth extraction under general anaesthetic. This program is focused on providing enhanced services to Indigenous children in remote areas (that is, areas outside the main urban and regional centres of Darwin, Alice Springs, Nhulunbuy and Katherine).

Table 1.1 provides more information on the target populations and scope of both programs.

Table 1.1: CHCI(CtG) and SFNT oral health programs

Type of service	Target population
CHCI(CtG)—August 2007 to June 2012	
Clinical services including extraction under general anaesthetic	Indigenous children under the age of 16 in prescribed communities of the Northern Territory. Children with a referral from NTER Child Health Checks were targeted, however, other children in need in the Prescribed Areas were also able to access services.
Full-mouth FV and fissure sealants	As above.
SFNT—July 2012 onwards	
Clinical services including extraction under general anaesthetic	Indigenous children under the age of 16. Focus on, but not limited to, remote areas of the Northern Territory (that is, areas outside of the main urban and regional centres of Darwin, Alice Springs, Nhulunbuy and Katherine).
Full-mouth FV	Indigenous children in the Northern Territory under the age of 16 with a focus on children between the ages of 18 months and 15 years.
Fissure sealants	Indigenous children in the Northern Territory under the age of 16 with a focus on children between the ages of 6 and 15 years.

SFNT OHP services

The main service elements of the SFNT OHP are described below. Data are collected on these programs.

Full-mouth Fluoride Varnish

Full-mouth FV is a concentrated form of fluoride. A pea size dose is applied in 1 service to as many tooth surfaces as possible. It is a clinical preventive intervention that has shown to be effective in reducing tooth decay (Marinho et al. 2002; Slade et al. 2011). A randomised controlled trial undertaken by Weintraub et al. (2006) showed that caries incidence was over 2 times as high among children in a control group (those who did not receive fluoride varnish) as among those who received the treatment once per year; and almost 4 times as high as those who received full-mouth FV twice per year. The researchers found that, although the efficacy of the treatment improved with more regular applications, 1 application per year yielded substantial improvements, and given the difficulties faced by public facilities in reaching children at regular intervals, 1 application per year constitutes a valuable public health intervention (Weintraub et al. 2006).

Fissure sealants

Fissure sealants are protective adhesive coatings that are applied to the grooves in the biting surfaces of back teeth to prevent the build-up of dental plaque and acids (SA Health 2007). Fissure sealants are usually applied to adult molars as soon as possible after eruption. They have been shown to be effective in preventing dental caries (Ahovuo-Saloranta et al. 2008), particularly in high–risk individuals (Weintraub 2001).

Clinical services including extraction under general anaesthetic

Clinical services include diagnostic services, periodontics (treatment of gums), endodontics (pulp treatments), restorative fillings, bridges and crowns, tooth extractions, orthodontics (dental braces), and prosthetic treatments (replacement of teeth). Fissure sealants and full-mouth FV applications can be provided at clinical visits, as well as other preventive services such as oral health education and instructions on dental hygiene.

In the first 3 years of the SFNT OHP there is provision for tooth extractions performed in hospital under general anaesthetic. While most extractions can be undertaken at dental clinics with topical or local anaesthetic, there may be some cases where children need to be treated in hospital under general anaesthetic (due to younger age, complex medical conditions or extent of treatment required).

Box 2: Service delivery, outcomes and evaluation

In order to make long-term improvements to the oral health of Indigenous children in the Northern Territory, the IP includes a series of performance benchmarks and targets. The current performance benchmarks outlined in the IP include: number of occasions of clinical services, dental surgeries under general anaesthetic, number of children receiving fissure sealants, twice-yearly fluoride varnish applications, and improvement in the oral health status of the targeted population. Some program payments are linked to measured improvements in the oral health status of Indigenous children in the Northern Territory.

In the early stages of the program, however, it was found that these benchmarks needed to be adjusted so that the amount and type of services that are required to be delivered are practical, given the high need for restorative services and the workforce challenges to deliver the preventive services.

At the time of preparing this report, variations to these benchmarks and targets were being negotiated between the Department of Health and the Northern Territory Government, and had not been finalised. It is expected that the revised benchmarks and targets will be reported against in future reports in this series, to provide a level of accountability.

The SFNT OHP is scheduled to be evaluated in 2015–16 by an independent consultant. The evaluation will include an examination of access to oral health services experienced by children across the Northern Territory and the equity of access to these services.

1.3 Information collected

The information presented in this report is derived from the SFNT dental data collection. This collection was established to monitor the progress of oral health services delivered through the SFNT program.

Data collected by Oral Health Services NT (OHS-NT) are transmitted to the AIHW in electronic format. For services delivered by Aboriginal Community Controlled Health Organisations (ACCHOs), the dental professional completes a questionnaire which is sent to the AIHW in paper format.

The data collected include:

- the child's basic demographic information—date of birth, sex and community identification number
- the child's hospital registration number (HRN)
- type(s) of dental services provided
- type(s) of dental problems treated
- the number of decayed, missing and filled teeth—for both permanent (DMFT) and deciduous (dmft) teeth
- recommendation for extraction under general anaesthetic
- requirement for follow-up services.

Data collection forms are included in Appendix B.

Consent for sharing information

The data that the AIHW receives depends on children's parents or guardians consenting to share this information. There are 2 scenarios for the provision of data under the consent requirements:

- if consent is given, all de–identified data are sent to the AIHW
- if consent is not given, only aggregate information on the number of services and the number of children is sent to the AIHW.

Limitations of the data

The SFNT oral health data collection has some limitations that should be considered when interpreting the findings.

- The scope of this report is limited to services provided under the SFNT OHP. Dental services provided through other funding sources (for example, other services funded by the Northern Territory Government or services provided by the private sector) are not included.
- During the first 6 months of the SFNT OHP (July–December 2012), the consent rate was very low (around 30% for clinical services and 25% for preventive services). This was because the SFNT OHP was in the early stages of development and some service providers were not aware of the consent arrangements. This means that the data collected in the early phase of the program are not representative of all children who received a SFNT dental service, and as such, much of the detailed analyses in this report are limited to the 2013 calendar year, where the consent rate is sufficient for analysis (around 80%). This information is noted in relevant tables.
- Because children's names are not provided, the AIHW can only track children using their HRN. A very small proportion of children (1.1%) cannot be tracked due to missing or incorrect HRN. These are noted in relevant tables.
- As mentioned above, with consent arrangements, the AIHW only receives detailed information on dental services if children's guardians give consent for sharing the information. Apart from the total number of services and the number of children who received services, other information in this report is representative of children for whom consent was obtained rather than all children who received services.

- Children who receive SFNT oral health services are not a random sample of Indigenous children in the Northern Territory and, as such, the findings in this report may not be representative of the Northern Territory Indigenous child population. Although all Indigenous children under the age of 16 in the Northern Territory are eligible for services provided under the oral health program, not all children had access to these services in this reporting period.
- Geographic information is based on the area where the service was provided, rather than the community of residence of the child.
- Of the six ACCHOs in the Northern Territory that have been funded to deliver SFNT oral health services, 3 deliver services directly while the others sub-contract services from OHS-NT. For this reporting period, the AIHW has only received data from the 3 ACCHOs that deliver services directly.
- A data quality statement is provided in Appendix E.

1.4 About this report

The information in this report relates to oral health services provided as part of the SFNT program from July 2012 to December 2013.

This report contains the following chapters:

- Chapter 2, **Dental service delivery**: provides information on the number of dental services provided, including clinical services, extraction under general anaesthetic, and preventive services (that is, fissure sealants and full-mouth FV).
- Chapter 3, **Oral health status of children**: examines types of problems treated, information on decayed, missing and filled teeth (dmft and DMFT scores), and changes in oral health status over time.
- It must be noted that this report does not include information on the SFNT oral health benchmarks and targets, as at the time of writing, these had not been finalised (see Box 2). It is expected, however, that these will be included in future reports.

2 Dental service delivery

2.1 How are dental services delivered?

While SFNT services are mainly provided by the Northern Territory Government through OHS-NT, there are six ACCHOs that have been contracted to provide clinical and preventive services.

This section describes the models of service delivery used by OHS-NT and the ACCHOs.

2.1.2 SFNT services delivered by OHS-NT

OHS-NT provides a range of oral health services including routine care (dental examinations and treatments including restorative fillings, extractions, endodontics and prosthetic services); preventive care (including fluoride, fissure sealants and oral hygiene); emergency care (pain and trauma management); and oral health promotion. Specialist services include orthodontics, oral surgery, general anaesthetic treatment in hospital and some periodontics.

OHS-NT provide these services in a format which is distinctly different to other states and territories. This is due to the large size of the Northern Territory (covering an area of about 1.3 million km^2) and because much of the population resides in regional areas and remote communities. Distance, unpredictable weather, available workforce, cost, transport and accommodation availability are just some of the factors which affect dental service provision throughout the Northern Territory. Figure 2.1 shows an aerial view of Warruwi, one of the communities serviced by OHS-NT, and a dental room on the Tiwi Islands.

OHS-NT use a mix of multi–chair community clinics (clinics with several resident oral health professionals); single–chair school clinics; remote or special needs clinics; and mobile dental trucks.

Multi-chair community clinics are located in Darwin, Palmerston, Nhulunbuy, Katherine, Alice Springs and Tennant Creek.

Source: Northern Territory Department of Health.

Figure 2.1: Aerial view of Warruwi community (Goulburn Island), North Arnhem Land (left), and the dental room at the Nguiu Health Centre, Tiwi Islands (right)

Single-chair school clinics are located in various primary schools in Darwin, Palmerston, Katherine, Tennant Creek and Alice Springs.

Single-chair remote clinics are co-located with health centres in remote communities throughout Northern Territory in both the Top End and Central Australia.

A single-chair special needs clinic is located at the Royal Darwin Hospital.

Mobile dental trucks (single-chair) visit small remote communities in Central Australia that do not have a dental chair within their health centre.

Remote clinics and mobile dental trucks are serviced by outreach dental teams consisting of either a dentist or dental/oral health therapist accompanied by a dental assistant. Regular OHS-NT staff are also supplemented by dental staff employed on short-term (3–4 week) contracts through the Remote Area Health Corps (RAHC). This service delivery model increases the capacity for providing services without compromising the staffing of regular services. The teams of 2 travel to communities for 1–3 weeks at a time. In the Top End the teams travel by 4WD to closer communities (up to 4 hours drive) and by chartered light aircraft or scheduled commercial flights (up to 2.5 hours flight times). In Central Australia the teams travel by 4WD with travel times up to 9 hours or by chartered light aircraft.

Oral health treatment under general anaesthetic is provided at Northern Territory public hospitals by regular OHS-NT staff and visiting specialists. SFNT funding has enabled agreements with Westmead Children's Hospital and the John James Foundation for general anaesthetic blitzes at Gove District Hospital, Katherine District Hospital, Tennant Creek Hospital and Alice Springs Hospital aimed at treating Indigenous children from remote locations. Numbers of general anaesthetic procedures are reliant on the availability of staff and theatre time, as well as the availability of transport and the willingness of children and their carers to travel from remote locations to undertake the procedures.

The provision of preventive services is part of routine dental care. These, along with other dental services, are provided in all dental clinics after dental examination as a part of the individual dental treatment plan with informed verbal consent from the parent or guardian.

In remote settings, where trained dental staff may not be available, full-mouth FV may be applied by primary health care workers who have undergone Healthy Smiles training (a certificate course run by OHS-NT). The Healthy Smiles training allows remote nurses and Aboriginal health workers to apply fluoride varnish to children aged between 18 months and 5 years as a part of a care program (such as Healthy Under 5 Kids in NT Government clinics) in remote health centres.

SFNT services delivered by ACCHOs

Six ACCHOs were funded in the reporting period to deliver SFNT oral health services. These services expressed an interest in delivering dental services and include Katherine West Health Board, Laynhapuy Homelands Aboriginal Corporation, Marthakal Homeland and Resource Centre Australia, Danila Dilba Health Service, Wurli Wurlinjang Health Service and Miwatj Health Aboriginal Corporation. Three ACCHOs deliver services directly, while the remaining organisations sub-contact services from OHS-NT. The AIHW only receives data from the ACCHOs that deliver services directly.

A range of models were used, depending on workforce availability, the geographical location of patients, existing dental services and the level of funding provided. All ACCHOs assist in coordinating patients to receive dental treatment. Some employ permanent dental staff such as a dentist, dental nurse, dental technician, dental assistant or dental therapist, some employ temporary dental staff via the RAHC program, whilst others subcontract services from OHS-NT. Patients can be transported to larger centres to receive services where oral health staff and equipment are located whilst others deliver services in home communities. The amount and type of equipment within each ACCHO varies. For example, Marthakal Homeland Health Service has a mobile dental van, whilst Laynhapuy Homelands Aboriginal Corporation has 2 portable sets of dental equipment (see Box 3 for a case study on how services are delivered in the Laynhapuy Homelands).

Some ACCHOs are using their primary health care staff to provide preventive dental care, including full-mouth FV to children, if these staff have completed the Healthy Smiles training package. (The Healthy Smiles training package must be fully completed before the staff member can apply full-mouth FV.)

