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Integrating oral health into primary healthcare for improved access to oral health care for rural and remote populations

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Key Messages

- Access to oral health care among rural and remote Australians is poor, particularly among vulnerable groups reliant on public dental services, including Indigenous people. This is due to maldistribution of oral health services and limited dental workforce supply, recruitment and retention in these areas. Strategies to address the longstanding rural and remote dental workforce shortage crisis have been insufficient.
- Primary healthcare professionals are the main providers of health services in most rural and remote communities and are well positioned to provide basic oral health care, such as screening for risk factors, oral health education, provision of non-invasive preventative interventions, and referral. However, limited oral health knowledge and skills and strong boundaries to professional scopes of practice restrict the possibility of leveraging existing primary healthcare resources for oral health care provision.
- Oral health promotion and disease prevention is not incorporated in general health promotion, despite known shared risk factors between oral health and other non-communicable diseases, such as poor dietary habits, smoking, and alcohol consumption. Opportunities for interprofessional collaboration and interoperability of oral and primary healthcare professionals are minimal; there are no data reporting, management, and sharing mechanisms between dental and broader healthcare systems.
- Adult oral health care provided by primary healthcare professionals and non-government healthcare organisations, such as the Aboriginal Community Controlled Health Services, are not generally subsidised through Medicare, which results in patient out-of-pocket expenses when seeking care in primary healthcare settings. Subsidy schemes based on the fee-for-service payment model, directed at specific adult vulnerable population groups in rural and remote areas, are necessary to ensure timely access to much-needed care.
- In rural and remote areas, a model of care where oral health is integrated into primary healthcare is an effective and efficient strategy to redress access to oral health care.

Recommendations

- Enhance oral health training for rural and remote primary healthcare professionals
- Standardised and nationally recognise scope of practice for primary healthcare professionals which includes oral health care
- Identify oral health as "core" primary healthcare service, especially in rural and remote areas
- Support innovative integrated oral health models of care
- Increased interoperability and data sharing between dental and general healthcare systems
- Improved access to oral health care under Medicare for rural and remote populations

Table of Contents

Issues brief

no: 56

Executive Summary

The burden of oral disease among rural and remote Australians is compelling, and yet, achieving timely access to appropriate oral health care in these areas remains elusive. Vulnerable and socioeconomically disadvantaged groups, such as Aboriginal and Torres Strait Islander people, who rely on government-subsidised oral health care, are disproportionately affected by poor access. This Issues Brief synthesises evidence regarding the extent of access challenges, and the possible factors impacting on access. It shows that maldistribution of public dental services, long-standing shortage of public dental workforce, and frequent turnover among public dental professionals primarily contribute to the problem of oral health care access in rural and remote areas.

Integrating oral health promotion, screening and non-invasive preventive care provision into primary healthcare is considered to be an effective and efficient strategy to improve access to oral health care, especially in resource constrained contexts. In some rural and remote Australian settings, where oral health care has been integrated into primary healthcare, improvements in oral health outcomes have been achieved. Despite, integrated oral healthcare models are not widely adopted.

The barriers to integration of oral health into primary healthcare in Australia include:

- Limited oral health knowledge and skills among primary healthcare professionals and legislative and regulatory boundaries hinder their ability to provide oral health care.
- Dissociated dental and general healthcare systems results in siloed activities, including limited opportunities for interprofessional collaboration; and a lack of robust data infrastructure to facilitate data reporting, management and sharing between dental and primary healthcare systems.
- Oral health care is not covered under Medicare, which is particularly important for vulnerable groups in rural and remote areas. Where there is limited access to care for children and adolescents, the existing fee-for-service funding structure does not allow for primary healthcare professionals to participate in oral health care provision.

Key considerations at the healthcare system, organisational, professional and clinical service delivery levels are highlighted. Building oral health competency of primary healthcare professionals, expanding primary healthcare professionals' scopes of practice to include oral health care, identifying oral health as a "core" component of primary healthcare, supporting the development and implementation of innovative integrated models that include oral health care, prioritising infrastructure development to support interoperability and data sharing, and enhancing access to oral health care under Medicare will enable wider adoption of integrated oral healthcare models

Background

High unmet oral health needs

The high oral health needs among rural and remote[1] populations are not being met. In part, this is due to the limited workforce and a smaller number of available services in these regions, placing strain on an already stretched public dental system. The number of patients placed on the public dental waiting list is continuously increasing, and so too, is the amount of time individuals are waiting to receive dental care. Public dental patients can wait up to 4 years for general care in Victoria, Tasmania and the Northern Territory (NT) [1].

Difficulty in gaining timely access to dental care leads to delays in oral disease management, which exacerbates existing oral health problems and can lead to serious dental infections. This results in individuals resorting to hospital emergency departments [2], some requiring admissions for management.

Between 2017 and 2022, potentially preventable hospitalisations due to dental conditions were persistently higher in rural and remote areas (Figure 1). Management of untreated dental infections often involves more invasive, painful and expensive procedures. This not only has sociopsychological and financial impacts on the patients, but also, indirectly imposes a burden on the overall healthcare system. For instance, in 2019-2020 hospital patient care for oral problems costed an estimated $605 million for the Australian health system, more broadly [1]; a breakdown by rural and remote was unavailable.

[1]The terms rural and remote represent the following categories within the Australian Statistical Geography Standard Remoteness Area (ASGS-RA), 2021, and the Modified Monash Model (MMM), 2019, classification frameworks: Rural = Outer Regional (ASGS-RA) and small, medium and large rural towns (MMM); Remote = remote and very remote (ASGS-RA and MMM).

