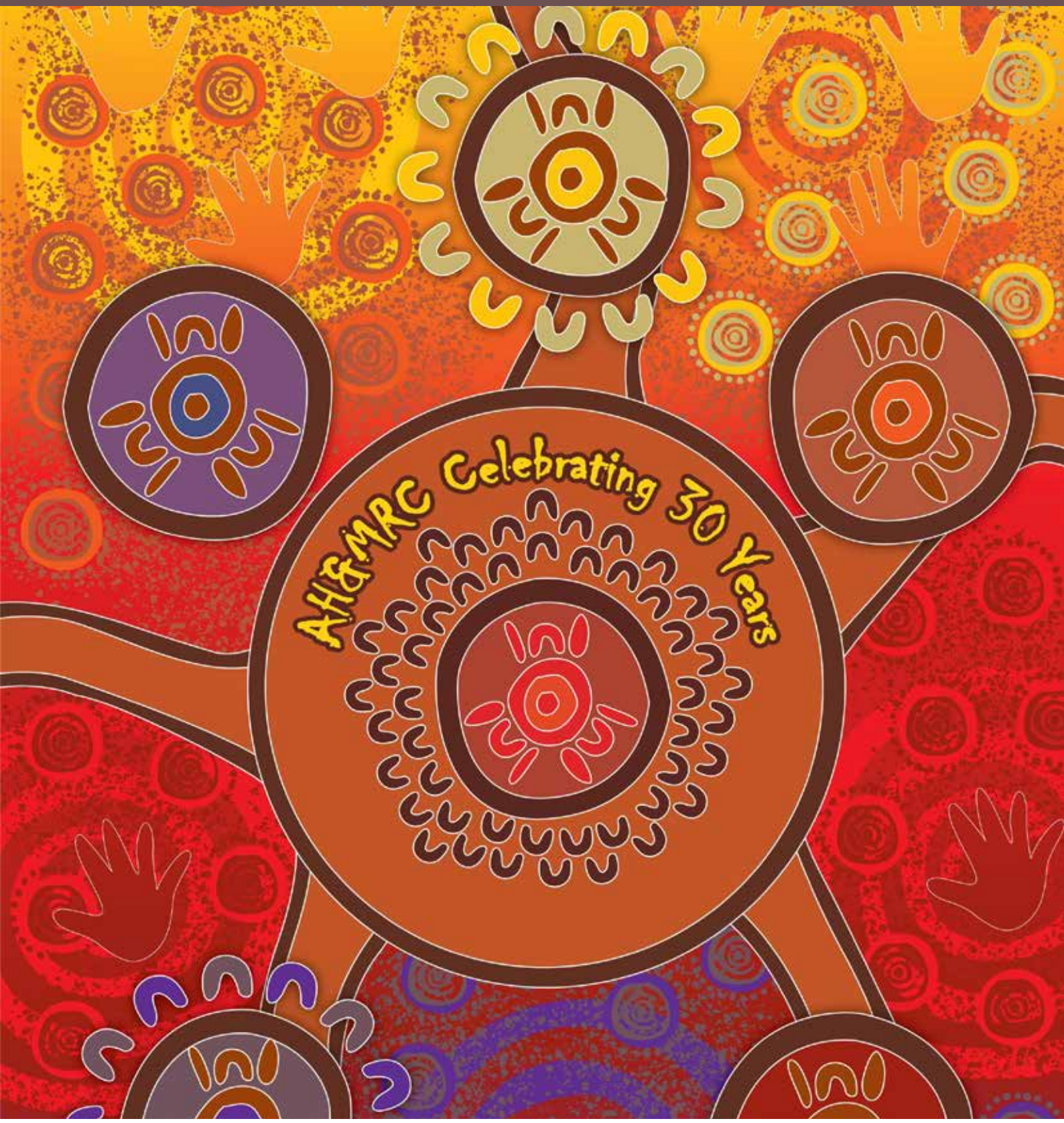
AHMRC ORAL HEALTH POSITION PAPER

Achieving oral health equity for Aboriginal communities in NSW



Aboriginal Health & Medical
Research Council – 2016

Aboriginal Health & Medical Research Council of New South Wales

About the AHMRC

The AHMRC is the peak body for NSW Aboriginal Community Controlled Health Services (ACCHSs). The purpose of the AHMRC is to:

- lead the Aboriginal health agenda for better policies, programs, services and practices;
- ensure Aboriginal knowledge informs decision-making processes; and
- support, strengthen and sustain ACCHSs.

For more information about the AHMRC, see www.ahmrc.org.au

Acknowledgements

This paper was prepared by Megan Campbell and Jenny Hunt, AHMRC Public Health Medical Officers, and Sandra Meihubers, Dental Consultant, with input from Victoria Jones, AHMRC Chief Operations Officer.

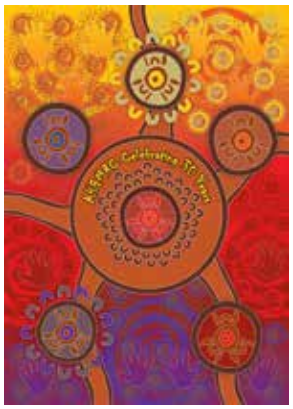
The AHMRC would like to acknowledge the contribution of Aboriginal Community Controlled Health Services that participated in the 2012 AHMRC Oral Health Project which informed the development of this position paper, and that provided valuable feedback on consultation drafts of the paper.

ISBN: 978-0-9943850-5-5

Suggested citation:

Aboriginal Health & Medical Research Council (2016). AHMRC Oral Health Position Paper: Achieving oral health equity for Aboriginal communities in NSW. Sydney: AHMRC.

Copies of this document can be downloaded from the AHMRC website www.ahmrc.org.au



This artwork was created by Carissa Paglino, a descendant of the Gamilaroi & Wonaruah nations and Italian heritage, who resides in Newcastle, NSW.

Website: www.miromaa.org.au/Graphic-Design/Design-Portfolio.html

CONTENTS

1.	Introduction	4
2.	Guiding principles	5
3.	Recommended priority actions to improve Aboriginal oral health	6
4.	Oral health in Aboriginal communities in NSW: An evidence base for action	8
	4.1 Oral health status	8
	4.2 Policy context	10
	4.3 Access to oral health services	12
	4.4 Funding for oral health programs	13
5.	Rationales for recommended priority actions to improve Aboriginal oral health	15
	5.1: Ensure Aboriginal people have timely and coordinated access to oral health care	15
	5.2: Implement appropriate clinical and community based oral health prevention and promotion programs for Aboriginal people	18
	5.3: Support and strengthen an appropriately skilled oral health workforce	20
	5.4: Facilitate continuous quality improvement and best practice oral health service delivery	22
	5.5: Support oral health research and evaluation that contributes to the evidence for improving oral health in Aboriginal communities	23
References		24

1 INTRODUCTION

Aboriginal Community Controlled Health Services (ACCHSs) deliver culturally appropriate comprehensive primary health care to meet the needs of local Aboriginal communities (1), and for many ACCHSs in NSW this includes providing oral health care (2). Improving the oral health of Aboriginal communities in NSW has consistently been identified by NSW ACCHSs as an important priority and area of need (2).

'Oral health'[1] refers to the level of health required for people to eat, work, socialise and speak without pain, discomfort or embarrassment (3, cited in 4) and is an integral component of general health and wellbeing. Aboriginal people in NSW experience a disproportionate burden of poor oral health from childhood to adulthood, and the impacts of poor oral health on the lives of Aboriginal peoples are pervasive. Oral disease causes significant morbidity through pain and loss of function, and there is evidence that poor oral health is associated with chronic disease, including cardiovascular disease and diabetes (5, 6).

The AHMRC has a vision for Aboriginal oral health in NSW that all Aboriginal peoples in NSW experience levels of oral health that allow them to speak, eat, socialise and work without pain, embarrassment or discomfort, and that are equitable with levels of oral health in the general NSW population.

Over recent years, the AHMRC has made efforts to have a focus on oral health, despite not having access to specific oral health funding. AHMRC oral health activities have included integrating coverage of oral health into AHMRC program activities, such as chronic disease workshops and conferences, and advocating on behalf of the ACCHS sector about impacts of changes to arrangements for Medicare funding of dental care.