Box 3: Case study: Laynhapuy Homelands Aboriginal Corporation

The Laynhapuy Homelands are situated in North East Arnhem Land, with a population of about 1,100 Yolngu residents. **Laynhapuy Homelands Aboriginal Corporation** (LHAC) delivers primary health services to 20 remote communities which are located approximately 100 to 220 kilometres by gravel road from Nhulunbuy, the main service centre in the area. Since January 2009, Laynhapuy Health Service has been providing oral health services though the CHCI(CtG) and SFNT programs.

The Laynhapuy oral health service is an entirely mobile service. Dental teams, consisting of a therapist and assistant, are deployed to the larger homelands communities to deliver services for periods of time. Clients from the smaller outlying homelands are transported to access these services. The oral health teams move equipment and services to another site when all children have been seen. LHAC also employs an assistant/coordinator to manage the program.

An important aspect of the work undertaken by LHAC is information sharing and a focus on prevention. Dental staff work alongside Yolngu health workers, youth workers and community members to deliver oral health education and prevention programs. LHAC has had much success in engaging community members through innovative programs, such as football club coloured mouthguards for teenage boys, 'mums and bubs' days, and a 'girls' day in'. These programs have proven to be a great forum for delivering key messages about oral health and highlighting how dental health can have a positive impact on overall health and wellbeing.

This is particularly important in the Laynhapuy Homelands because of the presence of rheumatic heart disease (RHD). This is damage to the heart that remains after acute rheumatic fever (ARF), an illness caused by a reaction to a bacterial infection and most likely to affect children between the ages of 5 and 14. While rare in developed countries, ARF is prevalent in remote communities in the Northern Territory.

An important aspect of preventing further damage to heart valves for people diagnosed with RHD is to maintain healthy teeth and gums. Poor oral hygiene and gum disease can lead to bacteraemia, which increases the risk of infective endocarditis—a heart condition with increased risk for people who have RHD.

The LHAC oral health program, funded through SFNT, prioritises preventative oral health services to children diagnosed with RHD. Audits show that in areas where LHAC delivers oral health services, up to 95% of clients diagnosed with RHD under the age of 18 had a documented dental visit within the previous 12 months. Audits also show that without oral health programs based in the homelands, clients do not access oral health services. LHAC believes that oral health services are imperative for people diagnosed with RHD and can result in improved prognoses and reduced rates of heart valve replacement and extensive post valve replacement care.

Oral health education with children from Laynhapuy Homelands.

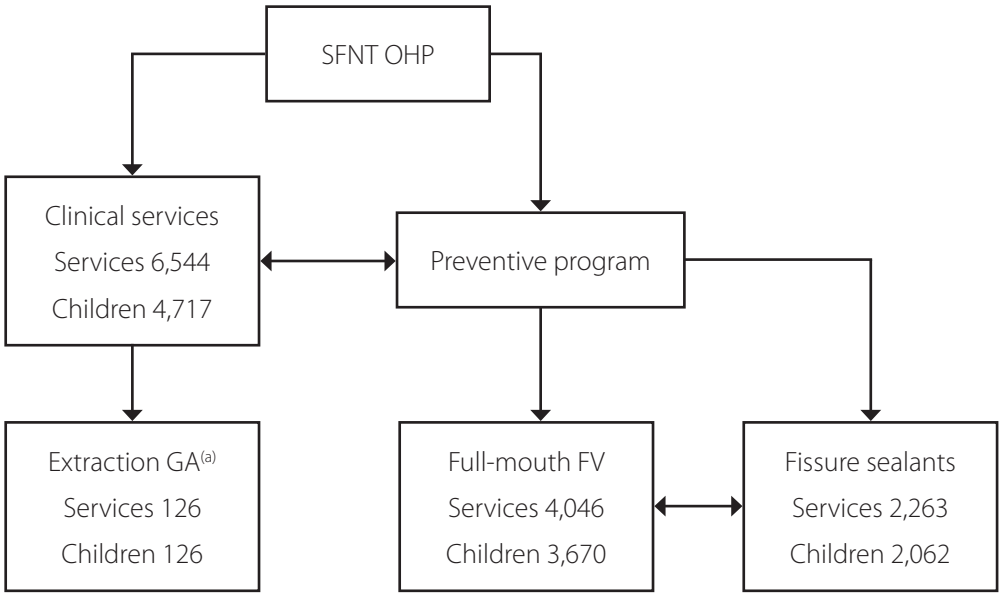
Source: Information and photograph provided by Laynhapuy Homelands Aboriginal Corporation

2.2 Number of services and children

Overall, 3,670 Indigenous children received services where a full-mouth FV application was provided, and 2,062 received services where fissure sealants were applied (Figure 2.2). A child may receive 1 or more fissure sealants in 1 service occasion.

A total of 4,717 children received 6,544 occasions of clinical service, including 126 children who received tooth extraction under general anaesthetic. An 'occasion of clinical service' refers to a dental visit where a child may be provided with several different service activities, such as diagnosis and assessment, fillings, gum treatment or oral health education.

This section presents more detailed information on these main service components of the SFNT OHP.



(a) Extraction in hospital under general anaesthetic

Notes

1. A child may receive multiple types of services, for example, clinical services and preventive services.
2. Includes consented and non-consented data, and therefore, the total number of children who received SFNT oral health services cannot be estimated. As non-consented data is provided in aggregate form individual children cannot be tracked across the different service types.
3. A 'clinical service' refers to an occasion of service.
4. A 'full-mouth FV service' refers to an occasion of service where a child received a full-mouth FV application.
5. A 'fissure sealant service' refers to an occasion of service where a child received a fissure sealant application. A child may receive several sealants in 1 service application.

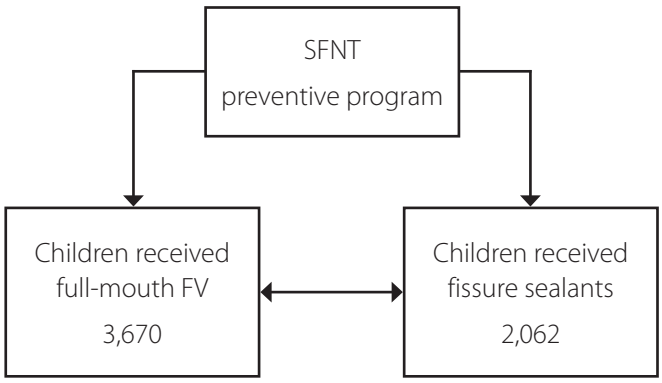
Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Figure 2.2: SFNT OHP, types of services provided, and Indigenous children who received services, July 2012–December. 2013

2.2.1 SFNT preventive program

The SFNT program of preventive services, consisting of the provision of fissure sealants and full-mouth FV, is delivered by the Northern Territory Government (OHS-NT) and ACCHOs.

Between July 2012 and December 2013, a total of 3,670 children received services where full-mouth FV was applied, and 2,062 received services where fissure sealants were provided (Figure 2.3).



Notes

1. Categories are not mutually exclusive. Children may receive full-mouth FV and fissure sealant services.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Figure 2.3: SFNT preventive program, Indigenous children who received full-mouth FV or fissure sealants, July 2012–December 2013

Full-mouth FV

From July to December 2012, only 429 full-mouth FV services were provided and consent for sharing information with the AIHW was collected for a small proportion (26%) of children who received services (Table 2.1). About half of all services involving the application of full-mouth FV were provided in the six month period from July to December 2013 (2,155) and 1,462 were provided from January to June 2013 (Figure 2.4). The consent rates improved in 2013 (73% from January to June, and 91% from July to December). As discussed earlier, children's families must provide consent for their data (at the unit record level) to be shared with the AIHW, otherwise only a limited amount of aggregated data is sent to the AIHW.

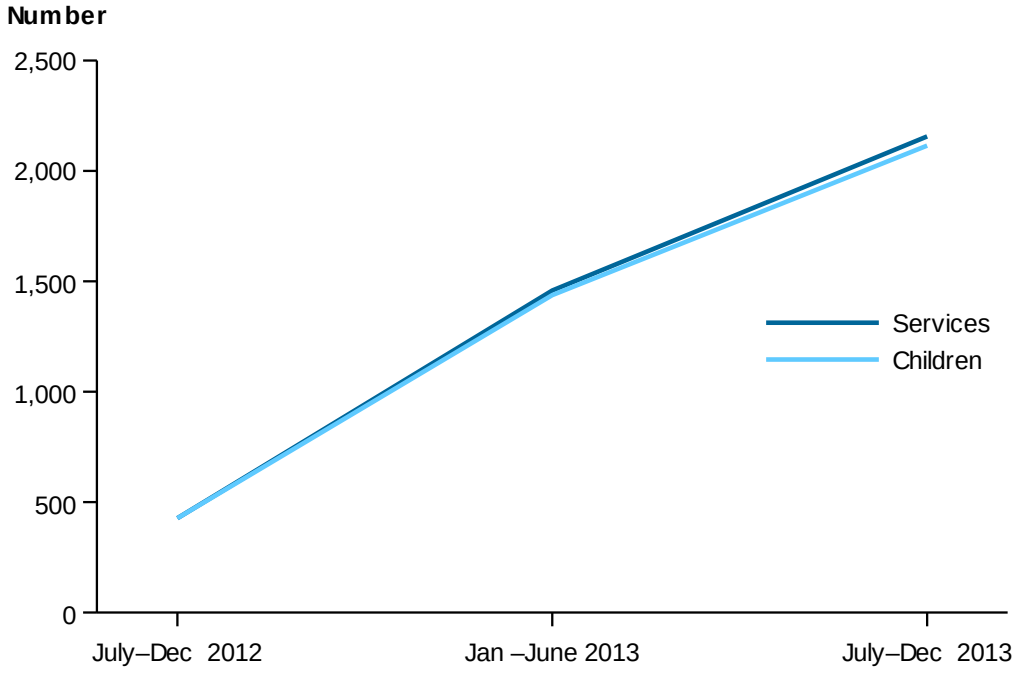
Table 2.1: Number of full-mouth FV services, and Indigenous children who received services, by consent status, OHS-NT services only[(a)], July 2012–December 2013

	Consent number		Non-consent number[(b)(c)]		Total number		Consent rate[(d)] %	
Time period	**Services**	**Children[(e)]**	**Services**	**Children**	**Services**	**Children[(e)]**	**Services**	**Children**
July–Dec 2012	113	111	316	316	429	427	26.5	26.0
Jan–June 2013	1,076	1,056	386	386	1,462	1,442	74.6	73.2
July–Dec 2013	1,973	1,936	182	182	2,155	2,118	93.2	91.4
Sub–total Jan–Dec 2013	*3,049*	*2,761*	*568*	*568*	*3,617*	*3,329*	*91.6*	*82.9*
Total July 2012–Dec 2013	**3,162**	**2,786**	**884**	**884**	**4,046**	**3,670**	**86.2**	**75.9**

(a) It is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers.
(b) Where consent for the sharing of detailed information has not been provided and data has been supplied in aggregate form.
(c) Non-consent data are only available for the number of children, and as such, each child had been counted as receiving 1 service.
(d) Proportion of consented data.
(e) As children can receive services in each time period, the sum of the column may not equal the total.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.



Notes

1. It is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers and these data are not included.
2. Services include only those that were provided through the SFNT program.

Source: Table 2.1.

Figure 2.4: Number of full-mouth FV services, and Indigenous children who received services, OHS-NT services only, July 2012–December 2013

It must be also noted that these data only include services provided by OHS-NT, as it is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers.

As most children received only 1 full-mouth FV service over the reporting period, there is minimal difference between the number of services and number of children.

In 2013, it is estimated that 14% of Indigenous children under the age of 16 in the Northern Territory received a service where full-mouth FV was applied (Table 2.2). The Health Service Delivery Areas (HSDAs) (see Appendix D) with the highest estimated population coverage were Top End West (26%), West Arnhem (24%) and Alice Springs Urban (22%). The population coverage ranged from 12 to 18% in Katherine Urban, Central Australia, Borroloola, East Arnhem, Tiwi and Maningrida; and was 10% or less in Barkly, Darwin Rural, Darwin Urban, Katherine East and Katherine West.

Table 2.2: Number of full-mouth FV services, and Indigenous children who received services, by Health Service Delivery Area[(a)], OHS-NT services only[(b)], July 2012–December 2013

	July–Dec 2012		Jan–Dec 2013			
Health Service Delivery Area	Services	Children[(c)]	Services	Children[(c)]	Population Indigenous children under 16[(d)]	Population coverage Jan–Dec 2013[(e)] %
Alice Springs Urban	67	67	500	448	2,005	22.3
Barkly	3	3	117	114	1,355	8.4
Borroloola	6	6	75	74	504	14.7
Central Australia	19	19	504	486	3,714	13.1
Darwin Rural	3	3	41	41	407	10.1
Darwin Urban	72	71	514	471	4,924	9.6
East Arnhem	90	89	594	545	3,479	15.7
Katherine East	2	2	88	87	1,430	6.1
Katherine Urban	3	3	127	121	1,056	11.5
Katherine West	—	—	59	57	973	5.9
Maningrida	51	51	197	184	1,015	18.1
Tiwi	44	44	140	129	752	17.1
Top End West	24	24	388	362	1,416	25.6
West Arnhem	45	45	237	206	873	23.6
Hospital	—	—	36	36	. .	. .
Total	**429**	**427**	**3,617**	**3,329**	**23,905**	**13.9**

— nil or rounded to zero.