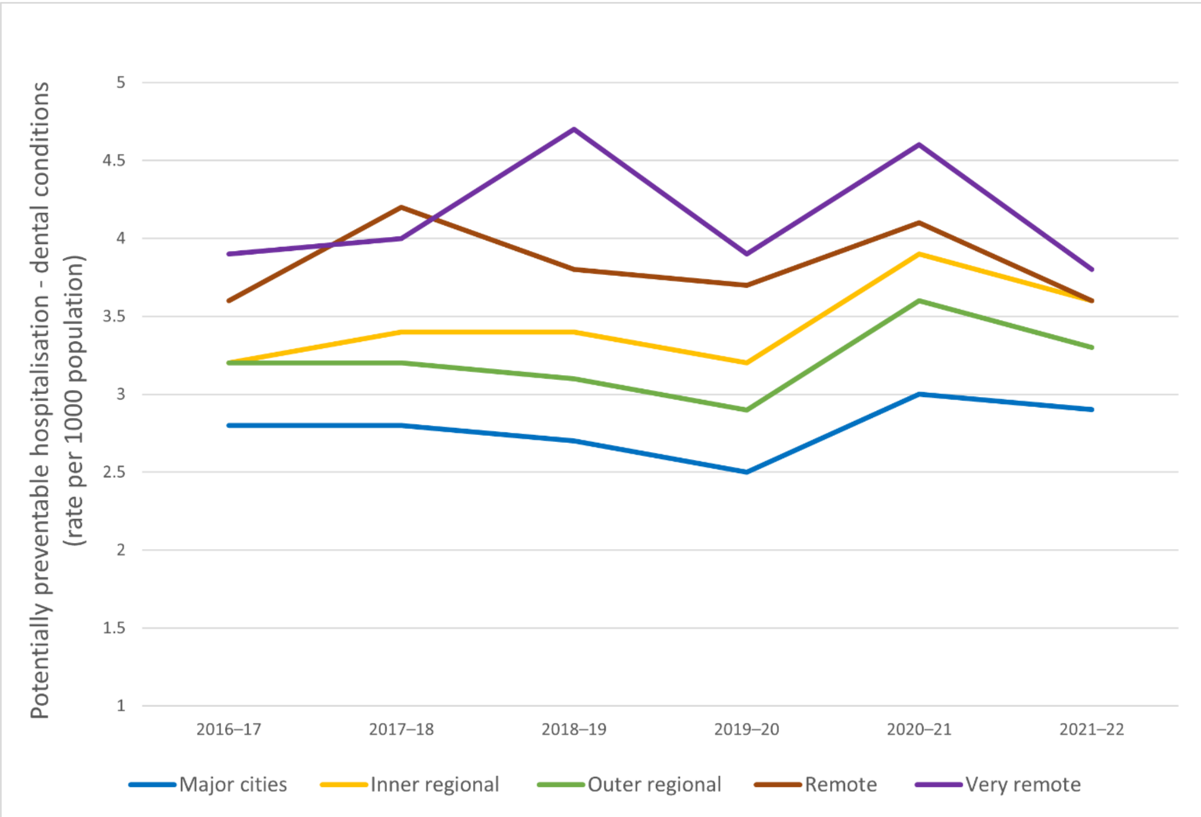

Figure 1. Potentially preventable hospitalisations due to dental conditions, by Remoteness category. Source: Analysis of Australian Institute of Health and Welfare data on hospitalisations [1].

The burden of poor oral health, including untreated dental caries, missing teeth due to dental conditions, and partial or complete tooth loss is higher among rural and remote populations than metropolitan [1]. This increase in burden is associated with indicators of poor access, such as treatment type (i.e., preventive, intervention, restorative, or emergency), frequency, and volume of dental service use [3-5]. Chronic conditions that have a bidirectional effect on oral health, such as diabetes, chronic kidney disease, coronary heart disease, are also highly prevalent among these populations [6], emphasising the need for appropriate and effective oral health care in rural and remote regions.

The public-private divide

Dental care in Australia is generally not covered under Medicare, Australia's universal health insurance scheme. Eligibility for public dental services is restricted to specific population groups, as determined by the states and territories.

More than 85% of dental care services are provided in the private sector [10]. Consequently, there are significant patient out-of-pocket costs for dental care, either in the form of direct expenses or private health insurance premiums, which in 2021-22, accounted for an estimated $6.5 billion [1].

Eligibility for public dental services in Australia

Individual states and territories stipulate eligibility criteria for public dental services. Eligibility typically includes children and adolescents, and Health Care and Pensioner Concession Card holders, and their dependents. In addition, Commonwealth Seniors card holders are eligible in Queensland [7] and New South Wales (NSW) [8], and Veterans' Affairs Gold card holders in remote locations are eligible in WA. Victoria also extends eligibility to other vulnerable groups, such as Aboriginal and Torres Strait Islander people and refugees and asylum seekers [9]

Commonwealth and state/territory governments' collective spending towards public dental services was less than half of this amount (around $2.3 billion) [1]. The proportion of total non-government dental expenditure has significantly increased from 72% in 2010-11 to 80% in 2021-22, highlighting the persistent discrepancy in activity between the public and private sectors [1]. In contrast, individual out-of-pocket expenditure towards general healthcare, in 2021-22, is starkly lower at 67%, 23%, and 16% for healthcare through private hospitals, referred medical services (such as specialist visits), and unreferred medical services (such as general practice visits), respectively.

Socioeconomic disadvantage among rural and remote populations limits affordability of private health insurance coverage. On average, only 45% of the people living in non-metropolitan areas have an insurance coverage for dental expenses, largely among those ineligible for public dental care [1]. Those that have coverage, will have to pay nearly half of their dental service expenses out-of-pocket, as insurance benefits often do not cover the total costs [11]. As a result, rural and remote populations frequently rely on subsidised public oral health services, and where such services are unavailable, they delay or avoid seeking care due to the financial burden [1].

Maldistributed oral health services

There is a disproportionate distribution of dental services across rural and remote Australia (Figure 2). Nearly 143,000 residents in rural and remote areas do not have access to any type of dental service (including fixed or visiting) within a 60-minute drive time [12]. Small, remote communities are heavily impacted, with oral health services sporadically available only once or twice a year, provided by visiting dental teams [13, 14]. Alternatively, these communities are forced to travel long distances, with no financial assistance or travel subsidies, in order to access care [14].

The availability of private and other non-government dental services is very low (only 8% of the total) in the rural and remote areas (Figure 2). Private dental services are clustered in metropolitan and the surrounding fringe areas, based on population affluence, presumably due to the profit-oriented business model [16].

While some non-government healthcare organisations, such as Aboriginal Community Controlled Health Services (ACCHS) provide no cost or subsidised dental care, it is generally limited to Aboriginal and Torres Strait Islander peoples.

Public dental services in rural and remote areas are inadequate, relative to population needs [17, 18].

Where services are available in some areas, geographic dispersion of the populations poses a major barrier to physically reaching the service locations. Limited and uncertain public dental funding further restricts the development and sustainability of innovative service delivery models to address the needs [14].