In addition, the AHMRC has undertaken a targeted literature review, and surveyed and interviewed NSW ACCHSs about their experiences of oral health needs and services in local Aboriginal communities. The findings from these projects were collated and integrated to inform a draft strategic framework for consultation with member ACCHSs in late 2015, and feedback incorporated in this position paper.

The AHMRC Oral Health Position Paper outlines oral health issues affecting Aboriginal people in NSW and suggests strategic action areas and priority actions for improving the oral health of Aboriginal people. The paper has been designed to complement the NSW government's *Aboriginal Oral Health Plan 2014-2020* (7), which also acknowledges the important role of Aboriginal communities, ACCHSs and the AHMRC.

This position paper is divided into the following sections:

- Section 2: Guiding principles to underpin all action to improve Aboriginal oral health
- Section 3: Recommended strategic action areas and priority actions for improving the oral health of Aboriginal peoples in NSW
- Section 4: A collation of the evidence regarding the oral health of Aboriginal people
- Section 5: Detailed rationales for recommended priority actions

Improving the oral health of Aboriginal peoples is an urgent priority in NSW, and requires the coordinated and strategic efforts of a broad range of stakeholders who deliver services, develop and evaluate programs and policies, make decisions about funding, develop the workforce, and undertake research and evaluation.

The AHMRC Oral Health Position Paper aims to contribute to efforts to improve Aboriginal oral health in NSW through providing a strategic framework to inform and support the coordinated efforts of Aboriginal communities, ACCHSs, and all who work with them, including service providers, peak bodies, researchers, educators, policy makers and funders.

[1] The term oral health is used in this document to refer to all health issues relating to the mouth and associated tissues, in particular tooth cavities (dental caries), gum disease (periodontal disease) and tooth loss (edentulism).

2 GUIDING PRINCIPLES

The AHMRC Oral Health Position Paper is underpinned by the following guiding principles:

- **Aboriginal community control and self-determination**

The principles of Aboriginal community control and self-determination are at the foundation of the Aboriginal community controlled health sector. These principles acknowledge the right of Aboriginal communities to self-govern and determine how health services are designed and implemented. Aboriginal community control is an important determinant of Aboriginal health and wellbeing.

- **Culturally appropriate approaches**

The provision of culturally appropriate oral health services by all organisations providing services to Aboriginal people is vital to ensuring Aboriginal people feel comfortable and supported in accessing and receiving care. The development of culturally appropriate practices requires continuous learning and commitment from organisations and individuals.

- **Evidence based best practice**

Efforts to improve the oral health of Aboriginal communities will be most effective when they are grounded in the current evidence regarding best practice. A culture of continuous quality improvement facilitates ongoing improvements of oral health services for Aboriginal people.

- **Holistic perspective of health**

Oral health is an integral aspect of overall health and wellbeing. Poor oral health contributes to the chronic disease burden for Aboriginal people and improvements in oral health can lead to improved overall health and wellbeing. The Aboriginal concept of health acknowledges that health is not just physical but involves the social, emotional and cultural wellbeing of the individual and their community.

- **Social determinants of health**

The social determinants of health are the conditions in which people are born, live, work and age. Determinants such as poverty, racism, unemployment and inadequate housing have profound impacts on the oral health and general health of Aboriginal peoples and are important contributors to the gaps in oral health outcomes. Achieving equitable oral health for Aboriginal peoples in NSW depends on acknowledging and responding to these determinants.

- **Strengths based approach**

A strengths based approach acknowledges that there is significant strength, experience and positive action already existing in Aboriginal communities and the oral health system and these attributes can be built on to achieve equitable oral health for Aboriginal peoples.

- **Partnership**

Policies, programs and research aiming to improve Aboriginal health, including efforts to improve Aboriginal oral health, will be most effective if they are developed and implemented by, or in partnership with, Aboriginal communities and their representative organizations, including ACCHSs and the AHMRC.

3 RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

This section outlines priority actions for improving the oral health of Aboriginal people in NSW and is organised into five strategic action areas. The rationales for these recommended actions are discussed in more detail in Section 5 of this paper.

1: Ensure Aboriginal people have timely and coordinated access to oral health care

Priority actions

- Adequately and equitably fund all oral health services, including those provided by ACCHSs, to provide appropriate oral health care to Aboriginal people
- Base models of oral health care for Aboriginal people on best practice, and deliver them on the terms of ACCHSs and Aboriginal communities according to local cultural values and protocols
- Identify improved pathways for Aboriginal people to access primary oral health care as locally as possible, including for rural and remote populations, by oral health teams working in coordination with local Aboriginal communities and primary health care providers
- Embed oral health care for Aboriginal people within a comprehensive primary health care model to ensure integration between oral health and health care, and overall health and wellbeing
- Develop and disseminate appropriate tools and resources to assist in the provision of integrated models of care for Aboriginal people based on evidence based best practice care, including coordination with other primary health and chronic disease programs
- Prioritise Aboriginal children and other high risk groups of Aboriginal people, such as people with diabetes and young mothers, in activities aiming to improve oral health ensuring those at high risk receive regular preventive oral health care and advice
- Develop, implement and evaluate models of appropriate preventive oral health care for Aboriginal people, and make this information available to all service providers.

2: Implement appropriate clinical and community oral health promotion and prevention programs for Aboriginal people

Priority actions

- Develop and implement guidelines on models of community based prevention and oral health promotion programs for Aboriginal people, drawing on the available evidence, and experiences of ACCHSs and other oral health care providers
- Develop and implement policies regarding appropriate oral health prevention and education programs for Aboriginal children in preschool and school settings
- Implement fluoride varnish application programs for high risk groups of preschool and school-aged Aboriginal children, and other groups of Aboriginal people as determined by need, across NSW
- Ensure all Aboriginal communities in NSW have access to fluoridated water
- Collate and disseminate culturally appropriate oral health promotion resources for Aboriginal people through a central accessible online clearinghouse.

3: Support and strengthen an appropriately skilled oral health workforce

Priority actions

- Increase oral health training opportunities for Aboriginal Health Workers[2] through programs delivered by accredited providers, including through dedicated oral health courses and a greater emphasis on oral health in existing training modules
- Strengthen training pathways for Aboriginal people to access accredited and university based oral health training programs
- Target efforts to strengthen an oral health workforce at local Aboriginal people as a priority
- Develop, implement and evaluate accredited Continuing Professional Development (CPD) programs for oral health professionals working with Aboriginal people
- Support universities to implement courses on Aboriginal health and oral health, including access to student placements in Aboriginal communities
- Develop and implement guidelines to support mentors working with recent graduates in Aboriginal oral health care.

4: Facilitate continuous quality improvement and best practice oral health service delivery

Priority actions

- Embed continuous quality improvement (CQI) approaches in the operations of oral health services delivering care to Aboriginal peoples, including the use of indicators, Plan Do Study Act cycles and change management
- Collect service based and oral health status data in a streamlined and efficient manner with appropriate governance structures to ensure Aboriginal community governance of health information about Aboriginal people
- Ensure the reporting of Aboriginal oral health data is useful to, and informed by the perspectives of, Aboriginal communities
- Improve the quality and use of Aboriginal oral health data through developing and coordinating oral health indicators
- Support sharing of aggregated data about Aboriginal oral health between all services to enable monitoring of oral health status and access to oral health care for NSW Aboriginal peoples.

5: Support oral health research and evaluation that contributes to the evidence about what works to improve Aboriginal oral health

Priority actions

- Support all organisations providing care to Aboriginal people to develop and use research and evaluation approaches that are appropriate for Aboriginal communities
- Develop and support research and evaluation partnerships between research organisations, organisations providing care to Aboriginal people and Aboriginal communities.

[2] The term 'Aboriginal Health Worker' refers here to Aboriginal people working in the health system who have a minimum Certificate III in Aboriginal Primary Health Care.

4 ORAL HEALTH IN ABORIGINAL COMMUNITIES IN NSW: AN EVIDENCE BASE FOR ACTION

This section outlines the evidence regarding key oral health issues for Aboriginal people living in NSW, including the epidemiology of oral disease, the policy context, oral health services available to Aboriginal people and funding of oral health services in NSW. The information presented in this section has been drawn from a number of sources including the published literature, organisational websites, and communications between the AHMRC and member ACCHSs, including survey findings, interviews and informal communications.