. . not applicable.

(a) Based on area where service provided rather than place of residence of the child.

(b) It is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers.

(c) As children can receive services in multiple regions, the sum of the column may not equal the total.

(d) Population estimates for HSDAs for 2013, based on information provided by the Department of Health and ABS population projections (ABS 2014). See Appendix D for details.

(e) Proportion of Indigenous population under 16 that received services.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013; Department of Health; ABS 2014.

Table 2.3 presents information on children who received full-mouth FV applications, by age and by sex. It is based on children who provided consent for the sharing of information, and as such, is limited to the 2013 calendar year where the consent rate reached 83%. Out of a total of 2,761 Indigenous children who received a service involving the application of full-mouth FV and who provided consent for the sharing of information, just over half (1,474) were aged 6–11 (Table 2.3). Almost one third were aged 0–5 (791), and under 20% were 12–15 (496). Similar numbers of boys and girls received services (1,364 and 1,397 respectively).

Almost 90% of children received 1 service only (Table 2.3). This varied little by age (Figure 2.5) or sex.

Table 2.3: Number of Indigenous children who received full-mouth FV services, where consent for sharing information was provided, by age, sex and frequency of service, OHS-NT services only[(a)], 2013

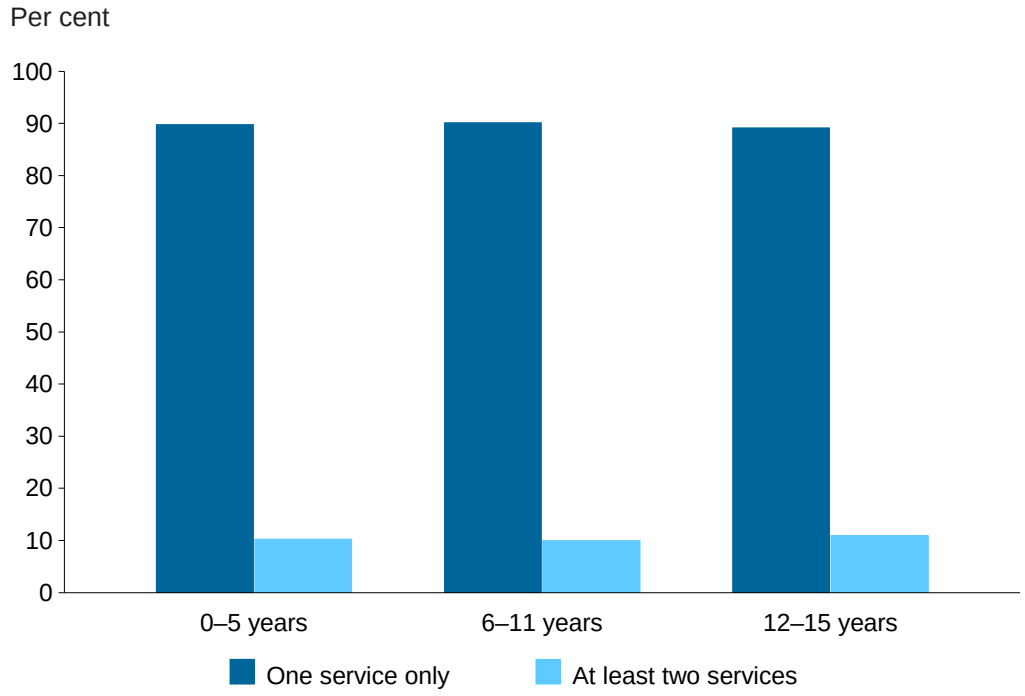
	Children with one service only		Children with at least 2 services		Total children	
	Number	%	Number	%	Number	%
Age group[(b)]						
0–5 years	710	89.8	81	10.2	791	100.0
6–11 years	1,328	90.1	146	9.9	1,474	100.0
12–15 years	442	89.1	54	10.9	496	100.0
Total	**2,480**	**89.8**	**281**	**10.2**	**2,761**	**100.0**
Sex						
Male	1,208	88.6	156	11.4	1,364	100.0
Female	1,272	91.1	125	8.9	1,397	100.0
Total	**2,480**	**89.8**	**281**	**10.2**	**2,761**	**100.0**

(a) It is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers.

(b) Age at last service.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.



Notes

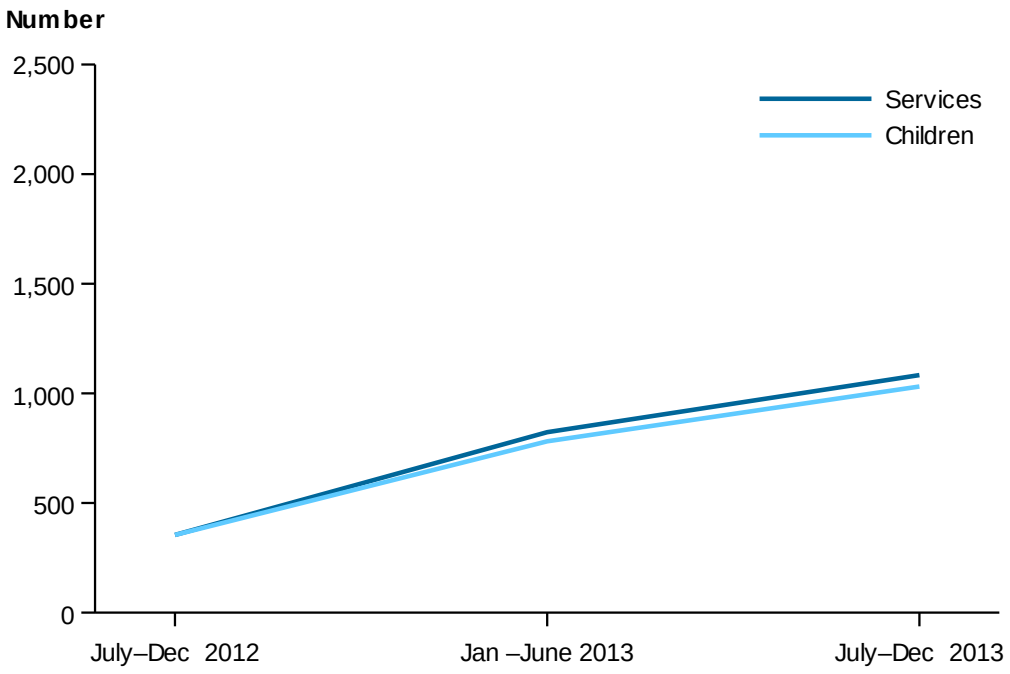
1. It is not possible to identify children who received full-mouth FV in data submitted by ACCHO providers and these data are not included.
2. Age at last service.
3. Services include only those that were provided through the SFNT program.

Source: Table 2.3.

Figure 2.5: Indigenous children who received full-mouth FV service, by age and frequency of service, where consent for sharing information was provided, OHS-NT services only, 2013

Fissure sealants

A 'fissure sealant service' refers to an occasion of service where fissure sealants are applied. Children may receive 1 or more individual sealants in 1 service. In the first 6 months of the program (July to December 2012), 358 services involving the application of fissure sealants were provided. Around half of all fissure sealant service occasions (1,086) were provided from July to December 2013 and 819 were provided from January to June 2013 (Figure 2.6 and Table 2.4).



Notes

1. A 'fissure sealant service' refers to an occasion of service where a fissure sealant was applied. Children may receive 1 or more fissure sealants in 1 occasion of service.
2. Services include only those that were provided through the SFNT program.

Source: Table 2.4.

Figure 2.6: Number of fissure sealant services, and Indigenous children who received services, July 2012–December 2013

Table 2.4: Number of fissure sealant services[(a)], and Indigenous children who received services, by consent status, July 2012–December 2013

	Consent number		Non-consent number[(b)(c)]		Total number		Consent rate[(d)] %	
Time period	**Services**	**Children[(e)]**	**Services**	**Children**	**Services**	**Children[(e)]**	**Services**	**Children**
July–Dec 2012	91	84	267	267	358	351	25.9	23.9
Jan–June 2013	586	544	233	233	819	777	75.4	70.0
July–Dec 2013	985	930	101	101	1,086	1,031	95.5	90.2
Sub–total Jan–Dec 2013	*1,571*	*1,419*	*334*	*334*	*1,905*	*1,753*	*89.6*	*80.9*
Total July 2012–Dec 2013	**1,662**	**1,461**	**601**	**601**	**2,263**	**2,062**	**80.6**	**70.9**

(a) A 'fissure sealant service' refers to an occasion of service where a fissure sealant was applied. Children may receive 1 or more fissure sealants in 1 occasion of service.

(b) Where consent for the sharing of detailed information has not been provided and data has been supplied in aggregate form.

(c) Non-consent data are only available for 'number of children', and as such, each child had been counted as receiving 1 service.

(d) Proportion of services or children where consent for sharing information was provided.

(e) As children can receive services in each time period, the sum of the column may not equal the total.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

As with full-mouth FV services, the consent rate was very low for children who received fissure sealants from July to December 2012 (24%), but increased to 70% in the period January to June 2013, and reached 90% between July and December 2013 (Table 2.4).

In 2013, it is estimated that 7% of the Indigenous population under the age of 16 in the Northern Territory received a service where fissure sealants were applied (Table 2.5). Alice Springs Urban had the highest estimated population coverage (17%); the coverage ranged between 5 and 10% in Barkly, Tiwi, Darwin Urban, Katherine Urban, Maningrida, East Arnhem, Top End West, West Arnhem and Central Australia; and was below 5% in Borroloola, Katherine East and Katherine West.

Table 2.5: Number of fissure sealant services[(a)], and Indigenous children who received services, by Health Service Delivery Area[(b)], July 2012–December 2013

	July–Dec 2012		Jan–Dec 2013			
Health Service Delivery Area	Services	Children[(c)]	Services	Children[(c)]	Population Indigenous children under 16[(d)]	Population coverage Jan–Dec 2013[(e)] %
Alice Springs Urban	98	97	367	345	2,005	17.2
Barkly	48	47	62	62	1,355	4.6
Borroloola	1	1	18	18	504	3.6
Central Australia	69	69	367	353	3,714	9.5
Darwin Rural	1	1	13	12	407	2.9
Darwin Urban	68	65	304	266	4,924	5.4
East Arnhem	32	30	262	235	3,479	6.8
Katherine East	2	2	23	22	1,430	1.5
Katherine Urban	2	2	74	68	1,056	6.4
Katherine West	—	—	15	13	973	1.3
Maningrida	5	5	89	80	1,015	7.9
Tiwi	3	3	37	35	752	4.7
Top End West	12	12	141	134	1,416	9.5
West Arnhem	16	16	89	80	873	9.2
Hospital	1	1	44	44	. .	. .
Total	**358**	**351**	**1,905**	**1,753**	**23,905**	**7.3**

— nil or rounded to zero.

. . not applicable.

(a) A 'fissure sealant service' refers to an occasion of service where a fissure sealant was applied. Children may receive 1 or more fissure sealants in 1 service.

(b) Based on area where service provided rather than residence of the child.

(c) As children can receive services in multiple regions, the sum of the column may not equal the total.

(d) Population estimates for 2013, based on information provided by the Department of Health and ABS population projections (ABS 2014). See Appendix D for details.

(e) Proportion of Indigenous population under 16 that received services.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013; Department of Health; ABS (2014).

Table 2.6 presents information on the children who received fissure sealants. by age and by sex. It is based on children who provided consent for the sharing of information, and as such, is based on the 2013 calendar year. Out of a total of 1,419 Indigenous children who received fissure sealants and provided consent for the sharing of information in 2013, almost two thirds (65%) were aged 6–11, 7% were aged 0–5, and around one quarter (28%) were 12–15 (Figure 2.7). Similar numbers of boys and girls received services (49% and 51% respectively).

Table 2.6: Number of fissure sealant services[(a)], and Indigenous children who received services, where consent for sharing information was provided, by age[(b)] and by sex, 2013

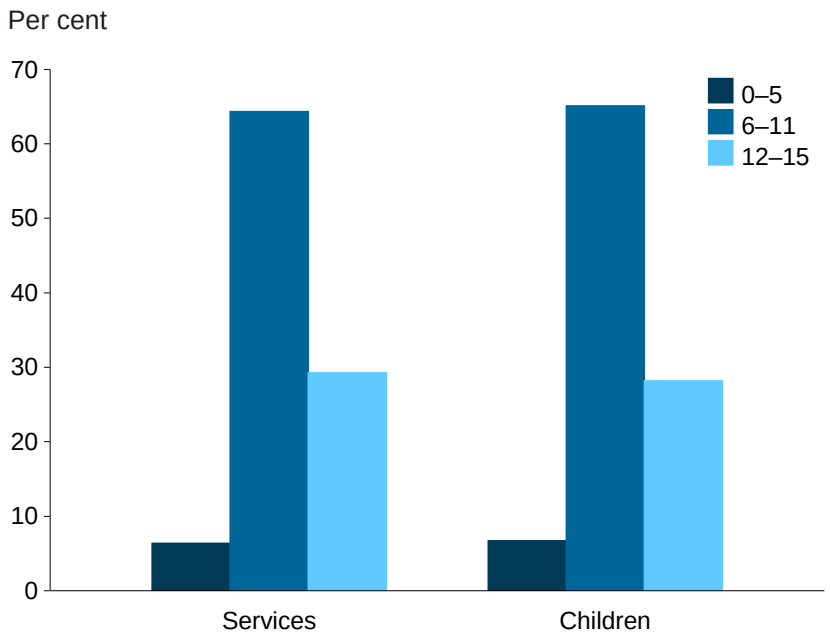
	Services		Children	
	Number	%	Number	%
Age group				
0–5 years	710	89.8	81	10.2
6–11 years	1,328	90.1	146	9.9
12–15 years	442	89.1	54	10.9
Total	**2,480**	**89.8**	**281**	**10.2**
Sex				
Male	1,208	88.6	156	11.4
Female	1,272	91.1	125	8.9
Total	**2,480**	**89.8**	**281**	**10.2**

(a) A 'fissure sealant service' refers to an occasion of service where a fissure sealant was applied. Children may receive 1 or more fissure sealants in 1 service.