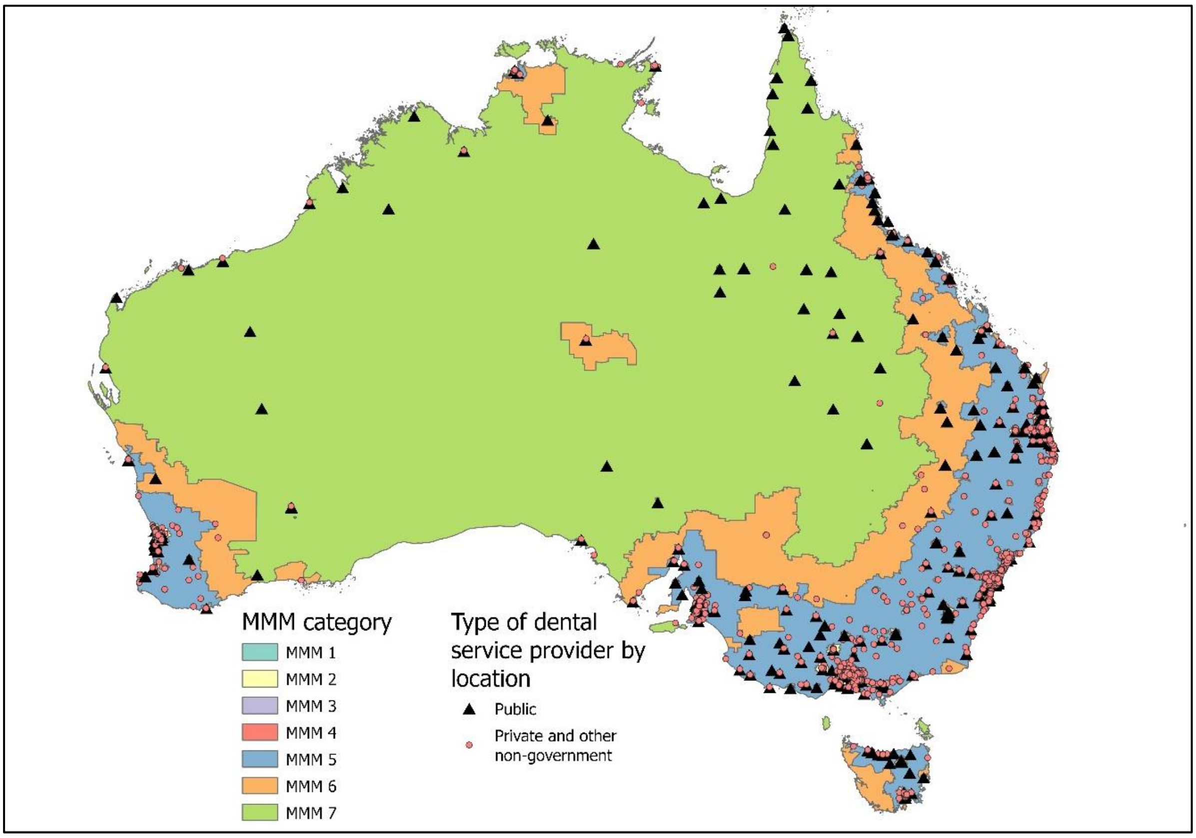

Figure 2. Distribution of dental service locations. NOTE: MMM, Modified Monash Model. Source: Analysis of General Dental Practice data from the National Health Services Directory [15].

Public oral health workforce shortage and frequent turnover

Since 2013, the Australian Government implemented a number of strategies to reform the longstanding rural and remote dental workforce shortage. These include [19]:

- expanding the University oral health graduate programs
- encouraging student placements (eg. Dental Training Expanded Rural Placements, Voluntary Dental Graduate Year Program, Oral Health Therapy Graduate Year Program), and
- incentivising workforce relocation and infrastructure support (eg. Dental Relocation and Infrastructure Support Scheme).

In addition, state and territory governments have implemented similar strategies. For example, NSW Health offers up to $20,000 in incentives for dentists working in rural and remote areas, as part of the Dental Officers Rural Incentive Scheme [20]. While majority of these programs have not been formally evaluated, based on limited available evidence, claims on their effectiveness suggest that they have had isolated benefits for workforce recruitment and retention [21]. However, collectively, as evident from the continued burden of poor oral health in rural and remote Australia, these programs have been broadly insufficient to address the rural and remote public dental workforce crisis and access problem at a wider scale.

Between 2013 and 2022, on average, the number of clinical full-time equivalent (FTE) dental professionals (including dentists, dental prosthetists, dental therapists, dental hygienists, and oral health therapists) per 100,000 population were consistently less than half in remote areas as in metropolitan areas (Figure 3) [22]. Further, over the same years, the numbers decreased by 10% in remote areas, on average, compared to a corresponding increase (by 16%) in the metropolitan areas.

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Based on the general eligibility criteria, a total of 5.4 million people are eligible for public dental services across Australia, of which approximately 1.5 million people live in rural and remote areas; this equates to about 28% of the total eligible population [24]. However, as of 2022, only 17% of the total clinical FTE dental practitioners in the public sector work in rural and remote areas [22].

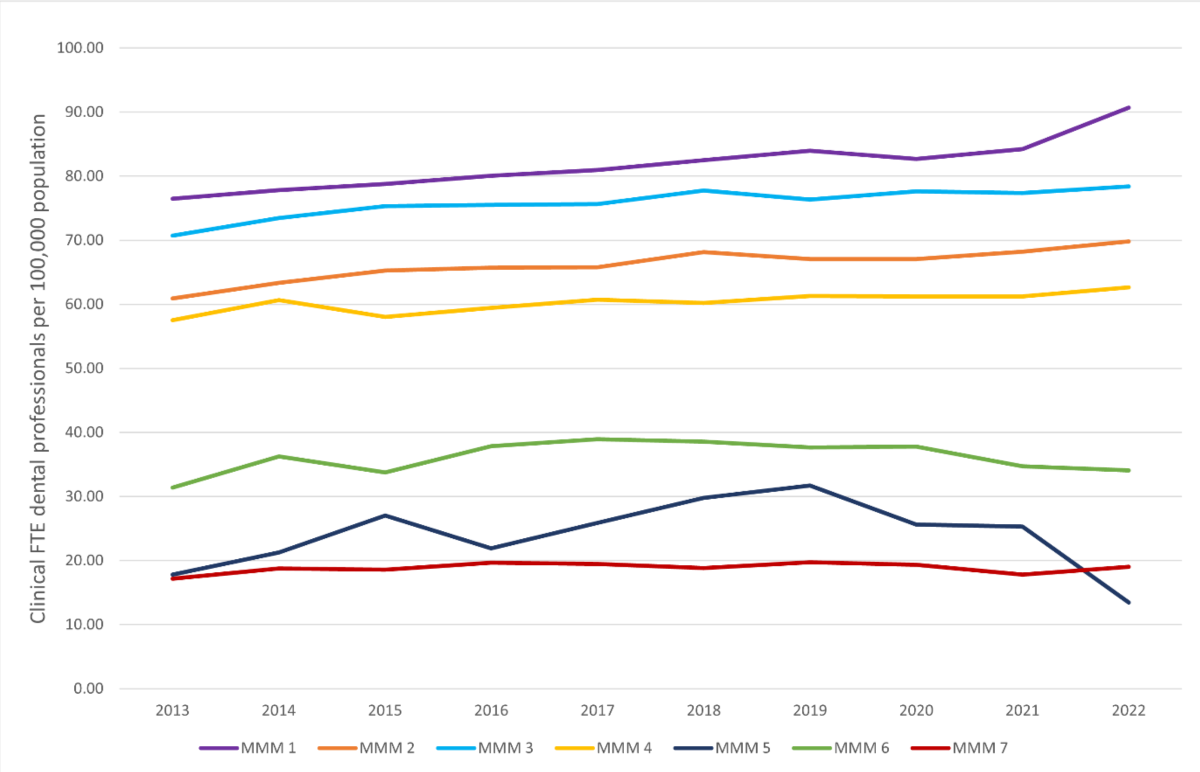

Figure 3. Full-time equivalent dental professionals per 100,000 population, by Modified Monash Model (2019) categories. Source: Analysis of the National Health Workforce Dataset [22] and Australian Bureau of Statistics Estimated Resident Population data [23]