4.1 Oral health status

Aboriginal people have significantly worse health outcomes than the general population and this includes poorer oral health. The gap in oral health outcomes between Aboriginal and non-Aboriginal children and adults is widely documented (8-10) and despite several strategies and policies aimed at reducing this gap, the burden on communities remains large (10). Aboriginal people experience poor oral health at an earlier age than the general population and experience a greater severity of disease (8).

The higher prevalence of oral disease experienced by Aboriginal peoples is due to a variety of factors. Oral disease is an indicator of deprivation with population oral health mirroring the gradient of social and material conditions in Australia (10). Aboriginal people are less likely to live in areas and socioeconomic circumstances that support access to healthy foods, oral hygiene products and preventive and restorative care (11, 12). Aboriginal people may also access oral health services less than non-Aboriginal people because of a lack of cultural appropriateness (13). Unfluoridated water and smoking are further risk factors for oral disease that disproportionately affect Aboriginal people (14, 15). Aboriginal people living in remote communities are likely to face additional barriers to good oral health, including difficulty accessing locally available oral health care (16, 17).

The two main oral health problems affecting Aboriginal people in NSW are dental caries (tooth decay) and gum diseases. Dental caries is caused by bacteria in dental plaque (an invisible bacterial film that develops on teeth surfaces) that demineralise (weaken by leaching out strong elements such as calcium) and break down the enamel that forms the hard outer layer of the tooth (18). If caries is left untreated the tooth will continue to decay, causing infection of the internal dental pulp (containing nerves and blood vessels) and the tooth will eventually have to receive intensive treatment or be removed. The causes of dental caries are multifactorial and include a diet high in sticky and sweet foods that feed the caries-causing bacteria, reduced saliva flow and poor oral hygiene. Saliva helps to wash the mouth and neutralise acids from bacteria as well as from foods and drinks, and the flow of saliva is affected or reduced by smoking, some medications, and some health conditions such as diabetes.

Gum disease (also known as periodontal disease) is caused by an exaggerated immune response to bacteria in dental plaque (19). This causes the gums to become inflamed, with associated swelling and bleeding. If left untreated, inflammation can start to affect deeper tissues that support the teeth, which become loose. Gum disease is largely caused by poor oral hygiene, and can be exacerbated by underlying health conditions such as diabetes and compromised immune systems. Treatment by a health professional and good oral hygiene practices are important in preventing and treating gum disease.

Child oral health

The Aboriginal population of NSW is much younger than the non-Aboriginal population; more than one in three Aboriginal people in NSW are less than 15 years of age, compared with one in five for the non-Aboriginal population (20). In NSW, Aboriginal children have higher levels of dental caries in both deciduous (child or milk teeth) and permanent (adult) teeth when compared with non-Aboriginal children (5). In addition, Aboriginal children living in rural and remote locations experience higher levels of dental caries than those in metropolitan areas (13). A statewide child oral health survey in New South Wales found that Aboriginal children aged 5-6 years experienced on average more than twice as many decayed, missing and filled deciduous teeth than their non-Aboriginal counterparts, and had more than twice the number of untreated decayed teeth (21). The proportions of 5-6 year olds with no dental caries were 35.2% and 62.4% for Aboriginal and non-Aboriginal children respectively. In the same survey high rates of dental caries were also observed in the permanent dentition: 46.4% of Aboriginal children aged 11-12 years had caries compared with 32.8% of non-Aboriginal children of the same age. Nationally Aboriginal and Torres Strait Islander 15-year-olds have 50% more tooth decay than the rest of the populations (22).

Untreated dental decay often results in pain and infection, causing great discomfort to the child. This can also affect school attendance, and often results in refusal to receive clinical oral health care. Young children deemed to have unsuitable behaviour for treatment under conscious sedation or local anaesthetic are placed on waiting lists for dental treatment under general anaesthesia (23). The number of Aboriginal children undergoing dental treatment under general anaesthesia in the period from 1994 to 2004 increased seven fold (6). Treatment under general anaesthesia comes with high risks including death, and is conventionally considered as the last option in a range of treatment possibilities (24).

Adult oral health

The high prevalence of dental caries seen in children continues through the lifespan with Aboriginal adults experiencing more than twice the number of decayed teeth as non-Aboriginal adults, and three times the number of decayed surfaces (8). This has been associated with poor access to oral health services. The higher prevalence of dental caries among Aboriginal adults contributes to the higher rates of edentulism (loss of tooth) in the Aboriginal population.

Aboriginal adults also suffer from a higher rate of periodontal disease (8). General risk factors for periodontal disease include smoking, diabetes, advancing age, stress and poor oral hygiene (10). The impact of periodontal disease, in terms of tooth loss, is far more severe in people with diabetes – a disease also more prevalent in the Aboriginal population (13). Treatment of pre-existing periodontal disease has demonstrated small but significant improvements in glycaemic control for individuals with type 2 diabetes, underscoring the importance of regular oral health assessments in this population (10).

Oral cancer is the eighth most common cancer in Australia, and can affect the lips, tongue, saliva glands, gums, mouth, or throat (19). It is more common among Aboriginal people, occurring at a rate three times greater than the rest of the Australian population. Most oral cancers are associated with tobacco use and/or alcohol use (25).

4 ORAL HEALTH IN ABORIGINAL COMMUNITIES IN NSW: AN EVIDENCE BASE FOR ACTION

Oral health and overall health

Aboriginal people have worse health outcomes than the general population, with higher rates of cardiovascular disease, diabetes, respiratory disease and renal disease (26). As well as causing pain and morbidity directly, dental caries and periodontal disease can also affect many of the chronic diseases that contribute to the disparity in life expectancy between Aboriginal and non-Aboriginal people. A review of the published evidence identified strong links between oral health and general health and four major relationships have been identified: a significant association between poor oral health and major chronic diseases such as diabetes; poor oral health causes disability; there are common risk factors between oral health and the major chronic diseases; and oral health conditions can be caused or worsened by general health problems (27).

There is growing evidence to suggest periodontal disease may be associated with cardiovascular disease, stroke and preterm low birth weight babies, however, causal links have not been proven. (10-12). Bacteraemia from periodontal disease can contribute to structural valve damage in rheumatic heart disease (28) and oral disease more generally has been associated with cardiovascular and cerebrovascular disease (29), aspiration pneumonia and otitis media (30). The high rates of Aboriginal people avoiding certain foods due to oral disease may also challenge the prevention and management of diet-related chronic disease (8).

4.2 Policy context

There have been several state and federal policy frameworks addressing the oral health of Aboriginal people and these are summarised below.

The *National Aboriginal and Torres Strait Islander Health Performance Fr*amework monitors progress towards closing the gap in health outcomes between Aboriginal and non-Aboriginal people (22). The Framework identifies health status, determinants of health and aspects of health service delivery that are useful in monitoring efforts towards improved health for Aboriginal people. Oral health indicators are included in the health status section and Framework reports continue to note the significantly poorer oral health of Aboriginal children and adults when compared with the general population, noting that this gap in health status indicates a large unmet need for dental care.

The *National Oral Health Plan 2004-2013* (31) identifies Aboriginal people as a key population group on which to focus to improve oral health status and reduce the burden of disease. Areas of action include:

- supporting the inclusion of a Medicare covered biennial health assessment for Aboriginal adults including an oral examination
- providing culturally appropriate oral health services through partnerships between mainstream and Aboriginal services
- providing water fluoridation to communities with more than 1,000 residents
- strengthening the Aboriginal oral health workforce
- increasing oral health promotion for Aboriginal people
- promoting the integration of oral health within the broader health care system
- improving Aboriginal oral health data quality by creating a national data set.

Progress towards this Plan was recently assessed (32) and found some progress had been made across all action areas in Aboriginal health. However, this progress was noted to have been hampered by lack of workforce, difficulties in gaining high priority for oral health in a population with many concerning health problems, and difficulties with implementing flexible service delivery models within existing health services. The program reviewers expressed further concern about the need for sustainable programs and the need for enhanced support for ACCHSs to coordinate, collaborate on and provide dental care.