(b) Age at last service.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013; Department of Health; ABS (2014).



Notes

1. A 'fissure sealant service' refers to an occasion of service where a fissure sealant was applied. Children may receive 1 or more fissure sealants in 1 service.
2. Age and sex at last service.
3. Services include only those that were provided through the SFNT program.

Source: Table 2.6.

Figure 2.7: Number of fissure sealant services, and Indigenous children who received services, where consent for sharing information was provided, by age and by sex, 2013

Table 2.7 provides information on the number of individual sealants provided to children. A child may receive several sealants in 1 service. The table provides only data on services delivered by OHS-NT, as it is not possible to identify the number of individual sealants in data provided by ACCHO services. It is also based on the 2013 calendar year and only includes services where consent for the sharing of information was obtained.

During 2013, a total of 1,384 children were provided with 5,900 individual fissure sealants. The average number of sealants per child was 4.3. Children aged 12–15 had the highest average number of sealants (5.7) (Figure 2.8).

Table 2.7: Number of fissure sealants[(a)], and Indigenous children who received sealants, OHS-NT services only[(b)], where consent for sharing information was provided, by age and by sex, 2013

	Sealants		Services		Children		Average no. sealants	
	Number	%	Number	%	Number	%	Per service	Per child
Age group[(c)]								
0–5	260	4.4	95	6.2	92	6.6	2.8	2.7
6–11	3,448	58.4	989	64.7	906	65.5	3.8	3.5
12–15	2,192	37.2	444	29.1	386	27.9	5.7	4.9
Total	**5,900**	**100.0**	**1,528**	**100.0**	**1,384**	**100.0**	**4.3**	**3.9**
Sex								
Male	2,682	45.5	739	48.4	672	48.6	4.0	3.6
Female	3,218	54.5	789	51.6	712	51.4	4.5	4.1
Total	**5,900**	**100.0**	**1,528**	**100.0**	**1,384**	**100.0**	**4.3**	**3.9**

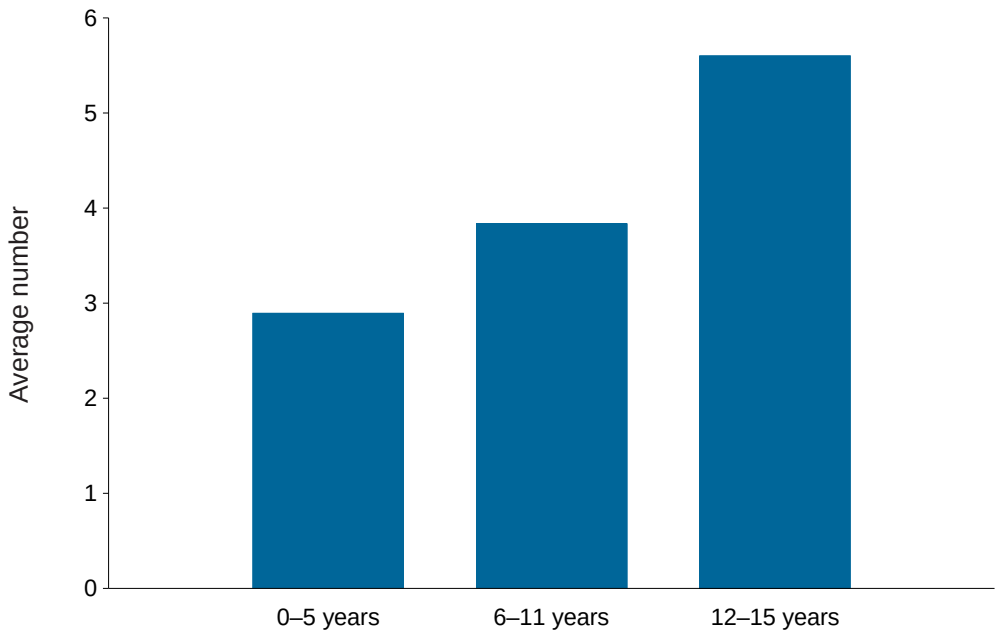
(a) Fissure sealants applied to individual teeth. A child may receive several sealants in 1 service.

(b) It is not possible to identify the number of individual sealants in data supplied by ACCHO providers.

(c) Age at last service.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.



Notes

1. Fissure sealants applied to individual teeth. A child may receive several sealants in 1 service.
2. It is not possible to identify the number of individual sealants in data supplied by ACCHO providers and these data are not included.
3. Age at last service.
4. Services include only those that were provided through the SFNT program.

Source: Table 2.7.

Figure 2.8: Average number of fissure sealants per child, OHS-NT services only, where consent for sharing information was provided, by age, 2013

2.2.2 Clinical services

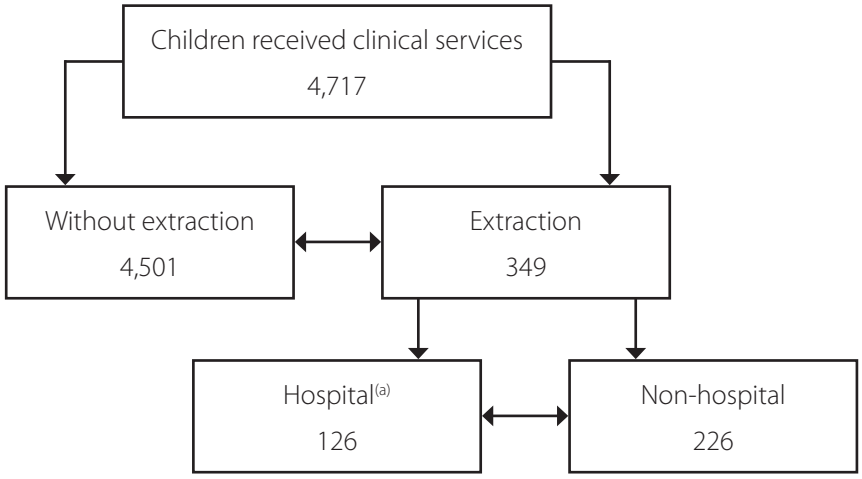
'Clinical occasions of service' involve a range of service activities such as restorative services; tooth extraction; diagnostic services or assessments; orthodontic; and periodontic services. Oral health education, dental hygiene advice and diet advice may also be offered. Most extractions are undertaken at dental clinics with topical or local anaesthetic, however, there are some cases where children are treated in hospital under general anaesthetic.

Full-mouth FV and fissure sealants may be provided at clinical visits, however, these services were examined separately in Section 2.2.1.

From July 2012 to December 2013, a total of 4,717 Indigenous children were provided with 6,544 occasions of clinical service (including tooth extractions). Of the 349 children who were provided with extractions, 126 were treated in hospital under general anaesthetic (Figure 2.9).

The number of clinical services has gradually increased since the implementation of the SFNT program. There were 1,748 occasions of services provided from July to December 2012, 1,962 from January to June 2013, and 2,834 from July to December 2013 (Figure 2.10 and Table 2.8).

The consent rate gradually increased over the course of the program. It was lowest in the first 6 months of the SFNT program (32% for children), but improved to 64% during the next six months, and reached 82% from July to December 2013 (Table 2.8).



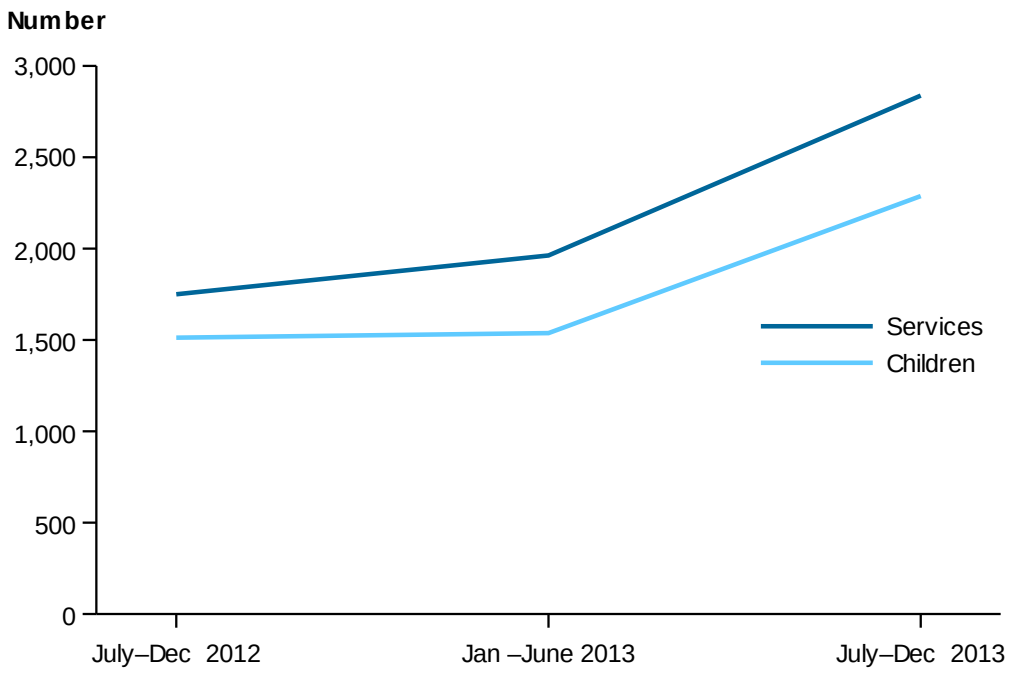
(a) Treatment in hospital under general anaesthetic.

Notes

1. Categories are not mutually exclusive, as children can receive clinical services and extraction.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Figure 2.9: Indigenous children who received clinical services (including extractions under general anaesthetic), July 2012–December 2013



Notes

1. A 'service' refers to an occasion of service.
2. Services include only those that were provided through the SFNT program.

Source: Table 2.8.

Figure 2.10: Clinical services (including extractions under general anaesthetic), by number of Indigenous children and services, July 2012–December 2013

Table 2.8: Number of clinical services (including extractions under general anaesthetic), and Indigenous children who received services[(a)], by consent status, July 2012–December 2013

	Consent number		Non-consent number[(b)]		Total number		Consent rate[(c)] %	
Time period	**Services**	**Children[(d)]**	**Services**	**Children**	**Services**	**Children[(d)]**	**Services**	**Children**
July–Dec 2012	573	485	1,175	1,022	1,748	1,507	32.8	32.2
Jan–June 2013	1,321	983	641	554	1,962	1,537	67.3	64.0
July–Dec 2013	2,387	1,883	447	407	2,834	2,290	84.2	82.2
Sub–total Jan–Dec 2013	*3,708*	*2,596*	*1,088*	*961*	*4,796*	*3,557*	*77.3*	*73.0*
Total July 2012–Dec 2013	**4,281**	**2,734**	**2,263**	**1,983**	**6,544**	**4,717**	**65.4**	**58.0**

(a) A 'service' refers to an occasion of service.

(b) Where consent for sharing detailed information was not provided and data supplied in aggregate form.

(c) Proportion of services or children where consent for sharing information was provided.

(d) As children can receive services in each time period, the sum of the column may not equal the total.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Table 2.9 presents information on Indigenous children who were provided with tooth extractions under general anaesthetic. Most extractions under general anaesthetic were delivered in the period from January to June 2013 (90), with 26 being provided from July to December 2013, and 10 in the first 6 months of the SFNT OHP. The consent rate was lowest in this period (20%), but reached over 90% in the second half of 2013 (Table 2.9).

As discussed in Section 2.1.2, the numbers of general anaesthetic procedures are reliant on available staff, availability of theatre time and transport and the willingness of children and their carers to travel from remote locations to undertake the procedures.

Table 2.9: Extractions under general anaesthetic, number of Indigenous children and services[(a)], by consent status, July 2012–December 2013

	Consent number		Non-consent number[(b)]		Total number		Consent rate[(c)] %	
Time period	**Services**	**Children[(d)]**	**Services**	**Children**	**Services**	**Children[(d)]**	**Services**	**Children**
July–Dec 2012	2	2	8	8	10	10	20.0	20.0
Jan–June 2013	68	68	22	22	90	90	75.6	75.6
July–Dec 2013	25	25	1	1	26	26	96.2	96.2
Sub–total Jan–Dec 2013	*93*	*93*	*23*	*23*	*116*	*116*	*80.2*	*80.2*
Total July 2012–Dec 2013[(d)]	**95**	**95**	**31**	**31**	**126**	**126**	**75.4**	**75.4**

(a) A 'service' refers to an occasion of service.