Public dental workforce shortage is likely accounted for by the difference in salaries between the private and public sectors and their associated geographic distribution [25]. Failure to meet financial expectations trigger the movement of public dental professionals to the private sector [26]. Availability of professional development opportunities, quality of life expectations, family circumstances, rural background and overall access to essential services further impact workforce retention in rural and remote areas [27].

Integrated oral health and primary healthcare models

Primary healthcare professionals are the main providers of health care services in most rural and remote communities [28]. They are the first point of contact for patients and are generally well-positioned to address oral health promotion and assess patients' oral health needs. There is a dearth of dental practitioners in rural and remote Australia, relative to primary healthcare professionals most commonly practicing in these areas.

When considering clinical FTE professionals per 100,000 population in rural and remote areas (MMM3 to MMM7), on average, there are nearly twice as many Aboriginal and Torres Strait Islander (ATSI) health practitioners, three times as many pharmacists, 10 times as many medical professionals, and 60 times as many nurses and midwives, as there are dental professionals (Figure 4)

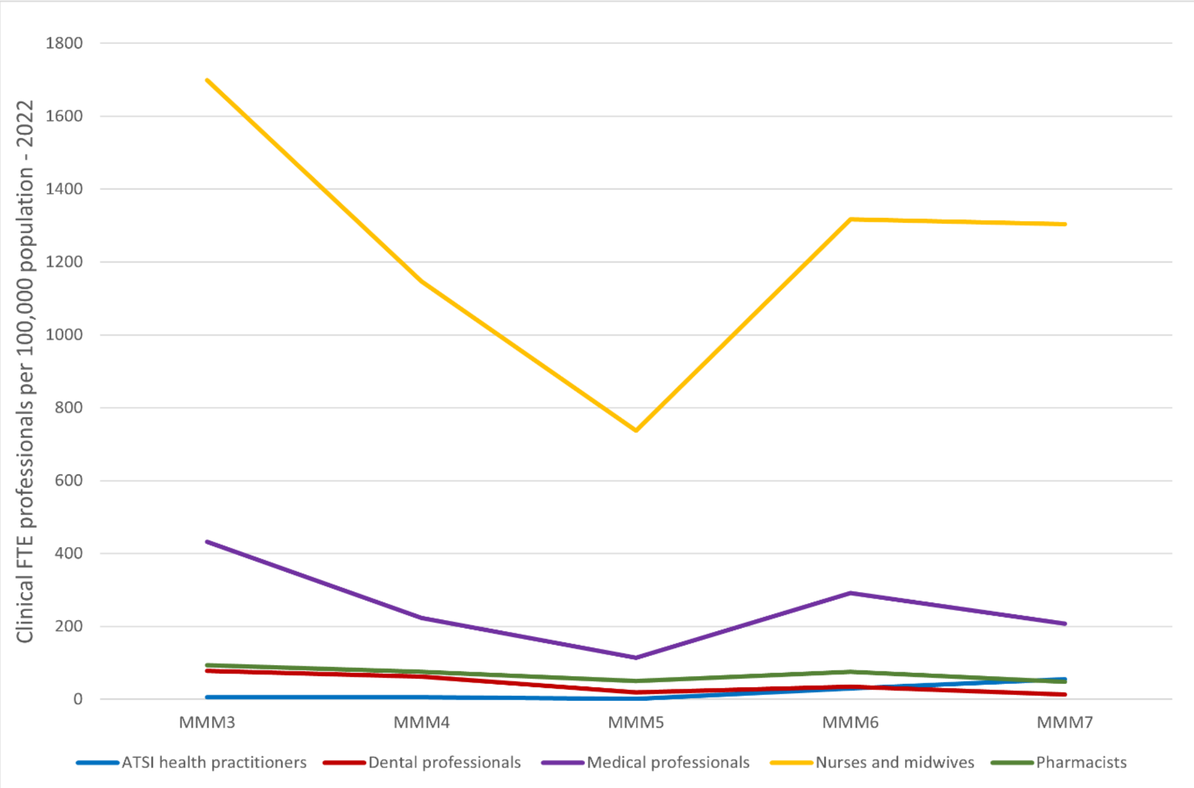

Figure 4. Clinical FTE dental and primary healthcare professionals per 100,000 population (as of 2022) in rural and remote areas according to Modified Monash Model (2019) categories. Source: Analysis of National Health Workforce Dataset [22] and Australian Bureau of Statistics Estimated Resident Population data [23].

In such resource-constrained contexts, integrated oral healthcare models – leveraging the existing primary healthcare workforce and resources – are warranted to improve access to oral health care [29, 30]. The concept of integrated oral health care is based on the evidence of a synergistic relationship between oral health and general health, and that coordinating care is essential to maintaining overall health [31].

Along the primary care continuum, integration of oral health care can be achieved at micro, meso and macro levels [32, 33]. At the micro-level, integration focuses on clinical practice, including delivery and coordination of oral health care services by primary healthcare professionals, to enhance person-centered care [33]. Meso-level integration represents integration within the professional and organisational dimensions.

Collaboration between oral and primary healthcare professionals based on shared competences, roles, responsibilities and accountability to deliver comprehensive continuum of care, underpinned by interprofessional education and training, is the basis for professional integration [33]. Organisational integration ensures a conducive environment for integrated service delivery, for example, through colocation of oral and primary healthcare services or promotion of interdisciplinary professional networks within or across organisations [33].

Combining activities, structures and processes at the healthcare systems level represents macro-level integration, which counteracts the fragmentation of services across different systems to improve care provision for the whole of population [32].

Further support mechanisms are required to coordinate modalities for financial, management and information systems across the micro, meso and macro levels [32].

In Australian rural and remote contexts, oral healthcare models with integration at the micro and meso levels have been successful in promoting access to oral health care by:

- facilitating timely screening and prevention of oral diseases [34]
- encouraging regular dental visits [35]
- streamlining dental referrals and ensuring appointment follow-ups [36, 37], and
- improving patient and provider satisfaction [37, 38].