Australia's National Oral Health Plan 2015-2024 (Consultation Draft) (33) also acknowledges the many barriers faced by Aboriginal people in accessing oral health care, including location and cost. The draft plan recognises the limited representation of Aboriginal and Torres Strait Islander people in the oral health workforce, and the lack of cultural sensitivity in many dental services. It notes that many Aboriginal and Torres Strait Islander people prefer to visit the dentist along with family and friends, a practice which might not be accepted in mainstream services.

The draft plan identifies the following key strategies for addressing Aboriginal oral health:

- promote the incorporation of cultural competency in assessment, referral and management protocols in clinical guidelines and training
- develop integrated models of care that incorporate oral health education, prevention and screening throughout public, private and community-controlled health services
- increase the representation and engagement of Aboriginal and Torres Strait Islander people in the oral health workforce
- expand existing primary health practice incentives or loading to oral health care for Aboriginal and Torres Strait Islander people.

In NSW the *NSW Oral Health Strategic Directions 2011-2020* (34) was coordinated by the Centre for Oral Health Strategy NSW and the State Oral Health Executive. The document provides a strategic framework to improve oral health and reduce disparities in oral health status and service access through similar action areas to the *National Oral Health Plan*. This policy document also identifies Aboriginal people as a target population for strategic action.

The *New South Wales Aboriginal Health Plan 2013-2023* (20) identifies six strategic directions for health improvement that are relevant to oral health. These are:

- building trust through partnerships
- implementing what works and building the evidence
- ensuring integrated planning and service delivery
- strengthening the aboriginal workforce
- providing culturally safe work environments and health services
- strengthening performance monitoring, management and accountability.

The NSW Ministry of Health has also developed a strategic policy framework for Aboriginal oral health, the *New South Wales Aboriginal Oral Health Plan 2014-2020* (7). This plan was released in February 2015 and recognises the importance of strong and respectful partnerships in achieving the stated outcomes. The three stated goals of the Plan are to:

- improve the oral health of the NSW Aboriginal Population through primary prevention
- improve access to oral health services for Aboriginal people in NSW
- reduce disparities in the oral health status of Aboriginal people in NSW.

4 ORAL HEALTH IN ABORIGINAL COMMUNITIES IN NSW: AN EVIDENCE BASE FOR ACTION

The six strategic directions to achieve these goals are:

- increase access to fluoridated water and fluoride programs to assist in the reduction of dental caries
- develop and implement sustainable oral health promotion and prevention programs
- improve access to appropriate dental services for Aboriginal people in NSW in culturally safe environments
- develop and implement sustainable programs to increase the number of Aboriginal people in the oral health workforce in NSW
- strengthen the capacity of the existing and future oral health workforce to provide appropriate oral health care in Aboriginal communities
- improve oral health for Aboriginal people through supported action-oriented research and improved oral health data collections for evaluating both service delivery and oral health outcomes.

4.3 Access to oral health services

The majority of Aboriginal people in New South Wales live in metropolitan or inner regional areas (35). While there are smaller numbers of Aboriginal people living in outer regional and remote areas, Aboriginal people represent a higher proportion of the total population in these areas. In very remote areas of New South Wales, Aboriginal people can comprise the majority population (36). Studies exploring access to oral health services illustrate that rural and remote populations have more difficulties accessing regular oral health care (37).

A range of providers deliver oral health care in NSW including Aboriginal Community Controlled Health Services, public dental services, private dentists and some university departments and non-government organisations. Equity of access and integration of services could be strengthened with greater coordination at a regional or state level.

Aboriginal Community Controlled Health Services strive to provide oral health care as part of their overall approach to coordinated primary health care delivery, although not all ACCHSs are funded to provide oral health care (2). An AHMRC study documented the experiences of ACCHSs in delivering oral health care and found that ACCHSs vary in their capacity to provide oral health services depending on available financial and staffing resources (2). Some ACCHS oral health services involve dentists only, while others have established larger teams that include dentists, dental/oral health therapists, dental hygienists and others. ACCHSs therefore vary in the types of services they provide, and this may include acute and restorative dental care, the provision of oral hygiene products, health promotion programs and dental surgery. ACCHSs are required to balance local community need with available resources and this means that ACCHSs have a range of approaches to eligibility criteria, with some ACCHSs charging a co-payment fee for dental services. The services provided are targeted to meet local needs, and financial and transport assistance are viewed as important strategies for increasing accessibility to services for Aboriginal people.

Public Dental Services are managed by the NSW Ministry of Health through the Centre for Oral Health Strategy (38). Each Local Health District (LHD) bears responsibility for the management and coordination of government dental services within its District. Clinics are generally multi-surgery configurations with a mix of providers including dentists, dental and oral health therapists and dental prosthetists. The numbers and range of providers vary according to location and size of the facility. Basic dental care is provided at all public dental services and specialist dental services are mainly provided at two major teaching hospitals in Sydney: the Westmead Centre for Oral Health and the Sydney Dental Hospital.

Children aged 0-5 years and those who are under the age of 18 years and enrolled in primary,

secondary or tertiary studies are eligible for dental care in the NSW public dental system (39). Eligibility for adults over the age of 18 years is limited to those with a Health Care Card, Pensioner Concession Card, or Commonwealth Seniors Health Card. Approximately 47% of the NSW population is eligible for public oral health services (39).

Access to oral health services in the public dental system is managed through the *NSW Health Priority Oral Health Program and List Management Protocols* (40). These protocols involve a series of steps in order to access dental care:

- accessing call centres and answering phone questionnaires;
- being triaged and allocated a priority level according to clinical need and socio-economic risk factors;
- placement on waiting lists for an appointment to attend for a dental assessment; and,
- depending on the determined need of a person after a dental assessment appointment, placement on a second waiting list for dental treatment.

There are criteria to ensure someone with urgent dental treatment needs will be seen within a specified timeframe, and under the Oral Health Fee For Service Scheme vouchers for treatment in private clinics are used to assist in the flow of access to dental care (40). The multi step process for accessing public dental care can create difficulties for Aboriginal people and several ACCHSs report providing assistance to help people access appointments.

Many Aboriginal adults seek dental care for emergency treatment and acute pain relief, and according to the NSW policy directive these adults are eligible for immediate dental treatment (within 24 hours) in the public dental system if they have visible facial swelling associated with the dental problem, and/or uncontrolled bleeding and/or loss of function and/or supervening infection (40). People will be seen within three days if they have a medical condition that would be adversely affected by lack of dental care, and within one week to one month depending on the priority accorded to the person's pain. The treatment seeking behaviours of children are likely to be largely guided by their carers, and those carers who seek treatment only for acute conditions (rather than preventive care) may also only seek care for their children when an acute condition arises.

Several LHDs have worked to bypass some of the barriers to accessing oral health care in the public dental system. LHD initiated innovations include establishing a dedicated phone line for Aboriginal people requiring dental care, allocating clinical days for Aboriginal clientele, fast tracking appointments, and appointing Liaison Officers to facilitate passage through the system (2).

An Aboriginal Oral Health Hub and Spoke Program operates at the Sydney Dental Hospital (41). This program involves dental teams providing blocks of dental care on a fly in fly out basis to rural ACCHS clinics that do not have a dentist as well as seeing Aboriginal clients referred to the Sydney Dental Hospital clinic.

Private Dental Care in NSW is provided by dentists in private practice including clinics run by health insurance companies for their members. Private dental care is provided on a fee for service basis, with some private dentists accepting government funded vouchers to pay for delivery of basic dental care to people eligible for government services (10).

Other Service Providers involved in delivering oral health care to Aboriginal communities in NSW include non-government organisations such as the Royal Flying Doctor Service and dental services provided by university programs for example the Poche Centre for Indigenous Health, University of Sydney in the northern tablelands of NSW, and Charles Sturt University in northwestern NSW.

4 ORAL HEALTH IN ABORIGINAL COMMUNITIES IN NSW: AN EVIDENCE BASE FOR ACTION

Some volunteer groups such as Filling the Gap (42) work with Aboriginal communities and ACCHSs to provide volunteer dentists as an interim measure, until such time as the community or organisation is independently able to provide oral health programs.

4.4 Funding for oral health programs

Since 2007 the Commonwealth government have been providing funds for dental services through several schemes including the Medicare Chronic Disease and Teen Dental programs (both now closed), and the Child Dental Benefits Schedule, which was introduced in 2014 (43). Since 2013 funds have been provided directly to the States and Territories for public dental care through the *National Partnership Agreement on Treating More Public Dental Patients*. This funding aims to focus on providing additional dental services to patients who are Aboriginal, at high risk of major oral health problems, or living in rural and remote areas (44).