(b) Where consent for sharing detailed information not provided and data supplied in aggregate form.

(c) Proportion of consented data.

(d) As children can receive services in each time period, the sum of the column may not equal the total.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

During 2013, it is estimated that the delivery of clinical services reached 15% of the Indigenous population aged under 16 in the Northern Territory (Table 2.10). The estimated population coverage was highest in the HSDAs of Top End West (30%), Central Australia (28%), and West Arnhem (23%). The coverage ranged from 20 to 25% in Barkly, East Arnhem, Maningrida, Tiwi, West Arnhem and Borroloola, and was less than 10% in the HSDAs encompassing the urban centres of Darwin, Katherine and Alice Springs (Alice Springs Urban, Darwin Rural, Darwin Urban, Katherine East, Katherine Urban and Katherine West).

Table 2.10: Number of clinical services (including extractions under general anaesthetic), and Indigenous children who received services[(a)], by Health Service Delivery Area[(b)], July 2012–December 2013

	July–Dec 2012		Jan–Dec 2013			
Health Service Delivery Area	**Services**	**Children[(c)]**	**Services**	**Children[(c)]**	**Population Indigenous children under 16[(d)]**	**Population coverage Jan–Dec 2013[(e)] %**
Alice Springs Urban	—	—	35	33	2,005	1.6
Barkly	219	167	342	268	1,355	19.8
Borroloola	49	41	161	125	504	24.8
Central Australia	711	605	1,430	1,052	3,714	28.3
Darwin Rural	—	—	12	11	407	2.7
Darwin Urban	89	66	96	87	4,924	1.8
East Arnhem	200	186	995	702	3,479	20.2
Katherine East	51	48	176	136	1,430	9.5
Katherine Urban	—	—	3	3	1,056	0.3
Katherine West	2	2	75	69	973	7.1
Maningrida	106	97	292	214	1,015	21.1
Tiwi	95	87	215	159	752	21.1
Top End West	124	114	574	426	1,416	30.1
West Arnhem	92	86	272	203	873	23.3
Hospital	10	10	118	118	. .	. .
Total	**1,748**	**1,507**	**4,796**	**3,557**	**23,905**	**14.9**

— nil or rounded to zero.

. . not applicable.

(a) A 'service' refers to an occasion of service.

(b) Based on area where service provided rather than place of residence of the child.

(c) As children can receive services in multiple regions, the sum of the column may not equal the total.

(d) Population estimates for 2013 based on information provided by the Department of Health and ABS population projections (ABS 2014). See Appendix D for details.

(e) Proportion of Indigenous population under 16 that received services.

Note: Services include only those that were provided through the SFNT program.

Sources: AIHW analysis of SFNT dental database as 1 August 2014, for services provided on or before 31 December 2013; Department of Health; ABS 2014.

Table 2.11 shows the number of Indigenous children who received clinical services (including extractions under dental anaesthetic), by age and by sex. This table is based on services where consent for the sharing of information was obtained, and excludes data from July to December 2012 due to the low consent rate.

Most children who received services were aged 6–11 (53%), with 30% aged 0–5, and 17% 12–15 (Figure 2.11). Slightly more girls (53%) than boys (47%) received services.

Table 2.11: Number of clinical services[(a)] (including extractions under general anaesthetic), and Indigenous children who received services, where consent for sharing information was provided, by age and by sex, 2013

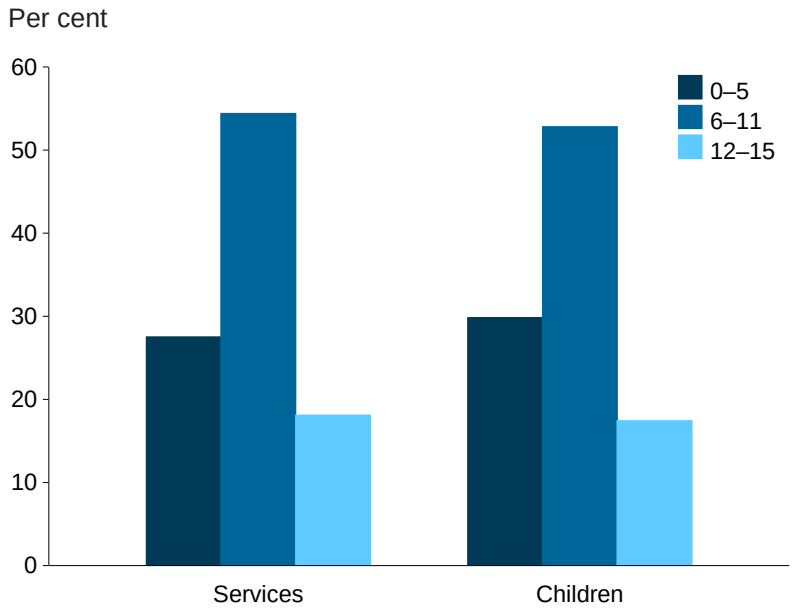
	Services		Children	
	Number	%	Number	%
Age group[(b)]				
0–5 years	1,019	27.5	774	29.8
6–11 years	2,018	54.4	1,370	52.8
12–15 years	671	18.1	452	17.4
Total	**3,708**	**100.0**	**2,596**	**100.0**
Sex				
Male	1,704	46.0	1,221	47.0
Female	2,004	54.0	1,375	53.0
Total	**3,708**	**100.0**	**2,596**	**100.0**

(a) A 'service' refers to an occasion of service.

(b) Age at last service.

Note: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.



Notes

1. A 'service' refers to an occasion of service.
2. Services include only those that were provided through the SFNT program.

Source: Table 2.11.

Figure 2.11: Clinical services (including extractions under general anaesthetic) for children who provided consent for sharing information, by age, 2013

Table 2.12 shows types of services received by Indigenous children in 2013, and is also based on data where consent for the sharing of information was provided.

Most children received diagnostic (assessment) services (98%); 60% received preventive services such as oral health education and diet education (excluding children who received full-mouth FV or fissure sealants only); and 38% received restorative services such as fillings.

Table 2.12: Types of clinical services[(a)(b)] received by Indigenous children, where consent for sharing information was provided, 2013

	Services		Children	
	Number	%	Number	%
Diagnostic	3,045	82.1	2,555	98.4
Preventive[(c)]	1,814	48.9	1,566	60.3
Restorative	1,162	31.3	977	37.6
Tooth extractions	306	8.3	286	11.0
General anaesthetic	*93*	*2.5*	*93*	—
Endodontic	20	0.5	18	0.7
Periodontic	—	—	—	—
Prosthetics	—	—	—	—
Orthodontic	—	—	—	—
Other	42	1.1	39	1.5
Total[(d)]	**3,708**	**100.0**	**2,596**	**100.0**

— nil or rounded to zero.

(a) A 'service' refers to an occasion of service.

(b) Includes extractions under general anaesthetic.

(c) Preventive services other than full-mouth FV or fissure sealants only (such as oral health education or instruction in dental hygiene).

(d) Children may receive multiple services, and as such, the sum of the columns may not equal the total.

Notes: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

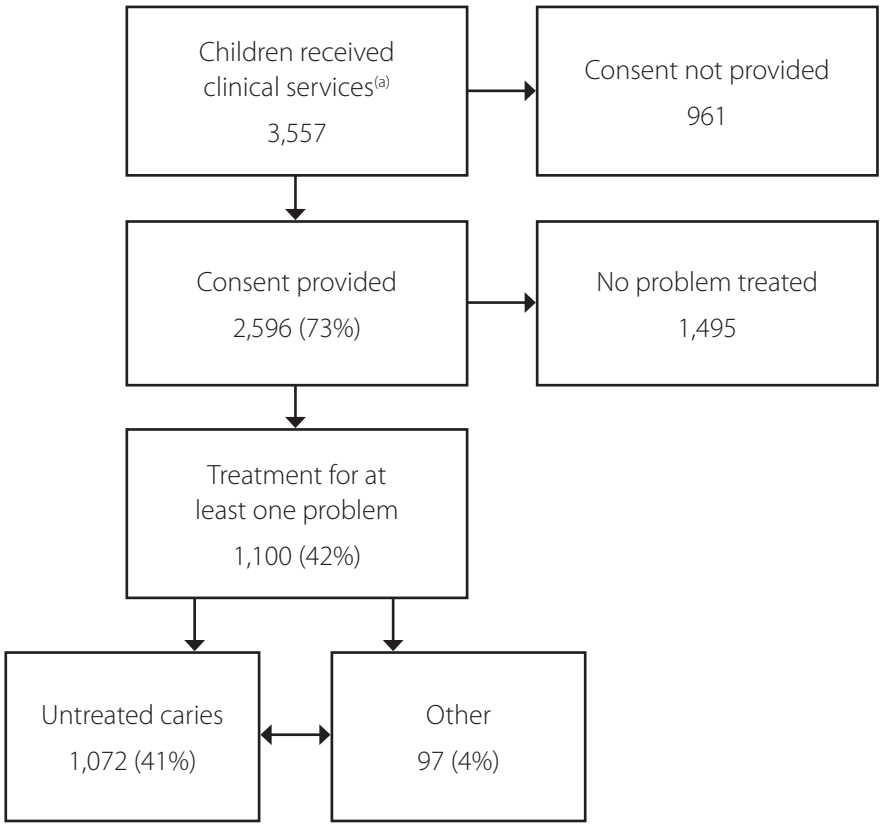
3 Oral health status of children

3.1 Problems treated

In this section, problems treated during clinical services are used as a proxy measure for the prevalence of oral health conditions among Indigenous children who participated in the SFNT program. A child is identified as having an oral health condition if such a condition was treated on any occasion of service that that child received between January and December 2013.

It is important to note that this method may under-count the number of children who had oral health problems, because it is possible that children were not treated for problems through the SFNT program during the reporting period, even if they had the problem. This may happen because they were treated through a service provider not funded by the SFNT program. It is also possible that they were treated for a problem, but did not provide consent for the sharing of information.

Figure 3.1 and Table A.1 show problems treated for Indigenous children who received clinical services in 2013, where consent for the sharing of information was provided (2,596 or 73% of total children). Forty–two percent of these children (1,100) had a least 1 problem treated, with untreated caries being the most common problem (1,072 or 41% of all children who provided consent). Only 4% of children were treated for other conditions, such as mouth infections or sores, gum disease, abnormal teeth growth, missing teeth or dental abscesses.



(a) Includes extractions under general anaesthetic.

Notes

1. Categories for problems treated are not mutually exclusive as children can receive treatment for multiple conditions.
2. Services include only those that were provided through the SFNT program.

Source: Tables 2.8 and A.1.

Figure 3.1: Dental problems treated, Indigenous children who received a clinical service (including extractions under general anaesthetic), 2013

3.2 Decayed, missing and filled teeth

The number of decayed, missing and filled teeth is a widely used indicator of oral health status. It measures if teeth are affected by decay (d), missing (m) or filled (f) in either deciduous (dmft) or permanent (DMFT) teeth. Deciduous teeth are teeth that develop during infancy and are lost and replaced by permanent teeth as children age. A dmft score of 5 would mean that a child has a total of 5 decayed, missing or filled deciduous teeth. Deciduous teeth that have been lost as a result of the normal growth process are not counted as missing teeth. A child may have deciduous and permanent teeth, and as such, may have a dmft and DMFT score.

The notation 'dmft/DMFT' refers to the score for deciduous and permanent teeth combined (that is, dmft+DMFT). A dmft/DMFT score greater than zero indicates that a child has caries experience. The mean dmft /DMFT is the average number of decayed, missing and filled teeth per child.

Between July 2012 and December 2013, the mean dmft score was highest among children aged 5 and 6 (5.8 and 5.3 respectively) (Table 3.1). The mean DMFT for 12 year olds was 2.1.

The proportion of children with a dmft/DMFT score greater than zero ranged between 56% for children aged 1–3 years and 89% for 8 year olds.

The results for these children are substantially higher than results obtained from the 2009 Child Dental Health Survey (Chrisopoulos & Harford 2013). In this survey, (which involved children who visited a school dental service in all states and territories except New South Wales and Victoria), the mean dmft for 6 year olds was 2.36, and the mean DMFT for 12 year olds was 1.05. In addition, the proportion of 8 year olds with a dmft/DMFT score greater than zero was 67%.

Indigenous children in the SFNT OHP had much higher scores than Indigenous children who participated in the Child Dental Health Surveys conducted between 2000 and 2003 (in South Australia, New South Wales and Northern Territory). The mean dmft of 6 year olds was 3.68 and the mean DMFT of 12 year olds was 1.25 (AIHW DSRU: Jamieson et al. 2007).

Table 3.1: Decayed, missing and filled teeth, deciduous and permanent teeth (dmft/DMFT), Indigenous children who received a dental service, by age[(a)], July 2012–December 2013

					Children with dmft/DMFT>0	
Age	Number of children	Mean dmft	Mean DMFT	Mean dmft/ DMFT	Number	%
1–3	507	2.8	—	2.8	286	56.4
4	419	4.8	—	4.8	326	77.8
5	504	5.8	—	5.8	428	84.9
6	562	5.3	—	5.5	474	84.3
7	515	4.9	—	5.2	450	87.4
8	485	4.5	0.6	5.1	431	88.9
9	514	3.2	0.9	4.1	410	79.8
10	501	2.2	1.0	3.1	394	78.6
11	443	1.0	1.3	2.3	297	67.0
12	389	—	2.1	2.5	262	67.4
13	322	—	2.2	2.5	211	65.5
14	239	—	3.0	3.1	170	71.1
15	190	—	3.9	3.9	145	76.3

— nil or rounded to zero.