However, these models have predominantly been trialled in isolated and limited settings, often out of necessity. A multitude of factors impede wider scale implementation of integrated oral health and primary healthcare models, across micro, meso and macro levels. These are broadly related to:

- Oral health care provision by primary healthcare professionals.
- Compartmentalisation of oral and general healthcare systems.
- Financing dental care through Medicare Benefits Schedule.

Barriers to oral health care provision by primary healthcare professionals

Limited oral health knowledge and skills in primary care

In Australia, general practitioners (GPs) encounter nearly 1.2% of oral health-related presentations, mostly related to dental infections [39]. Rural and remote GPs see an average of 12 patients with oral health problems each month [40]. The majority presentations are managed with medications, such as antibiotics and painkillers [39]. However, antibiotic prescription for dental infections does not relieve the source of infection and is not in line with the best-practice guidelines outlined by the Australian Commission on Safety and Quality in Health Care [41]. Many primary healthcare professionals, including GPs, nurses and pharmacists, have limited or no in-depth training on oral health [42-44]. This not only leads to missed opportunities for prevention and early intervention of oral conditions, but also poor and inappropriate management.

In Australia, health professional education is focused on a single discipline, with limited inclusion of interdisciplinary activities, such as shared lectures and clinical placements [45]. The medical and nursing undergraduate curricula do not include dedicated modules in oral health, besides some oral health-related training within the existing pre-clinical and clinical training, such as the oral health effects of medications, identifying select dental problems, and managing dental emergencies [46, 47]. Consequently, these graduates who end up practicing in primary healthcare report feeling underprepared to confidently address oral health concerns or perform basic screenings [42, 48, 49]. For example, in a survey conducted among 144 community pharmacists across Australia, nearly 97% reported that their practice would benefit from additional training in oral health [50].

Compared to countries like the United States of America, where about 30% of medical schools offer more than 10 hours of non-clinical oral health education [51], on average, only 0.3% of an Australian medical student education's total teaching hours (about 9.7 hours) involve oral health [52]. This level of training is inadequate for establishing foundational knowledge of oral health for clinical application. There are also inconsistencies across Australian medical/nursing schools in terms of learning objectives, amount of clinical exposure, and approach to outcomes assessment in oral health education [46, 47]. A national guideline highlighting the oral health educational requirement for future generations of medical and nursing graduates is warranted to inform a comprehensive education reform.

Medical and nursing educators noted curriculum overload and time constraints as key barriers to implementing oral health education in the existing curricula, and the addition of oral health modules is perceived to move the focus away from what is considered as essential medical knowledge [46, 47].

There is a misperception among some medical professionals, that oral health is not directly relevant to overall health [46, 47], and therefore, should not be an educational priority. Since there is limited oral health expertise among the medical and nursing faculty, the absence of dedicated dental professionals on medical/nursing faculty and separate locations of dental facilities poses further challenges [46, 47]. The resulting lack of understanding and awareness on the importance of oral health among the newly qualified graduates seemingly influence their perceptions and attitudes in their future practice [13].

An intermediary and equally effective alternative is to build the capacity of existing practicing primary healthcare professionals through bespoke oral health training [53]. However, this alternative is also being underutilised.

Professional development training in oral health, available to primary healthcare professionals, are inadequate. For example, a survey of 924 community pharmacy staff (pharmacists and pharmacy assistants) across Australia found that, nearly 84% reported not having access to oral health training resources to assist their practice [54].

The staff also referred to incomplete, inconsistent, and non-evidence-based oral health information available to them, which is counterproductive to promoting optimal care [54]. This highlights the inadequacy of additional training and educational resources for primary healthcare professionals.

Given the workload of rural and remote primary healthcare professionals, and ensuing time constraints, lack of flexible training options limit their engagement in additional training [13]. Moreover, some oral health training activities are not developed collaboratively with dental professionals, which is key to ensuring educational quality of the training resource and relevance to primary healthcare professionals' practice [54]. As such, these activities do not receive continuing professional development accreditation, discouraging engagement [54].

While some oral health training programs have been trialled/implemented for primary healthcare professionals, as part of health programs or academic research in Australia, only few have been formally evaluated.

The Healthy Smiles program, NT

The program was originally developed as part of the NT Oral Health Program in 2012 [55], and was later supported through the NT Remote Aboriginal Investment, a partnership agreement between the National Indigenous Australians Agency and NT Government [56]. Oral health training includes basic oral health information, knowledge about early childhood decay, and preventive management through the application of fluoride varnish [57]. The program is targeted at remote primary care staff, mainly nurses and ATSI health practitioners, in the NT [57].

Only a partial evaluation of the program was available, primarily focused on the output, such as the number of healthcare staff who received training and the number of fluoride varnish applications per annum [56]. Results showed that the program exceeded the set target for both indicators. A total of 73 and 74 staff received training in 2015 and 2016, respectively [56]. Percentage population receiving fluoride varnish applications increased from 25% in 2014 to 57% in 2021 [56].

The Healthy Smiles program is a population-level health program, based on the ongoing provision of preventive oral health care, and the program can be easily adapted to other rural and remote areas outside the NT. For example, the Royal Flying Doctor Service has successfully adapted this program in 2014 in Queensland [58].

Midwifery-Initiated Oral Health (MIOH) education program

Targeted training was developed and implemented for midwives from maternity services in NSW and Victoria to build the necessary capacities for oral health education, screening and referrals to be given at antenatal appointments [59]. The MIOH program resulted in significant improvement in the oral health knowledge of midwives (by about 22%), leading to confidence in introducing the topic of oral health and referring pregnant women to dental services [60].

The program implementation was further examined through a multi-centre randomised controlled trial, which showed that the program can be successfully implemented into midwifery practice, is effective in improving dental service utilisation [61], and is cost-effective compared to the non-integrated care delivery model when the benefits are considered over the long haul [62]. Midwives also perceived that the program to be acceptable and scalable [63].

Demonstrating the effectiveness and cost-effectiveness of these programs through evaluation is key to inform future development and implementation activities, and scale-up of existing programs in rural and remote contexts. Oral health training for existing qualified rural and remote primary healthcare professionals, including GPs, nurses and midwives, ATSI health practitioners, and pharmacists, is not incorporated as a strategic priority within state/territory and national level workforce plans.

Currently, only South Australia has explicitly laid out training and upskilling non-dental rural and remote clinicians in oral health care, as a strategic priority in its Rural Oral Health Workforce Plan, 2021-2026 [64].

Restricted professional scopes of practice

Since 2010, Australia follows a National Registration and Accreditation Scheme, departing from the earlier state/territorial level system [65]. Under this national scheme, 16 registered health professions are recognised, among which, those commonly engaged in rural and remote primary healthcare are ATSI health practitioners, dental practitioners, medical practitioners, nurses, midwives, and pharmacists [66]. All 16 professions are governed by the respective national health professional boards, along with the Australian Health Professional Regulatory Agency [66].