The sustainable delivery of oral health care is challenged by ongoing changes in government policy. The majority of ACCHS oral health programs receive their funds from the NSW Ministry of Health through the Non-Government Organisation Grants Program, however, ACCHSs have reported that the funding formula used to allocate funds is unclear (2). Some ACCHSs use Commonwealth funds to support their oral health services, particularly if they received dental funding from the previous Aboriginal and Torres Strait Islander Commission prior to the Commonwealth taking over funding for Aboriginal health in 1995. ACCHSs may use a combination of funding sources to sustain their oral health programs including core or general ACCHS funding, co-payments from patients, NSW Health Oral Health Fee For Service Scheme vouchers from the public dental system, and Medicare dental and medical funds.

Dental care in the private sector is provided on a fee for service basis. Some ACCHSs report paying fees for their clients to access private dental care if no other treatment option is available (2), and private dentists and ACCHS dentists may also participate in the NSW Health Oral Health Fee for Service Scheme.

Universities and non-government organisations source support from a variety of funders including government departments, philanthropic supporters and other grant providers. As with all dental service providers, there are inherent risks in the sustainability of programs due to short-term and "once-off" funding.

5 RATIONALES FOR RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

This section provides detailed rationales for the recommended priority actions presented in Section 3 of this paper under five strategic action areas.

5.1: Ensure Aboriginal people have timely and coordinated access to oral health care

Priority actions

- Adequately and equitably fund all oral health services, including those provided by ACCHSs, to provide appropriate oral health care to Aboriginal people
- Base models of oral health care for Aboriginal people on best practice, and deliver them on the terms of ACCHSs and Aboriginal communities according to local cultural values and protocols
- Identify improved pathways for Aboriginal people to access primary oral health care as locally as possible, including for rural and remote populations, by oral health teams working in coordination with local Aboriginal communities and primary health care providers
- Embed oral health care for Aboriginal people within a comprehensive primary health care model to ensure integration between oral health and health care, and overall health and wellbeing
- Develop and disseminate appropriate tools and resources to assist in the provision of integrated models of care for Aboriginal people based on evidence based best practice care, including coordination with other primary health and chronic disease programs
- Prioritise Aboriginal children and other high risk groups of Aboriginal people, such as people with diabetes and young mothers, in activities aiming to improve oral health ensuring those at high risk receive regular preventive oral health care and advice
- Develop, implement and evaluate models of appropriate preventive oral health care for Aboriginal people, and make this information available to all service providers.

Rationale

Ensuring timely and coordinated access to oral health care is vital for improving the oral health of Aboriginal people in NSW. Adequate access to oral health care depends on continuity of care and coordination between services providers. Unique issues and actions required relating to access to oral health care for Aboriginal children and adults are outlined below.

Continuity and coordination of care

The range of different oral health service providers delivering care to Aboriginal people in NSW provides opportunities and limitations. Oral health care in this context benefits from ensuring there is regular communication within and among service providers both at local and state levels.

Continuity of service delivery is a vital element of building community trust within a service. Short term and occasional visiting services have limited impact in a community, however they can be useful in the early days of gauging oral health needs and providing information for future service planning. Visiting and short term oral health providers can increase access to dental care, but also result in additional administrative loads being placed on ACCHS staff, particularly if there are several different providers visiting a particular location. Careful evaluation of fly in fly out and

5 RATIONALES FOR RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

other visiting models requires consideration of these impacts as well as cost effectiveness more broadly, if they are being considered as medium to long term approaches to addressing the oral health needs of Aboriginal communities.

Integrating oral health care within a wider spectrum of health care has a range of potential benefits for overall health, including improved wellbeing and improved control of some chronic diseases (27). Where possible linking oral health programs with other health program areas will facilitate coordinated and improved health care for Aboriginal people. The preventive health assessment guidelines produced by the Royal Australian College of General Practitioners in association with the National Aboriginal Community Controlled Health Organisation contain a section on oral health care (45). These guidelines are a useful resource for non-dental practitioners to be better able to identify signs of early disease and dental disease risk factors, and provide their clients with appropriate oral health advice.

Some ACCHSs with established dental services have developed models of care where oral health care is embedded within the comprehensive primary health care model offered by the ACCHSs. Some ACCHSs incorporate oral health checks into all health assessments and others require a health assessment prior to accessing the dental service. In addition, some ACCHSs have developed prevention and oral health promotion programs involving population based oral health check programs, including school based programs.

ACCHSs have also developed partnerships with other organisations involved in oral health care for Aboriginal people. Partnerships between ACCHSs and government services have led to establishing new Aboriginal targeted dental services and strengthening ACCHS dental services through sharing of dental staff. Some ACCHSs have also established partnerships with universities where ACCHSs offer student placements in oral health care and universities support the ACCHS dental service with staffing and clinical governance.

Other ACCHSs have implemented different models of care where oral health is integrated with annual child and adult health checks. A range of health practitioners offer relevant health screening, including dental screening and advice. Referral for necessary care is provided, and oral health is seen to be an integral component of primary health care practice. Both approaches are able to maximise the currently available Commonwealth funding for Aboriginal and Torres Strait Islander health checks.

Improving child oral health

An evaluation of a primary oral health care model in South Australia demonstrated improvements in oral health among Aboriginal children (46). In this evaluation reduced levels of dental caries in the permanent teeth of Aboriginal children were attributed to focusing on regular oral health screening and prioritisation for dental treatment, use of atraumatic approaches such as caries arrestment and management, protection of permanent teeth by widespread use of pit and fissure sealants, and regular applications of fluoride. Evaluation of this program illustrated that participating Aboriginal children had lower oral disease levels than in the corresponding age groups (12 years) of the general statewide population.

The higher proportion of Aboriginal people under the age of 15, and their greater oral health needs justify oral health programs prioritising and delivering appropriate preventive and clinical care to this age group (47). This type of care focuses on:

- disease risk assessment at regular recall visits,
- ongoing appointments for fluoride applications (three to six monthly),
- provision of minimal intervention and preventive clinical oral health care, and
- guidance on appropriate oral health advice.

Program flexibility and working with families and communities to develop an increased understanding of the need for regular dental care are required to ensure the necessary regular visits are accessible for children and their families.

The urgency of prevention services for young children is illustrated by the high rates of dental caries in Aboriginal children in the 5-6 year age group (10), and the growing numbers of Aboriginal infants and young children being waitlisted for dental treatment under general anaesthesia (23). As well as working with young mothers and preschool groups, oral health programs can coordinate with early childhood programs to facilitate access to preventive oral health care and advice for Aboriginal children.

Improving adult oral health

There is great potential for oral health care referral pathways to be improved by oral health programs linking with other services and service providers to Aboriginal people such as general practitioners, chronic disease programs, child and maternal health programs and diabetes educators (27). Oral health programs can be instrumental in ensuring health staff working in other health areas have an understanding of oral health and disease, and their role in prevention and referral.

Oral health programs can also be strengthened by linkages with Aboriginal community groups such as Elders and mothers groups. Working with Aboriginal community groups can facilitate the sharing of oral health advice between health professionals and Aboriginal people as well as identify methods of encouraging Aboriginal people to attend for regular preventive oral health care.

Some ACCHSs are using community based health checks where several health and community programs work together to offer health screening, advice and referral for necessary care. Oral health can be integrated into these checks, providing opportunities to deliver oral health advice and offer referral to oral health services and programs.

5 RATIONALES FOR RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

5.2: Implement appropriate clinical and community based oral health prevention and promotion programs for Aboriginal people

Priority actions:

- Develop and implement guidelines on models of community based prevention and oral health promotion programs for Aboriginal people, drawing on the available evidence, and experiences of ACCHSs and other oral health care providers
- Develop and implement policies regarding appropriate oral health prevention and education programs for Aboriginal children in preschool and school settings
- Implement fluoride varnish application programs for high risk groups of preschool and school-aged Aboriginal children, and other groups of Aboriginal people as determined by need, across NSW
- Ensure all Aboriginal communities in NSW have access to fluoridated water
- Collate and disseminate culturally appropriate oral health promotion resources for Aboriginal people through a central accessible online clearinghouse

Rationale

The evidence base for effective actions to improve oral health in Aboriginal communities has been summarised in The Evidence-Based Oral Health Promotion Resource produced by the Department of Health in Victoria (48). This resource identifies six evidence-based oral health promotion interventions for Aboriginal people:

- community fluoride varnish programs with oral health education and community promotion;
- community-based oral health promotion;
- use of health workers as oral health champions;
- preschool and school-based supervised tooth brushing programs with oral health education integrated into the curriculum;
- health policies and practices in childcare and school settings; and
- enhancing access to oral care services.