(a) Age at last service.

Notes

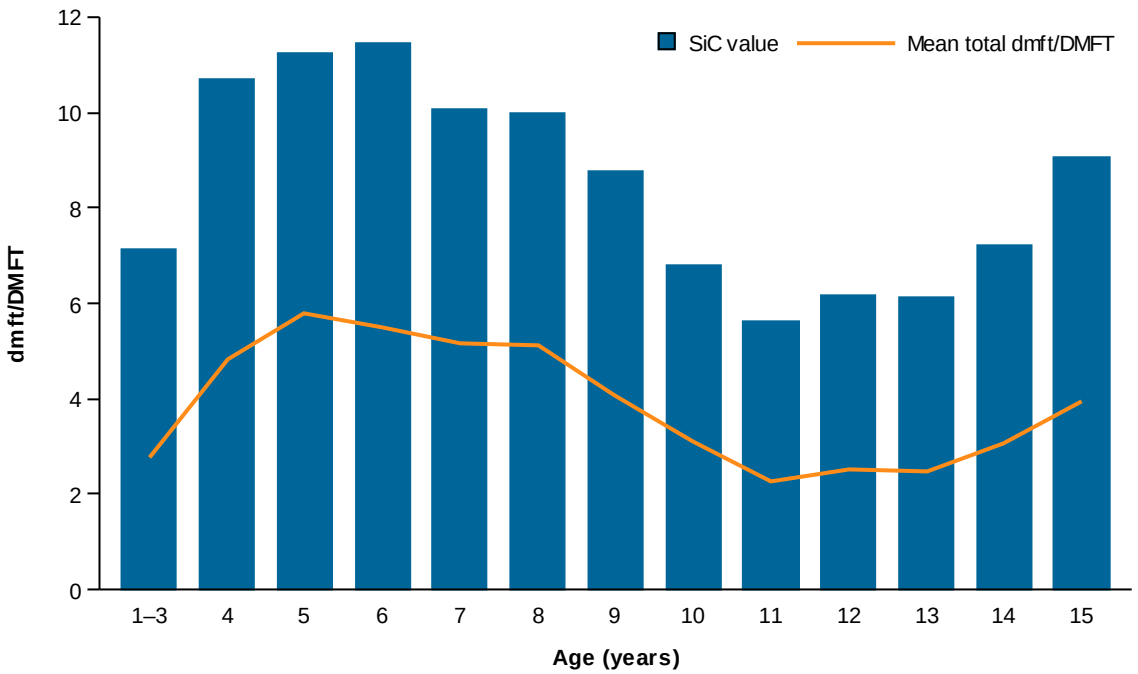
1. Excludes children with missing or invalid HRN and children with missing dmft/DMFT scores.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Significant Caries Index

The Significant Caries Index (SiC) is the average number of decayed, missing and filled teeth of the 30% of the population with the highest dmft/DMFT. This measure is used to bring attention to those individuals with the worst dental decay experience (Ha et al. 2011).

The SiC value was highest among 5 and 6 year olds at 11.2 and 11.4 respectively, substantially higher than the mean total dmft/DMFT for each age group (5.8 and 5.5) (Figure 3.2 and Table A.2). This shows the very high oral health needs of a minority of Indigenous children in the Northern Territory.



Notes

1. SiC value is the mean dmft/DMFT of the 30% of children with the highest dmft/DMFT scores.
2. Excludes children with missing or invalid HRN and children with missing dmft/DMFT scores.
3. Services include only those that were provided through the SFNT program.

Source: Table A2.

Figure 3.2: Significant Caries Index, Indigenous children who received a dental service, July 2012–December 2013

Decayed, missing and filled teeth by Health Service Delivery Area

Table 3.2 shows average dmft/DMFT scores by HSDA during 2013 for children who provided consent for the sharing of information. The proportion of children with caries experience ranged from 82 to 85% in West Arnhem, Katherine Urban, Maningrida, Katherine East, and Borroloola; and from 71 to 78% in Katherine West, Top End West, Darwin Urban, Alice Springs Urban, Barkly, Tiwi, Central Australia and East Arnhem. All children treated in hospital had a dmft/DMFT score greater than zero.

Darwin Rural, Katherine East and Borroloola had the highest mean dmft/DMFT scores (7.4, 5.7, and 5.5 respectively), while Katherine West, Barkly and Darwin Urban had the lowest (2.6, 2.9 and 3.3 respectively). Children treated in hospital had a score of 11.4.

The SiC value was highest in Darwin Rural (13.8), Borroloola (10.9), Katherine East (10.8), West Arnhem (10.7), East Arnhem (10.3) and Maningrida (10.3).

Table 3.2: Decayed, missing and filled deciduous and permanent teeth (dmft/DMFT), Indigenous children who received a dental service, where consent for sharing information was provided, by Health Service Delivery Area[(a)], January 2013–December 2013

Health Service Delivery Area	Number of children	No. with dmft/DMFT>0	% with dmft/DMFT>0	Mean dmft/DMFT	No. children in top 30%	SiC value mean top 30%
Alice Springs Urban	319	228	71.5	3.4	95	8.0
Barkly	110	81	73.6	2.9	33	6.8
Borroloola	110	95	86.4	5.5	33	10.9
Central Australia	472	352	74.6	3.5	141	8.2
Darwin Rural	19	18	n.p.	7.4	5	13.8
Darwin Urban	267	191	71.5	3.3	80	7.7
East Arnhem	567	444	78.3	4.7	170	10.3
Katherine East	83	71	85.5	5.7	24	10.8
Katherine Urban	105	87	82.9	4.5	31	9.2
Katherine West	62	44	71.0	2.6	18	6.3
Maningrida	184	154	83.7	4.8	55	10.3
Tiwi	132	98	74.2	3.7	39	8.5
Top End West	359	254	70.8	3.6	107	8.3
West Arnhem	196	160	81.6	4.7	58	10.7
Hospital	68	68	100.0	11.4	20	15.9

n.p. not publishable because of small numbers, confidentiality or other concerns about the quality of the data.

(a) Based on area where service provided at last service.

Notes

1. Excludes children aged less than 1 year.
2. Excludes children with missing or invalid HRN and children with missing dmft/DMFT scores.
3. Services include only those that were provided through the SFNT program.

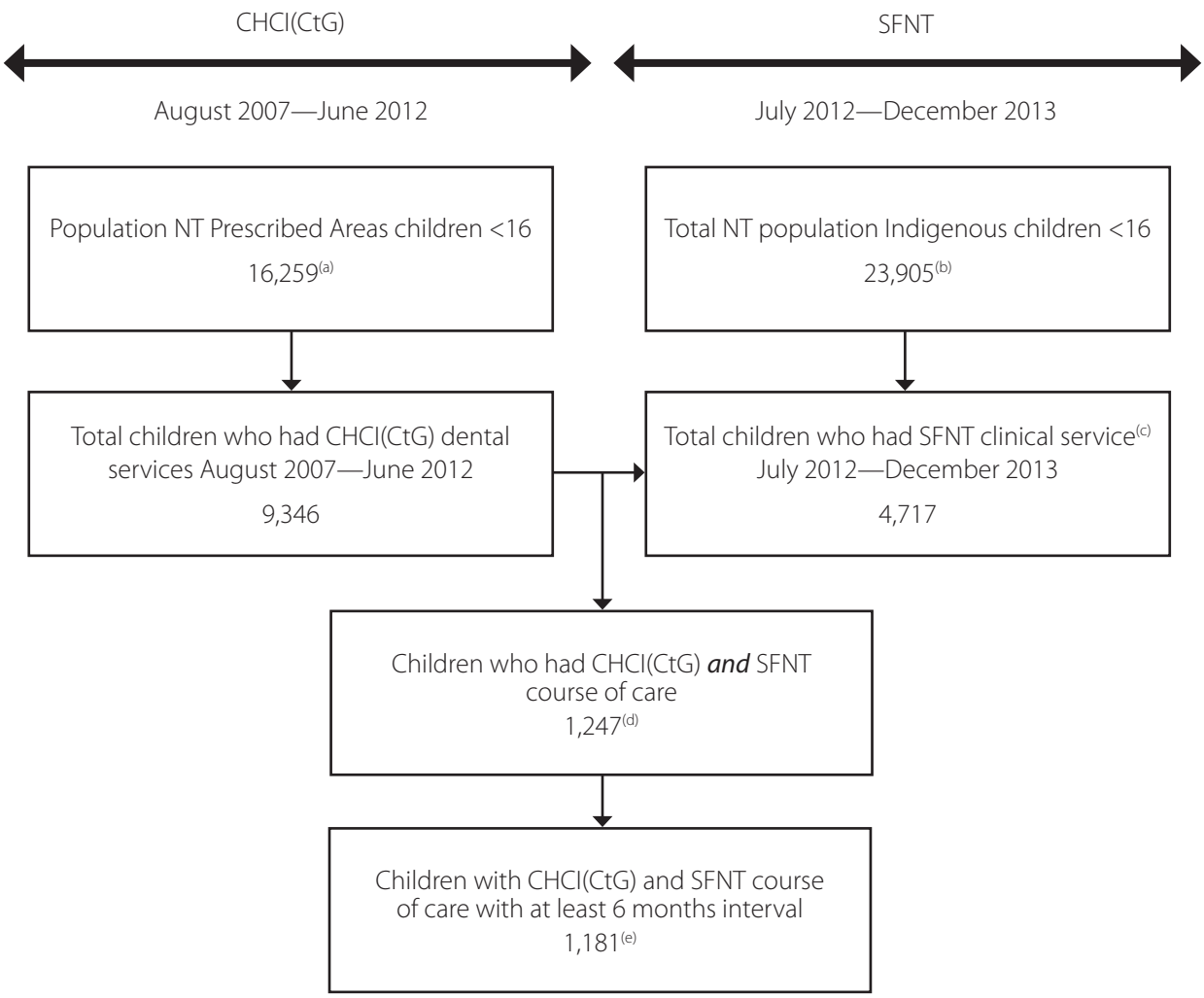
Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

3.3 Changes over time

This section examines information on changes in oral health status among children who received a clinical service in the CHCI(CtG) and SFNT programs. It compares their oral health conditions in both programs. It also examines dmft/DMFT information at different time periods.

3.3.1 Oral health conditions

In order to assess change in their oral health status, children who received an SFNT clinical service are linked with children who participated in the CHCI(CtG) oral health program (see Box 1). Children's oral health status at their last course of care in the CHCI(CtG) program is compared with that of their last course of care in the SFNT program. In common dental practice, children may be treated over several consecutive occasions of service within 1 course of care. The duration of a course of care may vary according to a child's oral health. As information on the duration of a course of care is not available in the CHCI(CtG) and SFNT dental data collections, a course of care is defined as occasions of service that occur within a 3 month period. However, the duration of a course of care may vary in actual practice and in some cases may exceed 3 months. In this analysis, a 'course of care' is defined as all services within a 3 month period of a child's last service in each program. Overall, there were 1,247 children who had at least two courses of care and participated in both programs (Figure 3.3).



(a) Single-year population estimate provided by the Department of Health, based on 2006 Indigenous Estimated Resident Population.

(b) ABS Indigenous population projection for June 2013.

(c) Includes extractions under general anaesthetic.

(d) Consented data only and excludes children with missing or invalid HRN.

(e) Excludes services provided from July–December 2012 due to low consent rate.

Note: Services include only those that were provided through the CHCI(CtG) and SFNT programs.

Sources: AIHW analysis of CHCI(CtG) and SFNT dental databases as at 1 August 2014, for services provided on or before 31 December 2013; Department of Health; ABS 2014.

Figure 3.3: Indigenous children who participated in the CHCI(CtG) and SFNT programs, August 2007–December 2013

Children are only included in this analysis, however, if there is a gap of at least 6 months between the two courses of care. This time period is required to observe changes in children's oral health status. There are 1,181 children who meet this criteria (Figure 3.3), with a median time interval between the two courses of care of 26 months. Services provided between July and December 2012 are excluded from the analysis due to the low consent rate, as are children with a missing or invalid HRN.

Among children who meet the criteria and are included in the analysis, 48% had at least 1 oral health problem, 40% had untreated caries, 2% had mouth infections or mouth sores, 22% had other oral health problems, and 52% had no problem treated during their last course of care in the CHCI(CtG) program (Table 3.3). By their last course of care in the SFNT program, the proportion of children with at least 1 oral health problem decreased by 3 percentage points, while the proportion with no problem treated increased by the same margin. The proportion of children with untreated caries, however, increased by 4 percentage points.

It is important to note that the analyses presented in this section do not reflect changes in the prevalence of oral health problems among Indigenous children in the Northern Territory or among children who participated in the CHCI(CtG) or SFNT programs. Rather, these analyses track changes in the oral health status of children who participated in both programs, allowing for an examination of the treatment outcomes of these children.

Furthermore, these data do not capture changes in the severity of health conditions. Information is provided on whether or not a child was treated for untreated caries, but not on the number of teeth treated. A child may have several fillings in 1 course of care, but only 1 or two in a subsequent course of care. Such improvements in oral health status are not reflected in the data.