The national health professional boards identify the areas of practice and develops registration standards about the scope of practice of healthcare professionals [65]. However, this national standard merely provides protection to the practice boundaries [65]. Within these boundaries, each state/territory also have their respective legislations which results in jurisdictional differences in practice scopes [65]. Besides the state/territory and national standards, scopes of practice at a healthcare organisation level can also be determined based on settings-specific skill requirements and the clinical capability of particular healthcare professionals within the organisation, which is regulated by the jurisdictional clinical service capability framework [67]. This means that, healthcare organisations can use credentialing to include oral health care provision within the scope of primary healthcare professionals, based on their qualifications, training and experience [67]. Such a lack of regulatory uniformity and consistency across different levels poses a significant barrier to full expression of practice scope for primary healthcare professionals [68, 69].

In 2024, the Australian Government commissioned a scope of practice review for primary healthcare professionals to improve efficiency and access to care [70]. Oral health practitioners were not included in the review, excluding oral health from any discourse on professional scope of practice changes. Without a national outlook, the current fragmented approach will not ensure timely and appropriate access to preventive care for people living in all rural and remote areas.

Primary healthcare professionals' competencies are underutilised by the legislative barriers that restrict their scope to provide oral health care; the Restricted Dental Act is an important legislative barrier [71]. Under this act, healthcare professionals, other than registered dental and medical practitioners, are not allowed to engage in certain 'irreversible' dental procedures; for example, procedures that permanently or 'irreversibly' alter the physical structure of teeth, jaw or associated structures in the oral cavity, such as tooth fillings, inserting prosthetic appliances, tooth extractions etc., [71]. In other words, the legislative provisions exclude all registered primary healthcare professionals, except medical practitioners, from providing oral health care, with the exception of basic diagnostic, screening, promotion or non-invasive preventive care (eg. application of fluoride varnish). Exemptions to this national legislation are possible through "isolated practice authorisation," made by appropriate jurisdictional authorities, such as Chief Dental or Medical Officer [72]. However, such exemptions are made in an *ad hoc* manner and generally cover a specific set of activities.

Commonwealth, state and territory legislations and regulations on prescription drugs poses further barriers to extending health professionals' scope of practice to certain preventive dental procedures [45]. States and territories have their respective poisons and controlled substance standards which classifies fluoride varnish as a Schedule 4 substance, i.e., prescription-only medicine [73]. This creates barriers for access to and administration of fluoride varnish by registered primary healthcare professionals, excepting dental professionals. Authorising exemptions to these regulations is in the remit of individual states and territories. The NT, WA, Queensland and Victoria have introduced amendments to their respective equivalents to the poisons and controlled substances regulations to facilitate appropriately trained ATSI health practitioners to administer fluoride varnish [72, 74-76]. The NT also extends the scope of nurses to provide preventive oral health management, following the completion of prescribed training, including fluoride varnish application [76]. Particularly, the Victorian experience with Aboriginal health practitioners emphasises the extent of time and resources consumed to bring about changes to scope of practice [74].

The Drugs, Poisons and Controlled Substances Amendment (Registered Aboriginal and Torres Strait Islander Health Practitioners) Regulation 2022 [74]

In Victoria, the Drugs, Poisons, and Controlled Substances Regulations, 2017, sets out the persons who are authorised to obtain, possess, use, sell or supply poisons or controlled substances. This original regulation does not allow Aboriginal health practitioners to administer fluoride varnish. Persistent evidence-based advocacy led by Loddon Mallee Aboriginal Reference Group, resulted in an amendment to the Victorian regulation.

The overall advocacy took nearly six years (2016-2022) and included developing, implementing, and evaluating a pilot program supported by the Victorian Department of Health; submitting a brief followed by a full proposal, and receiving endorsement from the Health Professions Drug Access Committee (an internal committee in the Department that promote safe and effective drug use); and finally Ministerial approval for making the amendment.

Disconnected dental and broader healthcare systems

Oral health promotion and disease prevention in primary healthcare programs

Oral health promotion and disease prevention programs aim at reducing inequities by dealing with social, economic, and commercial determinants. These shared modifiable risk factors highlight the need for a collaborative approach [31]. High risk behaviours shared between dental and other non-communicable diseases, such as high sugar intake, tobacco use, and harmful alcohol consumption, are more prevalent among rural and remote populations [6].

Benefits of an integrated promotion and prevention model are particularly evident among children [77] and individuals with co-existing dental and chronic conditions [78]. Programs targeted at addressing these risk factors have been shown to effectively reduce the burden of oral diseases [79]. Evidence from Australia shows that oral health promotion activities by primary healthcare professionals aimed at families had a positive impact on the oral health practices of children and improved their clinical outcomes [77]. Similarly, the inclusion of oral health into routine primary care practice can help primary healthcare professionals effectively manage patients with chronic conditions, such as diabetes [80].

While incorporating oral health into overall preventive health agenda was emphasised as one of the guiding principles of the Australian National Oral Health Plan, 2015-2024 [29], the healthcare policy landscape is not conducive to integration. Oral health is not widely included in upstream population health promotion interventions [81]. For example, the case around imposing tax on sugar sweetened beverages focuses on preventing diabetes or obesity [82], where its potential impact on reducing oral disease burden [83, 84], which can help augment the case, is not mentioned.

Current fee-for-service primary healthcare funding model in Australia focuses on maximising output rather than providing interprofessional promotive or preventive care [85]. For example, there is no compensation or reward mechanism for the participation of primary healthcare professionals in oral health care [14]. This is in part because oral health is not widely considered as a part of “core” primary healthcare, for the purposes of primary healthcare funding and service planning. The evidence suggests the contrary. A Delphi survey among 39 experts in rural and remote primary healthcare across Australia found a high level of consensus (nearly 97%) on oral health to be considered as a “core” primary healthcare service [86]. Similar recommendation was made by the National Aboriginal Community Controlled Health Organisation, the national peak body of ACCHSs in Australia, by including oral health as a key component in comprehensive primary healthcare model of ACCHSs [87]. Without an agreement on the importance of oral health care inclusion in primary healthcare, cost and resource requirements for promotion and provision of oral health care are not accounted for in primary healthcare service planning [86]. Ad hoc funding and resource allocations for oral health services within primary healthcare, which is often the case [14, 37], result in erratic access to oral health care across rural and remote communities with similar needs.

Lack of opportunities for interprofessional collaboration

Dental and primary healthcare professionals often work in silos, with little to no communication [88]. In rural and remote areas, where the patients frequently present to primary care providers with dental problems, the lack of communication results in the primary care and visiting or regional dental care teams seeing the same patient, for the same problem [40, 48]. For patients already in pain, this leads to delay in treatment and unnecessary trauma to have to detail the problem history every time, and avoidable duplication of work for healthcare professionals [40].