Community based programs are more likely to be effective when they are grown locally from identified needs. This can involve "oral health champions" who work with non-community based partners to ensure programs are appropriate, sustained and effective.

Oral health coordination with other programs

Oral health can be included in health policies and practices in childcare and school settings. As well as working with teachers and school staff to improve access to oral health information and instil programs such as school based toothbrushing there are programs that address issues on a broader level. One ACCHS has worked with the local primary school to install a water chiller at the school, to encourage the drinking of water in preference to sweetened drinks. Water bottles have been provided to the school students and water usage is regularly monitored and analysed. The local council is in the process of activating the addition of fluoride into the town water supply, which will enhance the oral health benefit of drinking water at school, especially for those children who live out of town.

Regional oral health promotion programs, such as the Bila Muuji Oral Health Promotion Program (49), has involved working with rural and remote schools to implement school based tooth brushing programs in areas with high Aboriginal populations. Other programs involving Aboriginal community

members and schools are being piloted. Standardised and recognised policies would assist with ensuring these programs are implemented in more regions as well as being sustainable over the long term and not vulnerable to changes in school management.

The application of fluoride varnish in school/preschool settings and school based tooth-brushing programs can increase exposure of Aboriginal children to caries preventing fluoride. Messages about oral hygiene can be embedded into other health program areas, with health promotion activities focusing on smoking cessation and nutrition lending themselves readily to inclusion of oral health promotion messages.

Use of fluorides

Fluoride is a naturally occurring element that can strengthen teeth by disrupting acid production by oral bacteria and promoting remineralisation of decalcified enamel, thereby helping to prevent the initiation and spread of dental caries. Fluoridation of drinking water has been recognised to be the most effective and socially equitable means of enabling community-wide access to the decay-preventing benefits of fluoride (50). The protection afforded by fluoride is enhanced when regular exposure to fluoridated water is combined with the use of oral hygiene products containing fluoride.

While the fluoridation of all water supplies for Aboriginal communities is an important strategy to improving the oral health of Aboriginal people, the presence of fluoride in the water alone does not completely overcome the disparities in oral health outcomes between Aboriginal and non-Aboriginal children (51). While dental decay rates for Aboriginal and non-Aboriginal children are higher in non-fluoridated areas, the gap between Aboriginal and non-Aboriginal children persists in fluoridated areas, where Aboriginal children have greater rates of dental decay than non-Aboriginal children.

The application of fluoride varnish to individuals at high risk of dental caries is an effective preventive measure when such applications occur regularly (two to three times per year) over a minimum 24-month period (52, 53). This type of program is particularly useful for high-risk young children where the varnish is applied on sound and healthy teeth as they grow into the mouth. The evidence suggests that a coordinated statewide program of fluoride varnish application to high-risk Aboriginal children across NSW, as part of a broader school based preventive program, would contribute to improved oral health (54).

Oral health information resources

A range of organisations has developed oral health information resources for Aboriginal people and the general population. The establishment of a New South Wales based online oral health promotion clearinghouse could facilitate access to these information resources for all health personnel working with Aboriginal people in NSW. Such a clearinghouse could contain information on all aspects of oral health care including best practice and evidence based clinical care, oral health promotion activities occurring in NSW, and links to information sources in other jurisdictions and internationally.

5 RATIONALES FOR RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

5.3: Support and strengthen an appropriately skilled oral health workforce

Priority actions:

- Increase oral health training opportunities for Aboriginal Health Workers through programs delivered by accredited providers, including through dedicated oral health courses and a greater emphasis on oral health in existing training modules
- Strengthen training pathways for Aboriginal people to access accredited and university based oral health training programs
- Target efforts to strengthen an oral health workforce at local Aboriginal people as a priority
- Develop, implement and evaluate accredited Continuing Professional Development (CPD) programs for oral health professionals working with Aboriginal people
- Support universities to implement courses on Aboriginal health and oral health, including access to student placements in Aboriginal communities
- Develop and implement guidelines to support mentors working with recent graduates in Aboriginal oral health care

Rationale

A wide range of dental health professionals deliver oral health services to Aboriginal peoples in NSW including dentists, dental therapists, dental hygienists, oral health therapists, dental prosthetists and Aboriginal Health Workers. Recruitment and retention of dental health professionals can be challenging, particularly in rural and remote areas. In recent years there has been an increase in the number of overseas trained dentists passing the Australian Dental Council registration standards and an increase in graduating oral health professionals from a growing number of dental colleges across Australia (55). However, lower salaries in the public and ACCHS sectors in comparison with private sector incomes continue to be inhibitory factors for many ACCHSs in recruitment of suitable staff despite the potential oversupply of dental professionals (2).

Access to ongoing professional support

Dental professionals working with Aboriginal communities could benefit from increased professional support to enhance knowledge and skills in the particular issues affecting Aboriginal oral health. This support could include an online clearinghouse of relevant information and resources on appropriate, evidence based preventive clinical and community based care in Aboriginal communities including Aboriginal oral health face-to-face workshops and seminars as part of Continuing Professional Development programs.

Undergraduate programs

From talking to ACCHSs and those involved in university placements at ACCHSs, the AHMRC understands that the exposure to information in university curricula about Aboriginal health and oral health is variable across the different dental colleges and universities. While some dental students gain experience in communities with relatively high Aboriginal populations, there is no systematic approach to student placements.

Students who do undertake placements in Aboriginal communities can develop an interest in working in Aboriginal health and this can contribute to addressing the need for more health professionals working in Aboriginal communities to address oral health. Graduates working with Aboriginal communities can require close supervision and mentoring to develop clinical skills and foster cultural competency. For this reason some organisations will only employ dental professionals with at least two to three years experience post-graduation, unless there is an experienced practitioner available full time and onsite to provide mentorship and support.

Support for Aboriginal oral health professionals

Aboriginal Health Workers are involved in oral health programs either directly - working as part of the dental team - or indirectly by working in program areas that interact with oral health services, for example child and maternal health and chronic disease. The qualifications of Aboriginal Health Workers working in the dental team range from on-the-job experience to accredited programs such as the Certificate 3 in Dental Assisting.

Several NSW programs have focused on improving oral health training for Aboriginal people in NSW. The Poche Centre at the University of Sydney has worked with partners to develop state-wide accredited dental assistant and dental technician training programs (56), and TAFE Western Orange Campus has partnered with Charles Sturt University and others to implement the iSmile training program for Aboriginal dental assistants in Western NSW (57).

Both programs are strengthening career pathways for Aboriginal people in oral health across the state with students commencing tertiary study at a number of universities and this may assist with improving the oral health of Aboriginal people in NSW.

5 RATIONALES FOR RECOMMENDED PRIORITY ACTIONS TO IMPROVE ABORIGINAL ORAL HEALTH

5.4: Facilitate continuous quality improvement and best practice oral health service delivery

Priority actions:

- Embed continuous quality improvement (CQI) approaches in the operations of oral health services delivering care to Aboriginal peoples, including the use of indicators, Plan Do Study Act cycles and change management
- Collect service based and oral health status data about Aboriginal people in a streamlined and efficient manner with appropriate governance structures to ensure Aboriginal community governance of health information about Aboriginal people
- Ensure the reporting of Aboriginal oral health data is useful to, and informed by the perspectives of, Aboriginal communities
- Improve the quality and use of Aboriginal oral health data through developing and coordinating oral health indicators
- Support sharing of aggregated data about Aboriginal oral health between all services to enable monitoring of oral health status and access to oral health care for NSW Aboriginal peoples

Assessing effectiveness of oral health programs for Aboriginal peoples can be complex. Oral health indicators that are commonly used can emphasise throughput i.e. numbers of people seen and types of treatments/services provided, rather than focus on effectiveness and quality of care. For example setting targets for child population coverage for fissure sealants in permanent teeth, a known and effective caries-prevention intervention, is an example of an indicator that could be used to evaluate an important component of oral health services.