Table 3.3: Change in oral health condition, Indigenous children who received at least two courses of care[(a)], where consent for sharing information was provided, August 2007–December 2013

	Last course of care CHCI(CtG)		Last course of care SFNT			
Problem treated	**Number**	**% (x)**	**Number**	**% (y)**	**% change (y-x)/x**	**Percentage point difference (y-x)**
At least 1 problem	572	48.4	534	45.2	–6.6	–3.2
Untreated caries	467	39.5	515	43.6	10.3	4.1
Mouth infection/sore	22	1.9	1	—	–95.5	–1.8
Other	258	21.8	54	4.6	–79.1	–17.3
No problem treated	609	51.6	647	54.8	6.2	3.2
Total	**1,181**	**100.0**	**1,181**	**100.0**	**. .**	**. .**

— nil or rounded to zero.

. . not applicable.

(a) Comparison between last course of care in the CHCI(CtG) program and last course in SFNT, with at least 6 months between two courses of care. Median time interval was 26 months.

Notes

1. Excludes services provided from July–December 2012 due to low consent rate, and children with missing or invalid HRN.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of CHCI(CtG) and SFNT dental databases as at 1 August 2014, for services provided on or before 31 December 2013.

Although there has been a slight increase in the proportion of children with untreated caries among those who participated in both programs, when treatment outcomes are examined specifically for children who had untreated caries at their last CHCI(CtG) course of care, improvements in health status can be observed. Of children treated for untreated caries at this course of care (467), just over half (53%) were without the condition at their last SFNT course of care (Table 3.4).

All children who had mouth infections or mouth sores at their last CHCI(CtG) course of care (22) were free of the condition at their last SFNT course of care. This shows that most children treated for specific conditions did experience improvements in their oral health status, reflecting positive treatment outcomes for those participating in the SFNT program. This also indicates that the increase in prevalence of untreated caries is mainly due to new dental caries among children who were free of such condition at their previous dental check. This highlights the great importance and need for oral health promotion and prevention.

Table 3.4: Treatment outcomes for Indigenous children with untreated caries or mouth infections[(a)], where consent for sharing information was provided, August 2007–December 2013

Condition	Number last course CHCI(CtG)	Without condition last course SFNT		With condition last course SFNT	
		Number	%	Number	%
Untreated caries[(b)]	467	245	52.5	222	47.5
Mouth infection or sore[(c)]	22	22	100.0	—	—

— nil or rounded to zero.

(a) Outcomes for children who had specified conditions at last course of care in the CHCI(CtG) program, with at least 6 months before last course of care in SFNT program.

(b) Median time interval between two courses of care was 28 months.

(c) Median time interval between two courses of care was 41 months.

Notes

1. Excludes services provided from July–December 2012 due to low consent rate, and children with missing or invalid HRN.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of CHCI(CtG) and SFNT dental databases as at 1 August 2014, for services provided on or before 31 December 2013.

3.3.2 Changes in dmft/DMFT scores

The table below shows the proportion of children with caries experience (dmft/DMFT score greater than zero) from 2009 to 2013.

It is very important to note that the following analysis results are summary information based on dmft/DMFT data that were available to the AIHW periodically: from March to December 2009, January to June 2011, January to June 2012 and July 2012 to December 2013. As descripted in Chapter 2 of this report, the dental services are provided by outreach dental teams under the CHCI(CtG) and SFNT programs. The children who live in remote communities do not receive outreach services at the same time, but periodically when outreach teams visit their communities. As such, although the differences observed from these data may indicate changes in caries experiences among children who received services, it may also simply reflect the differences in the child populations resident in the different communities where services were provided.

Based on available dmft/DMFT data, the proportion of children with caries experience decreased for most age groups (Table 3.5). In particular, for 1–3 year olds, the proportion changed from 73% in the period from March to December 2009 to 56% in the period from July 2012 to December 2013; for 9 year olds the proportion decreased from 86% to 80% over the same period; and for 12 year olds the proportion decreased from 81% to 67%. There is much variability, however, between age groups and inconsistent trends.

Table 3.5: Proportion of Indigenous children with dmft/DMFT>0, 2009–2013

Age	March–December 2009	January–June 2011	January–June 2012	July 2012–December 2013
1–3	72.9	68.6	51.9	56.4
4	79.4	80.8	85.1	77.8
5	88.3	88.8	92.4	84.9
6	88.5	92.5	92.3	84.3
7	91.8	86.0	89.1	87.4
8	93.2	83.9	90.0	88.9
9	86.2	87.1	90.5	79.8
10	81.5	85.7	84.8	78.6
11	69.3	63.1	71.0	67.0
12	80.5	72.0	75.6	67.4
13	70.8	89.7	76.2	65.5
14	82.9	92.0	94.9	71.1
15+[(a)]	75.3	79.5	88.7	76.3

(a) The CHCI(CtG) program included some children over the age of 15.

Notes

1. Excludes children with missing or invalid HRN and children with missing dmft/DMFT scores.
2. Services include only those that were provided through the CHCI(CtG) or SFNT program.

Source: AIHW analysis of CHCI(CtG) and SFNT dental databases as at 1 August 2014, for services provided on or before 31 December 2013.

Appendix A: Additional tables

Table A1: Dental problems treated, Indigenous children who received a clinical dental service (including extractions under general anaesthetic)[(a)], where consent for sharing information was provided, 2013

	Services		Children	
Problem treated	**Number**	**%**	**Number**	**%**
Untreated caries	1,311	35.4	1,072	41.3
Other	106	2.9	97	3.7
At least 1 problem	1,359	36.7	1,100	42.4
No problem	2,253	60.8	1,495	57.6
Missing[(b)]	1	—	1	—
Total[(c)(d)]	**3,708**	**100.0**	**2,596**	**100.0**

— nil or rounded to zero.

(a) A 'service' refers to an occasion of service.

(b) 'Not stated' responses for problem treated.

(c) The sum of the columns may not equal the total because 1 child can receive treatment for multiple conditions.

(d) Total children who had a clinical service including those who had extractions under general anaesthetic.

Notes: Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Table A.2: Significant Caries Index, dmft/DMFT, by age, July 2012–December 2013

Age	Number of children	Mean total dmft/DMFT	No. children in top 30%	SiC value mean top 30%
1–3	507	2.8	152	7.1
4	419	4.8	125	10.7
5	504	5.8	151	11.2
6	562	5.5	168	11.4
7	515	5.2	154	10.1
8	485	5.1	145	10.0
9	514	4.1	154	8.8
10	501	3.1	150	6.8
11	443	2.3	132	5.6
12	389	2.5	116	6.2
13	322	2.5	96	6.1
14	239	3.1	71	7.2
15	190	3.9	57	9.1

Notes

1. Excludes children with missing or invalid HRN, and children with missing dmft/DMFT scores.
2. Services include only those that were provided through the SFNT program.

Source: AIHW analysis of SFNT dental database as at 1 August 2014, for services provided on or before 31 December 2013.

Appendix B: Data collection form

SFNT CHCI DENTAL SERVICES DATA COLLECTION FORM

1. Organisation details

Date of Service: ☐☐/☐☐/☐☐☐☐ (dd/mm/yyyy)

ID or name of Community or Town Camp where this service was provided:

☐☐☐☐☐

ID or name of Community or Town Camp where child is resident:

☐☐☐☐☐

2. Consent to provide information to the Commonwealth

This dental service is funded by the Commonwealth Government. Information relating to the dental services provided to you, including any treatment and follow up treatment you receive (for example, surgery) will be kept by your dentist and provided to the Australian Institute of Health and Welfare (AIHW). To ensure you receive any follow up services you need and to evaluate and improve this program, the AIHW may disclose the information it receives to the Commonwealth Government to enable this evaluation, improvement and follow up to occur. Your name will not be provided to the AIHW or the Commonwealth Government and your information will not be reported in any way which could identify you.

Consent given to provide information to the Commonwealth?

☐ Yes ☐ No

If consent is not obtained, no data to be sent to the AIHW.

3. Child's details

HRN: _____

DOB: ☐☐/☐☐/☐☐☐☐ (dd/mm/yyyy)

SEX: ☐ Male ☐ Female

continued on next page

Please provide HRN and date of service again: HRN:_____ Date of service:_____

4. Dental services provided

Indicate all services provided during this occasion of service

- ☐ 0: Diagnostic
- ☐ 1: Preventive
  - ☐ 1(a): Full-mouth fluoride
  - ☐ 1(b): Fissure sealant
    Number of teeth have fissure sealant in this service ( )
- ☐ 2: Periodontic
- ☐ 3: Surgery/Exodontia
- ☐ 4: Endodontic
- ☐ 5: Restorative
- ☐ 6: Crown or bridge
- ☐ 7: Prosthetics
- ☐ 8: Orthodontic
- ☐ 9: Other – please specify_____

5. Problems treated

Indicate all problems treated during this occasion of service

- ☐ 1: Assessment only
- ☐ 2: Oral health education
- ☐ 3: Untreated caries
- ☐ 4: Gum disease
- ☐ 5: Broken or chipped teeth due to trauma
- ☐ 6: Abnormal teeth growth
- ☐ 7: Missing teeth
- ☐ 8: Mouth infection or mouth sores
- ☐ 9: Dental hygiene (including plaque and calcification)
- ☐ 10: Dental abscess
- ☐ 11: Other – please specify_____

6. dmft/DMFT and dmfs/DMFS scores

•dmft: if less than 11 years old	d		m		f		dmft	
•DMFT: if 7 years or over	D		M		F		DMFT	
•dmfs: if less than 11 years old	d		m		f		dmfs	
•DMFS: if 7 years or over	D		M		F		DMFS	

7. Follow-up requirements

Does this child require further follow-up in order to complete their treatment plan? ☐ Yes ☐ No

8. Referred for GA ☐ Yes ☐ No

Appendix C: CHCI(CtG) Prescribed Areas

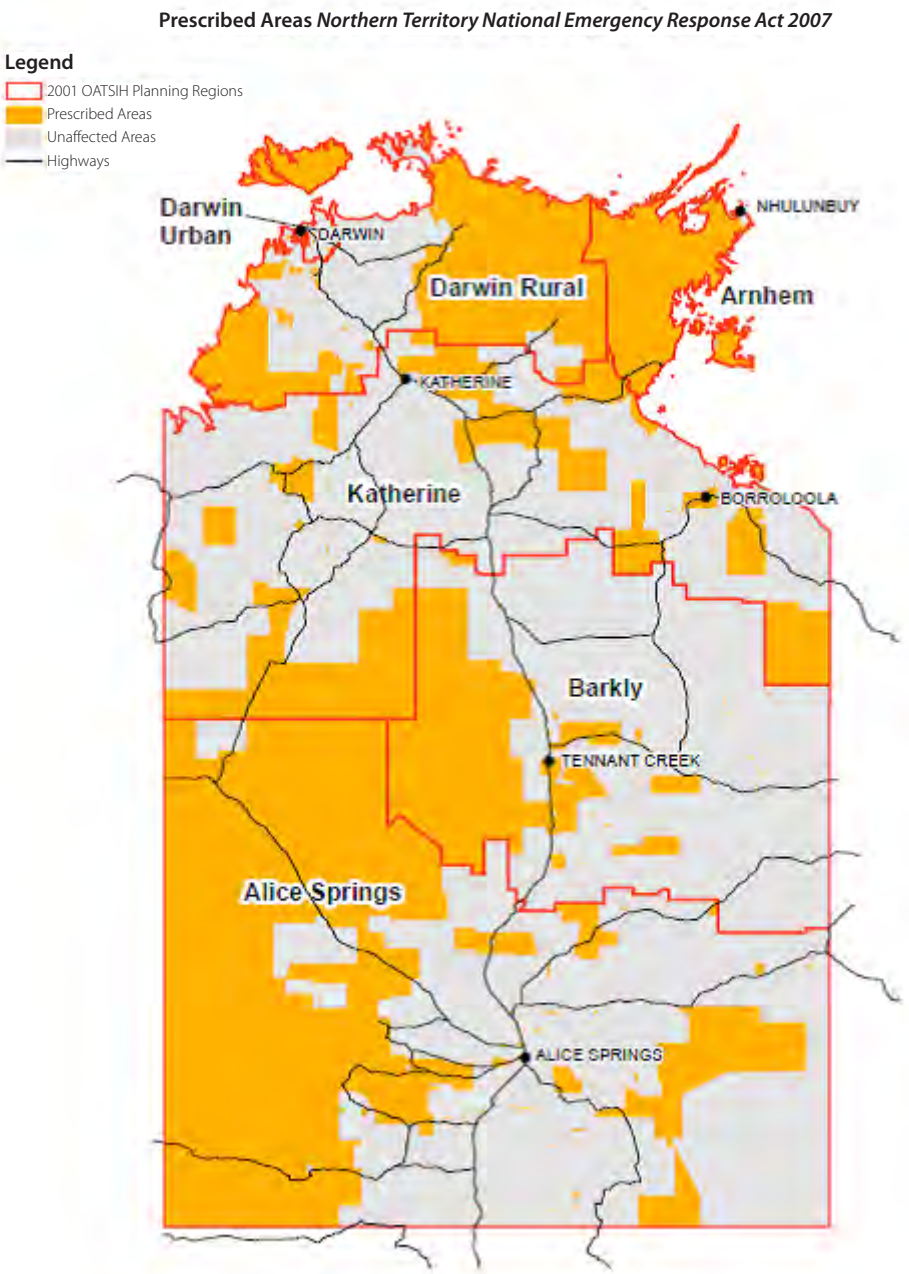


Figure A.1: CHCI(CtG) Prescribed Areas

Appendix D: Health Service Delivery Areas (HSDAs)