Establishment of interprofessional networks at a service, organisational, or regional level, provides a platform for better communication between oral and primary healthcare professionals. International evidence shows that such collaborative networks are effective in improving communication by providing a platform for knowledge sharing and professional development, eventually promoting oral health and overall health outcomes of patients [89, 90]. Similar initiatives in Australia, such as the South Australia Rural and Remote Oral Health Coalition [91] and the Australian Network for Integration of Oral Health [92], service as good case studies.

South Australia Rural and Remote Oral Health Coalition (RROHC) [91]

The RROHC is a partnership between multiple stakeholders, specifically formed to address the challenges of providing oral health services in rural and remote South Australia. Members include public and private dental health sectors, hospital and primary healthcare sectors, local health networks, non-government peak health professional bodies, University sector, and the Royal Flying Doctor Service. The RROHC provides an opportunity for collaboration and coordination of the activities of these key stakeholders involved in oral health care.

Together, the members engage in consultations with rural and remote hospitals, local councils, schools, dental practices and communities to understand the contexts and specific needs, comprehensive identification of service gaps based on population data and demographics, development of pilot projects based on the gathered information, and scoping the feasibility and support of proposed projects. The SA Government provides funding for a project coordinator to oversee various project activities.

Poor interprofessional communication restricts opportunities for appropriate and effective dental referrals by primary healthcare professionals. For example, where rural Australian pharmacists provide oral health advice, there is no referral pathway from pharmacy to oral health services, since pharmacists have limited or no communication with local dental services [93]. GPs and nurses in rural and remote areas encounter similar issues, where the communication with dental professionals is often unidirectional precluding appropriate patient follow-up [13].

Appropriately designed telehealth models of care have the potential to improve access to health care in resource-deficit rural and remote settings [94, 95]. Traditionally, teledentistry models involved video consultations between dental professionals in remote and regional settings (eg. dental assistant and dentist or dentist and specialist) [96]. Given the shortage of dental professionals in rural and remote areas, implementation of conventional models may not be feasible in these contexts. Innovative teledentistry models, integrated into primary healthcare and led by primary healthcare professionals, have been trialled in settings without dental professionals or dental clinic facilities [37]. Limited evidence suggests that such models improve communication between primary and dental care providers and ensure real-time advice about oral health risk assessments, screening and referrals for primary healthcare professionals [37]. However, they have not been widely implemented in Australia.

The Torres Strait Primary Oral Health Care Project [37]

The project implemented an oral health model of care in which primary healthcare professionals in 15 remote Torres Cape primary healthcare centres sought real-time advise on oral health risk assessments, screening and referrals via video consultation with dental professionals in the Torres and Cape Hospital and Health Service on Thursday island, a regional centre. Existing information communication system technology (MOVI/Cisco Jabber platform) in the remote primary healthcare clinics was leveraged, in addition to the trialling the use of intra-oral cameras for a high-definition view of teeth and mouth.

Remote primary healthcare professionals received face-to face training on oral health assessments, use of intra-oral cameras and handling telehealth technology. Ongoing mentoring and support was also provided, remotely, by the regional team.

The model enabled remote primary healthcare professionals to undertake oral health assessments during patients' visit or within regular health checks and engage in oral health promotion.

Adequate training and dental consultation support for primary healthcare professionals are noted as factors impacting the success of integrated teledentistry models [37]. Other general barriers to the teledentistry models are related to lack of technology preparedness of healthcare professionals, poor infrastructure support in rural and remote service settings (eg. internet access and connectivity, security and compliance of technology), and bureaucratic and system-level bottlenecks [97]. Lack of reimbursement structure under the Medicare Benefits Schedule (MBS) for the provision of teledentistry services by primary healthcare professionals is an important systems-level challenge [98].

Comprehensive model of primary healthcare provided by ACCHSs, which includes limited oral health care services (eg. preventive and general dental care), also serves as an excellent modality for interprofessional collaboration [14, 99-101]. Dental services are co-located with primary healthcare services, which enables interprofessional collaboration, improves service efficiency and increases cultural sensitivity of care provided [38, 100]. But most rural and remote ACCHSs function within limited, and uncertain, primary healthcare funding which does not account for oral health care services provided [14, 99, 101]. This makes the sustainability of oral health service delivery challenging in these organisations [14, 99].

Interoperability and data sharing

Sharing dental and general healthcare data is key for interoperability of primary care and dental professionals [102]. Although there is no direct mention in the literature about the benefits of an integrated health data system in rural and remote primary healthcare settings, its potential role in optimising oral health care is intelligible [14]. Data sharing improves quality of care and safety through appropriate access to patient health records, increase provider efficiency, and enable enhanced referral pathways (eg. e-referral via the electronic health record system) for rural and remote patients [102]. An interoperable health data systems is also a critical component of value-based healthcare [103].

Despite long-standing advocacy on the importance of data exchange between dental and general healthcare systems, little progress has been made in this space in Australia.

In most Australian states and territories, the collection and recording of clinical data across dental and primary care systems (including public, private and non-government organisations) is fragmented and not standardised [104]. This prevents data exchange and interoperability – primary healthcare professionals do not have access to patient's dental records or oral care plans and dental professionals cannot access patient's medical or medication history. Without funding support from the Commonwealth government, building a standardised clinical data information system across the state/territory healthcare systems can be cost prohibitive to the respective governments; for example, the unified interoperable data information systems rolled out across public hospital and primary healthcare systems in the NT (i.e., the "Acacia" digital health system) costed nearly $260 million [105].

The My Health Record (MHR) system, a national level personally controlled electronic health record for patients, would be an ideal platform to share dental health summary to as part of patient's medical record. However, participation of dentists in the system is elective and dental care data is not integrated into the MHR system by default [106]. Electronic dental health record systems used by state and territory public dental services are not compatible with the MHR, which makes it challenging to seamlessly integrate oral health data into the MHR system [107]. Moreover, the dental diagnostic terminology framework used in the MHR system (i.e., Systematised Nomenclature for Dentistry or SNODENT) and that universally adopted across the dental profession in Australia (i.e., the

Australian Schedule of Dental Services and Glossary), do not align [107]. A comprehensive national data infrastructure is required to support standardised data recording and enable seamless data exchange between dental and primary healthcare systems.