Evaluation of programs could be enhanced if the major service providers of oral health programs to Aboriginal people in New South Wales - ACCHSs and the Ministry of Health - developed a common set of targets and measures, which acknowledged the capacities of the various providers and considered the needs and priorities of communities.

An additional challenge to evaluation of Aboriginal oral health programs in NSW has been the lack of a standardised method of oral health data collection, with a variety of methods and software programs being used both in the ACCHS and public dental sectors. In recent years a minimum data set has been developed and implemented in the majority of ACCHSs in NSW that receive NSW Health funding, with a move to the implementation of improved electronic data capture.

5.5: Support oral health research and evaluation that contributes to the evidence for improving oral health in Aboriginal communities

Priority actions:

- Support all organisations providing care to Aboriginal people to develop and use research and evaluation approaches that are appropriate for Aboriginal communities
- Develop and support research and evaluation partnerships between research organisations, organisations providing care to Aboriginal people and Aboriginal communities

Service providers may be limited in their capacity to undertake research related to their efforts in improving oral health in Aboriginal communities because of challenging workloads. However, there are potential opportunities to further develop the increasing interest in Aboriginal health shown by universities and research agencies.

Research undertaken with Aboriginal communities requires upholding sound ethical principles and involving the community in all stages of planning and implementation. AHMRC resources, including the AHMRC Ethics Committee Guidelines for Research into Aboriginal Health (58) and the AHMRC Research Assessment Tools (59), can assist those interested in undertaking research in Aboriginal oral health with understanding appropriate approaches and governance structures for working with Aboriginal communities.

There are important gaps in the evidence base around what works to address Aboriginal oral health, including the most effective models for delivering oral health care to Aboriginal people and successful interventions for particular Aboriginal population groups including adolescents and young adults (60). Areas of research should be developed through working with community representatives and individuals experienced in working in Aboriginal health and oral health.

REFERENCES

1. Couzos S, Murray R. Aboriginal primary health care: An evidence-based approach. 3rd ed. Melbourne: Oxford University Press 2007.
2. Campbell MA, Hunt J, Walker D, Williams R. The oral health care experiences of NSW Aboriginal Community Controlled Health Services. Australian and New Zealand Journal of Public Health. 2015;39(1):21-5.
3. Dental and Opthalmic Services Division. Choosing better oral health: an oral health plan for England. London: Department of Health, UK, 2005.
4. UK Department of Health. An oral health strategy for England. London: Department of Health, 1994.
5. Demmer RT, Desvarieux M. Periodontal infections and cardiovascular disease: the heart of the matter. Journal of the American Dental Association. 2006;137:145-205.
6. Taylor GW, Borgnakke WS. Periodontal disease: associations with diabetes, glycaemic control and complications. Oral Disease. 2008;14(3):191-203.
7. Centre for Oral Health Strategy. NSW Aboriginal Oral Health Plan 2014-2020. Sydney: NSW Ministry of Health; 2014.
8. Slade GD, Spencer AJ, Roberts-Thomson KF. Australia's dental generations: the national survey of adult oral heatlh 2004-06. Canberra: Australian Institute of Health and Welfare; 2007.
9. Jamieson L, Armfield JM, Roberts-Thomson KF. Oral health of Aboriginal and Torres Strait Islander children. Adelaide: Australian Research Centre for Population Oral Health (ARCPOH); 2007.
10. Williams S, Jamieson, L., MacRae, A., Gray, C. Review of Indigenous oral health 2011 18 May 2011. Available from: http://www.healthinfonet.ecu.au/oral_review.
11. Australian Bureau of Statistics. National Aboriginal and Torres Strait Islander Social Survey, 2008. Canberra: Australian Bureau of Statistics, 2009.
12. The Cancer Council NSW. NSW Healthy Food Basket Cost, Availability and Quality Survey 2007. Available from: http://www.cancercouncil.com.au/foodbasket.
13. Jamieson L, Armfield, JM., Roberts-Thomson, KF. Oral health of Aboriginal and Torres Strait Islander children. Canberra: Australian Research Centre for Population Oral Health (ARCPOH), 2007.
14. Ehsani J, Bailie R. Feasibility and costs of water fluoridation in remote Australian Aboriginal communities. BMC Public Health. 2007;7:100.
15. Trewin D. National Aboriginal and Torres Strait Islander health survey 2004-05. Canberra: Australian Bureau of Statistics, 2006.
16. Chrisopoulos S, Beckwith K, Harford J. Oral health and dental care in Australia: key facts and figures 2011. Canberra: Australian Institute of Health and Welfare, 2011.
17. Tennant M, Kruger E. A national audit of Australian dental practice distribution: do all Australians get a fair deal? International Dental Journal. 2013;63:177-82.
18. Selwitz RH. Dental caries. The Lancet. 2007;369(9555):51-9.
19. Philstrom BL, Michalowicz BS, Johnson NW. Periodontal diseases. The Lancet. 2005;366(9499):1809-20.

20. NSW Ministry of Health. NSW Aboriginal Health Plan 2013 - 2023. North Sydney: NSW Ministry of Health 2012.

21. Centre for Oral Health Strategy NSW. The New South Wales Child Dental Health Survey 2007. Sydney: NSW Department of Health; 2009.

22. Australian Health Ministers Advisory Council. Aboriginal and Torres Strait Islander Health Performance Framework Report 2014. Canberra: AHMAC; 2015.

23. Jamieson LM, Roberts-Thomson KF. Dental general anaesthetic trends among Australian children. BMC Oral Health. 2006;6(16).

24. Cantlay K, Williamson S, Hawkings J. Anaesthesia for dentistry. Continuing Education in Anaesthesia, Critical Care and Pain. 2005;5(3):71-5.

25. Australian Institute of Health and Welfare. Cancer in Australia 2010: an overview. Cancer series no. 60. Cat. no. CAN. 56. Canberra: AIHW; 2010.

26. Australian Institute of Health and Welfare. The health and welfare of Australia's Aboriginal and Torres Strait Islander people, an overview 2011. Cat. no. IHW 42. Canberra: AIHW, 2011.

27. Dental Health Services Victoria. Links between oral health and general health - the case for action: Dental Health Services Victoria; 2011 [cited 2015 20th October]. Available from: https://www.dhsv.org.au/news/news-stories/archive-news/dental-decay-linked-to-chronic-diseases-the-case-for-action.

28. Ito H. Infective endocarditis and dental procedures: evidence, pathogenesis, and prevention. Journal of Medical Investigation. 2006;53(3-4):189-98.

29. Seymour GJ, Ford PJ, Cullinan MP, Leishman S, West MJ, Yamazaki K. Infection or inflammation: the link between periodontal and cardiovascular diseases. Future Cardiology. 2009;5(1):5-9.

30. Australian Health Ministers' Advisory Council Steering Committee for National Planning for Oral Health. Oral health of Australians: National planning for oral health improvement: Final report. Adelaide: South Australian Department of Human Services, 2001.

31. National Advisory Committee on Oral Health Australian Health Ministers' Advisory Council. Healthy Mouths Healthy Lives: Australia's National Oral Health Plan 2004-2013. Adelaide: South Australian Department of Health; 2004.

32. Australian Research Centre for Population Oral Health. Report of the Workshop on monitoring of Australia's National Oral Health Plan. Adelaide: Australian Research Centre for Population Oral Health, 2009.

33. Australia's National Oral Health Plan 2015-2024. Consultation Draft v2.8. 2014.

34. Centre for Oral Health Strategy. NSW Oral health strategic directions 2011-2020. Sydney: Centre for Oral Health Strategy, 2010.

35. Australian Bureau of Statistics. 4705.0 - Population Distribution, Aboriginal and Torres Strait Islander Australians, 2006. Canberra: ABS, 2007.

36. Australian Bureau of Statistics. 2002.0 Census of Population and Housing: Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile, 2011 Third Release. Canberra: ABS, 2013.