HSDA Localities

Health Service Delivery Area	Locality
Alice Springs Urban	Alice Springs
Barkly	Ali Curung
	Canteen Creek
	Elliott
	Epenarra
	Lake Nash
	Tennant Creek
Borroloola	Borroloola
	Robinson River
Central Australia	Alcoota
	Amoonguna
	Ampilatwatja
	Aputula
	Areyonga
	Bonya
	Docker River
	Haasts Bluff
	Harts Range
	Hermannsburg
	Imanpa
	Kings Canyon
	Kintore
	Laramba
	Maryvale
	Mt Liebig
	Mutitjulu
	Nyrippi
	Papunya
	Pmara Jutunta
	Santa Teresa
	Stirling
	Tara
	Ti Tree
	Urapuntja
	Wallace Rockhole
	Willowra
	Yuelamu
	Yuendumu
	Yulara

Darwin Rural	Adelaide River
	Batchelor
	Belyuen
	Pine Creek
Darwin Urban	Bagot
	Danila Dilba
East Arnhem	Alyangula
	Angurugu
	Bickerton Island
	Galiwinku
	Gapuwiyak
	Gunyangara
	Laynhapuy
	Marthakal
	Milingimbi
	Nhulunbuy
	Numbulwar
	Ramingining
	Umbakumba
	Yirrkala
Katherine East	Barunga
	Beswick
	Bulman
	Jilkminggan
	Manyallaluk
	Mataranka
	Miniyeri
	Ngukurr
Katherine Urban	Binjari
	Katherine
Katherine West	Kalkaringi
	Lajamanu
	Timber Creek (Muringung)
	Yarralin
Maningrida	Maningrida
Tiwi	Milikapiti
	Nguiu
	Pirlangimpi
Top End West	Daly River
	Nganmarriyanga
	Peppimenarti
	Wadeye
West Arnhem	Jabiru
	Minjilang
	Oenpelli
	Warruwi

2013 HSDA population estimates

HSDA population estimates for Indigenous children under the age of 16 were provided to the AIHW by the Department of Health. These estimates, however, were only available for 2006. The AIHW adjusted these estimates using the 2013 ABS Indigenous population projection for Indigenous children under 16 in the Northern Territory (23,905) (ABS 2014). This was done by applying the estimated 2006 HSDA population proportions to the 2013 projected population.

For example, in the 2006 data supplied to the AIHW by the Department of Health, the estimated population of Alice Springs Urban was 1,996. This represented approximately 8.4% of the estimated total number of Indigenous children under 16 in the Northern Territory (23,797). This percentage was applied to the 2013 population projection (23,905) to derive a figure of 2,005. This method was applied to each of the HSDAs.

Appendix E: Data quality statement—Stronger Futures in the Northern Territory (SFNT) dental data collection

Summary of key issues

- Children who receive SFNT oral health services are not a random sample of Indigenous children in the Northern Territory. As such, SFNT oral health data may not be representative of the Northern Territory Indigenous child population.
- The data that have been collected as part of the SFNT Oral Health Program are a by-product of a clinical process. That is, dental professionals providing clinical services document the results on standard data collection forms or via a computer–based data collection system.
- The extent of missing data should be taken into account when using and interpreting SFNT data. Where possible, published tables show the percentage of missing data.

Description

The National Partnership Agreement on Stronger Futures in the Northern Territory SFNT was implemented mid–2012 outlining a 10 year commitment to 2021–22. It is funded by the Australian Government and delivered by the Northern Territory Government. The AIHW collects data on the SFNT Oral Health Program (OHP) which includes the delivery of clinical services, tooth extractions under general anaesthetic (in the first 3 years of the agreement), and a preventive program including the delivery of fissure sealants and full-mouth fluoride varnish (FV) applications.

Institutional environment

The Australian Institute of Health and Welfare (AIHW) is responsible for undertaking the data management, analysis and reporting of information collected as part of the SFNT OHP.

The AIHW is a major national agency set up by the Australian Government under the *Australian Institute of Health and Welfare Act 1987* to provide reliable, regular and relevant information and statistics on Australia's health and welfare. It is an independent statutory authority, governed by a Management Board, and accountable to the Australian Parliament through the Health portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The Institute also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

One of the main functions of the AIHW is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national datasets based on data from each jurisdiction, to analyse these datasets and disseminate information and statistics.

The *Australian Institute of Health and Welfare Act 1987*, in conjunction with compliance to the *Privacy Act 1988*, (Cth) ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.

For further information see the AIHW website <www.aihw.gov.au>.

The Northern Territory Department of Health (NT DoH) and six Aboriginal Community Controlled Health Organisations have been funded to deliver SFNT oral health services. NT DoH submits data in electronic format, while dental staff employed by ACCHOs complete standard data collection forms which are sent directly to the AIHW.

NT DoH is responsible for providing a wide range of health and family services, and delivers services related to the Ministerial responsibilities of Heath and Senior Territorians. Further information can be found on the NT DoH website <www.health.nt.gov.au>.

ACCHOs provide primary health care services to local Aboriginal communities. They are community operated and managed by an elected Board of Management. For further information please see the website of the **National Aboriginal Community Controlled Health Organisation**.

Timeliness

The first report from the SFNT dental data collection was published in December 2014, with a reference period of July 2012 to December 2013. It is expected that future reports will be published on an annual basis by calendar year.

For services delivered by ACCHOs there is a lag between the date when the service was provided and the date of receipt of data. This means that at any point in time, there may be services provided that have not yet been captured in the data collection. From July 2012 to December 2013, the median time between date of service and receipt of data was 12 weeks.

Accessibility

SFNT reports are published on the website of the AIHW: **AIHW Publications.** They can be downloaded free of charge. Permission to obtain unpublished data must be sought from NT DoH and the Department of Health. In addition, approvals from relevant ethics committees of the Northern Territory may be required.

Interpretability

SFNT reports contain basic information about the programs and the data contained in the report to enable interpretation of this information.

A copy of the *National Partnership Agreement on Stronger Futures in the Northern Territory* is available on the website of the **Standing Council on Federal Financial Relations**.

Relevance

Children who receive SFNT oral health services are not a random sample of Indigenous children in the Northern Territory. As such, SFNT oral health data may not be representative of the Northern Territory Indigenous child population.

The data that have been collected from services delivered under the SFNT Oral Health Program are a by-product of a clinical process. That is, dental professionals providing clinical services document the results on standard data collection forms or via a computer-based data collection system.

The AIHW SFNT dental data collection captures information on the following components of the SFNT Oral Health Program:

Clinical services and tooth extractions under general anaesthetic

Clinical services include diagnostic services, periodontics (treatment of gums), endodontics (pulp treatments), restorative fillings, bridges and crowns, tooth extractions, orthodontics (dental braces), and prosthetic treatments (replacement of teeth). In the first 3 years of the SFNT OHP there is provision for tooth extractions performed in hospital under general anaesthetic.

Clinical services and extractions under general anaesthetic are targeted towards, but not limited to, Indigenous children in remote areas (that is, children outside the main urban centres of Darwin, Alice Springs, Nhulunbuy and Katherine). Indigenous children under the age of 16 are eligible for these services.

Data collected includes demographic information about the child (age, sex, and community of treatment), information on problems treated, type of clinical management received, and the number of decayed, missing and filled teeth.

Preventive services

Preventive services include the application of fissure sealants and full-mouth FV. While these services are available to Indigenous children under the age of 16 across the Northern Territory, full-mouth FV services are targeted towards children between the ages of 18 months and 15 years and fissure sealant services to children aged 6 to 15 years.

Geographic information is based on the area where the service was provided, rather than the community of residence of the child.

Accuracy

For services delivered by NT DoH, data are recorded in a computerised database and sent to the AIHW electronically. For services delivered by ACCHOs, information is recorded on paper-based data collection forms which are sent directly to the AIHW. The forms were developed by NT DoH in consultation with the Australian Department of Health and the AIHW.

The extent of missing data should be taken into account when using and interpreting SFNT data. Where possible, published tables show the percentage of missing data.

Not all dental services provided in the Northern Territory are captured in the SFNT dental database. This data collection only captures oral health services funded through the SFNT program.

To obtain unit record data for the SFNT dental data collection, consent-for-sharing information must be obtained from children's families. If children's families do not give consent for their information to be used in unit record form, only a limited amount of information can be sent to the AIHW. These data are submitted to the AIHW in aggregate form to enable the number of services and children to be counted, but does not contain detailed information on the demographic characteristics of children, treatment received or oral health status. In the first 6 months of the SFNT OHP (July–December 2012), the consent rate was very low (around 30% for clinical services and 25% for preventive services), however, it rose to between 70 and 80% in the 2013 calendar year. This means that the data collected in the early phase of the program are not representative of all children who received a SFNT dental service.

In order to protect privacy, personal information, such as the child's name, is not provided to the AIHW. As such, children can only be tracked using a Hospital Registration Number (HRN). A very small proportion of children (around 1%) cannot be tracked due to missing or incorrect HRNs.

Not all services provided by the ACCHOs funded to deliver SFNT oral health services are captured in the data. Of the six ACCHOs that have been funded to deliver SFNT oral health services, 3 deliver services directly while the others sub-contract services from OHS-NT. During the reference period of the first SFNT OHP report (July 2012 to December 2013), the AIHW received data from the 3 ACCHOs that provided services directly.

Coherence

The SFNT audiology services were originally funded through the Child Health Check Initiative/Closing the Gap (CHCI(CtG)) program that ran from August 2007 to June 2012. Direct comparisons with data from this program cannot be made due to differences in the programs. The CHCI (CtG) services were provided to Indigenous children in Prescribed Areas in the Northern Territory, and targeted children who had a referral from the Northern Territory Emergency Response program of child health checks. The final report from the CHCI (CtG) program, *Northern Territory Emergency Response Child Health Check Initiative—follow-up services for oral and ear health: final report 2007–2012*, was published in 2012 and is available from the AIHW website.

Glossary

deciduous teeth: primary teeth that develop during the embryonic stage of human development and erupt (that is, become visible in the mouth) during infancy. They are usually lost and replaced by permanent teeth, but in the absence of permanent replacements, they can remain functional for many years.

dental caries: an infectious disease that can lead to cavities (small holes) in the tooth structure that compromise both the structure and the health of the tooth.

diagnostic services: services including examinations (initial, periodic and emergency oral examinations; consultations; written reports; referrals); radiographical examination and interpretation (intraoral radiographs; skull radiographs); and other diagnostic services including bacteriological examination, antibiotic sensitivity tests, biopsy and casts.

dmft: decayed, missing or filled teeth (deciduous).

DMFT: decayed, missing or filled teeth (permanent).

dmft/DMFT: the score for deciduous and permanent teeth combined (that is, dmft+DMFT).

endodontics: pulp treatments (pulp capping; pulpotomy; extirpation or debridement of root canal).

extraction: removal of permanent or deciduous tooth, tooth fragment.

full-mouth fluoride varnish (FV): a concentrated form of fluoride that is applied in 1 service to as many tooth surfaces as possible.

fissure sealants: thin plastic coatings that are applied to the grooves on the chewing surfaces of the back teeth to protect them from tooth decay.

Indigenous: a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives.

periodontics: treatment of gums (treatment of acute infection).

permanent teeth: adult or secondary teeth that erupt at about the age of six years. By about 21 years a person has 32 permanent teeth.

preventive services: services including dental prophylaxis (removal of plaque; removal of calculus; recontouring of existing restorations); topical fluoride (application of fluoride solution or gel; instruction on self-application); and other preventive services including dietary advice, oral hygiene instruction, fissure sealing and mouthguards.

restorative: amalgams (filling of 1, 2, 3+ surfaces). Glass ionomer, silicate and composite resins (filling of 1, 2, 3+ surfaces).

Significant Caries Index (SiC): mean dmft/DMFT score of the top 30% of the population.

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Related publications

- Austrailan Institute of Health and Welfare (AIHW) 2012. Northern Territory Emergency Response Child Health Check Initiative: follow-up services for oral and ear health: final report, 2007–2012. Cat. no. DEN 223. Canberra: AIHW.
- AIHW 2011. Dental health of Indigenous children in the Northern Territory: findings from the Closing the Gap Program. Cat. no. IHW 41. Canberra: AIHW.

The report presents data on the Stronger Futures in the Northern Territory Oral Health Program. From July 2012 to December 2013 approximately 3,700 Indigenous children received full-mouth fluoride varnish applications; 2,100 received fissure sealants; and 4,700 were provided with clinical services. Forty one percent of children had untreated caries; the mean dmft score for children aged 6 was 5.3, and the mean DMFT score for 12 year olds was 2.1. Between 2009 and 2013 the proportion of children with caries experience decreased in most age groups, in particular for 1–3 year olds, where the proportion dropped from 73% to 56%.