REFERENCES

37. Australian Institute of Health and Welfare Dental Statistics and Research Unit. Oral health and access to dental care - rural and remote dwellers. AIHW Dental Statistics and Research Unit Research Report No. 20. Adelaide: AIHW Dental Statistics and Research Unit; 2005.
38. Centre for Oral Health Strategy. Public Oral Health Care in NSW: NSW Health; 2014 [cited 2015 25th November]. Available from: http://www.health.nsw.gov.au/oralhealth/Pages/health_services.aspx.
39. NSW Health. PD2009_074 Oral health - Eligibility of persons for public oral health care in NSW. Sydney: NSW Health; 2015.
40. NSW Health. PD2008_056 Priority Oral Health Program and List Management Protocols. Sydney: NSW Health; 2008.
41. Sydney Local Health District. Our Clinical Services 2015 [cited 2015 25th November]. Available from: https://www.slhd.nsw.gov.au/services.html.
42. Filling the Gap. Filling the Gap 2015 [cited 2015 25th November]. Available from: http://www.fillingthegap.com.au/.
43. The Department of Health. The Child Dental Benefits Schedule 2014 [cited 2015 25th November]. Available from: http://www.health.gov.au/internet/main/publishing.nsf/content/childdental.
44. NSW Government. NSW Public Dental Services - Waitlists and Activity 2015 [cited 2015 25th November]. Available from: http://www.health.nsw.gov.au/oralhealth/Pages/public-dental-care-waiting.aspx.
45. National Aboriginal Community Controlled Health Organisation/Royal Australian College of General Practitioners. National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. 2nd edn. South Melbourne: RACGP, 2012.
46. Nganampa Health Council. Dental Program Paper [cited 2015 20th October]. Available from: http://www.nganampahealth.com.au/nganampa-health-council-documents/category/13-news.
47. Jamieson LM, Armfield JM, Roberts-Thomson KF. Indigenous and non-Indigenous child oral health in three Australian states and territories. Ethnicity and Health. 2007;12(1):89-107.
48. Rogers JG. Evidence based oral health promotion resource. Prevention and Population Health Branch Department of Health. Melbourne: Government of Victoria; 2011.
49. Bila Muuji Helath Services. Regional Oral Health Promotion Program 2011 [cited 2015 20th October]. Available from: http://www.bilamuujihealthservices.org.au/regional-oral-health-promotion-program.htm.
50. National Health and Medical Research Council. A systematic review of the efficacy and safety of fluoridation. Canberra: NHMRC, 2007.
51. Lalloo R, Jamieson LM, Ha D, Ellershaw A, Luzzi L. Does fluoride in the water close the dental caries gap between Indigenous and non-Indigenous children? Australian Dental Journal. 2015;60(3):390-6.
52. American Dental Association Council on Scientific Affairs. Professionally applied topical fluoride. Evidence based clinical recommendations. Journal of the American Dental Association. 2006;137(8):1151-9.
53. Marinho VCC, Worthington HV, Walsh T, Clarkson JE. Fluoride varnishes for preventing dental caries in children and adolescents. Cochrane Database of Systematic Reviews. 2013;7.

54. Slade GD, Bailie RS, Roberts-Thomson KF, Leach AJ, Raye I, Endean C, et al. Effect of health promotion and fluoride varnish on dental caries among Australian Aboriginal children: results from a community-randomized controlled trial. Community Dentistry and Oral Epidemiology. 2010;39(1):29-43.

55. Insight Economics. Review of Dental Workforce Supply to 2020. Melbourne: Insight Economics, 2012.

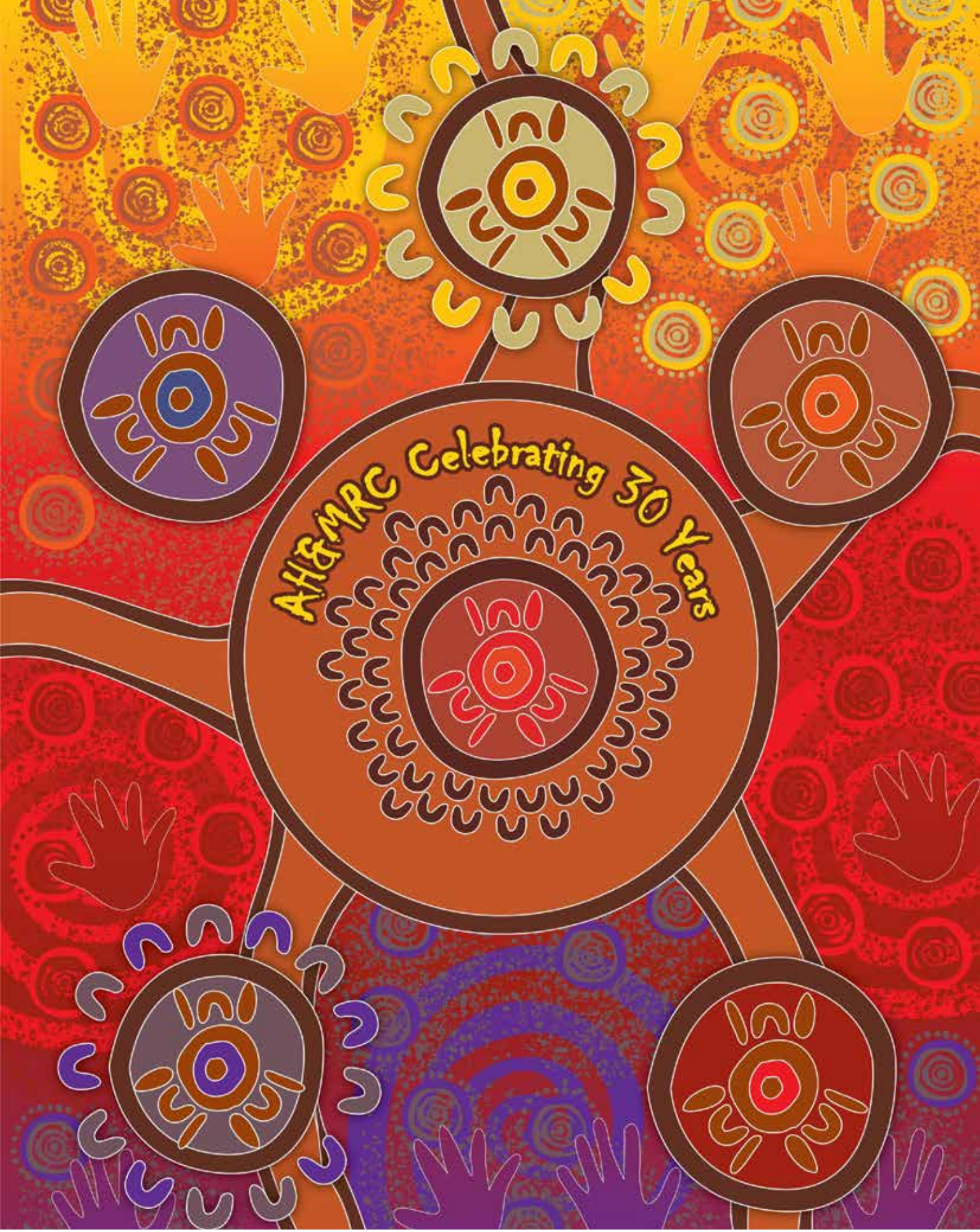
56. The University of Sydney. Scholarships open pathways to dentistry study for Aboriginal Australians 2014 [cited 2015 25th November]. Available from: http://sydney.edu.au/news/84.html?newsstoryid=13343.

57. TAFE Western NSW. Aboriginal students smile at opportunity to undertake dental course [cited 2015 25th November]. Available from: http://www.tafewestern.edu.au/news/aboriginal-students-smile-at-opportunity-to-undertake-dental-course - .VlWAVGQrLX8.

58. Aboriginal Health & Medical Research Council of NSW. AHMRC Guidelines for Research into Aboriginal Health: Key Principles. Sydney: AHMRC; 2013.

59. Aboriginal Health & Medical Research Council of NSW. AHMRC Research Assessment Tools: Tools for Aboriginal Community Controlled Health Services to support decision making about research requests. Sydney: AHMRC; 2015.

60. Dental Health Services Victoria. Update of the oral health promotion evidence base for the National Oral Health Promotion Committee. Melbourne: Dental Health Services Victoria, 2013.



Aboriginal Health & Medical Research Council®
of New South Wales