Oral health care for vulnerable adults not subsidised under the Medicare Benefits Schedule

The Australian Government has introduced a means-tested Child Dental Benefit Schedule (CDBS) to provide dental services for eligible children, the funding for which has been committed until 2026 [108]. CDBS has limited reach among eligible children, with less than 35% of those eligible using the scheme [109]. An important factor contributing to this limited uptake is that oral health services provided by non-dental healthcare professionals (including primary healthcare professionals) are not eligible to be claimed for reimbursement under the CDBS. This implies patient out-pocket expenses when visiting primary healthcare professionals for oral care, which deters rural and remote patients from availing services when in need. For rural and remote primary care organisations, such as ACCHSs, already delivering oral health services to children and adults as part of comprehensive primary healthcare, this ineligibility to claim reimbursement under the MBS impacts on their financial sustainability [14]. Moreover, the current funding through CBDS does not account for additional costs incurred in rural and remote areas, including:

- higher service provision costs owing to higher staff salaries and locum rates, greater freight, goods and utilities, housing costs [110]; and
- transport and accommodation for patients travelling from rural and remote communities to regional areas for oral health care [48, 99].

Besides children, there are other vulnerable groups with high burden of oral diseases in rural and remote areas. Oral health needs are known to be particularly high among individuals living with chronic conditions, such as diabetes [111], chronic kidney disease (CKD) [112] or cardiovascular disease [113], the burden of which are very high among rural and remote Australians [6]. For example, nearly 54% of Aboriginal people with CKD living in the remote NT have severe periodontal disease, a 20-fold higher prevalence rate than general population [114]. Those needing surgeries for rheumatic heart disease or end-stage kidney disease frequently delay their procedures due to poor access to oral health services in remote areas [115].

The Chronic Disease Dental Scheme (CDDS), introduced in 2007, provided up to $4250 of dental treatment rebates over two years for individuals with chronic conditions managed by GPs under the Enhanced Primary Care plan [116]. However, the uptake of the CDDS has been uneven across jurisdictions, relative to population size and chronic disease burden. For example, NSW had the highest per capita spending with a high proportion of very expensive services, while the NT had the lowest per capita expenditure and included basic care [116]. There was also inequity based on the remoteness of regions, where per capita costs for metropolitan areas was nearly seven times and 12 times higher than that of remote and very remote areas, respectively [117].

The CDDS was designed to cover full range of dental services, without any check or constraints on the type of services. This resulted in a significant uptake of the scheme over a short period of time [116]. Services provided were predominantly interventive and invasive – with excessive spending on more expensive procedures with an unclear link to oral health gains, such as prosthodontic crowns and bridges – with only a small proportion of services being preventative focused [116]. Compounded by poor implementation and administration issues, the CDDS was deemed unsustainable by the government, and was subsequently discontinued in 2012 [118].

The apparent failure of the CDDS was attributed to lack of due considerations for eligibility, scope of services to be provided, inadequate consultation with healthcare providers during development, limited promotion of the scheme among patients, and an unclear outline of the remuneration system [116, 117]. Despite strong support on its potential value from service stakeholders and consumers [118], there has been no attempt from the government at reviving the scheme.

Recommendations

Recommendation 1. Enhanced oral health training for rural and remote primary healthcare professionals

- Advocacy efforts by dental associations, health professional groups, and public health organisations are needed to raise awareness about the importance of oral health training for primary healthcare professionals and the need for funding support to enable such training in rural and remote areas. Commonwealth, state/territory, and organisational funding should be directed to support such training activities.
- Flexible and tailored training resources must be developed to meet the needs of rural and remote primary care practitioners, incorporating discipline-specific evidence-based guidance on oral health care. At the minimum, in rural and remote areas where establishing a full-fledged dental service is not viable, training for primary healthcare professionals should include:
    - providing oral health education and promotion
    - identifying early signs of dental diseases (eg. dental caries, periodontal diseases, oral lesions)
    - identifying conditions requiring emergency referral to dental practitioner and establishing appropriate referral pathways
    - basic understanding of dental conditions that can be treated by antibiotics and other medical procedures
    - where possible, planning and provision of non-invasive dental procedures.
- Oral health education must be incorporated within continuing professional development programs that are perceived to be relevant to primary healthcare professionals. For example, a program on management of people with diabetes targeted at GPs and other primary healthcare professionals, should include components on common oral conditions associated with diabetes and the impact of poor oral health on the management of diabetes.
- Nationally recognised units of competency, available through Registered Training Organisations, can be leveraged by healthcare professionals; examples include “Recognise and respond to oral health issues” (HLTOHC007), “Use basic oral health screening tools” (HLTOHC010), and “Apply Fluoride Varnish” (HLTOHC011) [119].
- Oral health training for rural and remote primary healthcare professionals must be identified as a strategic priority in national and state/territory level health workforce plans.

Recommendation 2. Standardised and nationally recognised scope of practice for primary healthcare professionals which includes oral health care

- Departments of Health and relevant peak health bodies at national and state/territory levels should lead, in a unified way, expansion of scope of practice for primary healthcare professionals to include oral health care provision. Scope of practice changes achieved in multiple Australian jurisdictions (outlined in this brief) presents strong evidence base to support oral health education and non-invasive preventive services (such as fluoride varnish application) by primary healthcare professionals.

Recommendation 3. Identify oral health as "core" primary healthcare service, especially in rural and remote areas

- Oral health must be identified as a "core" primary healthcare service at national, state/territory and organisational level healthcare policies and strategic plans. This entails accounting for oral health promotion and service provision in primary healthcare funding and resource allocation.
- Oral health must be considered as an integral component in primary healthcare promotion programs; for example, behavioural modification programs focused on chronic disease risk factors, such as unhealthy dietary habits, tobacco use, harmful use of alcohol.

Recommendation 4. Support innovative integrated oral health models of care

- Pilot research focused on developing, implementing and evaluating integrated oral health models of care in rural and remote primary healthcare settings, such as teledentistry-enabled comprehensive primary healthcare models, must be adequately supported. As well, scaling up and scaling out of programs that have been shown to be effective, must also be supported. State and territory governments and Primary Health Networks can potentially provide funding and support for such research activities.
- The role of "oral health champions" – a trained nurse or an ATSI health practitioner, who acts as a liaison and is responsible for educating and supporting patients and providers in oral health care – has been shown to improve patient care coordination and service experience in rural residential aged care settings in Australia [89]. Similar workforce models have potential in oral health care in rural and remote primary healthcare settings [90], and must be explored by healthcare organisations as part of internal quality improvement processes.
- Rural and remote ACCHSs must be allocated adequate funding for oral health promotion and service provision, which is delivered as part of their comprehensive primary healthcare model. Doing so helps increase access to culturally responsive oral health care for Aboriginal and Torres Strait Islander people and reduces their reliance on the mainstream public dental services [14, 36].
- State and territory governments and healthcare organisations must allocate resources to support the establishment of regional collaborative forums to facilitate greater communication between oral and primary healthcare professionals.

Recommendation 5. Increased interoperability and data sharing between dental and general healthcare systems

- The Australian Digital Health Agency's National Digital Health Strategy, 2023-2028, outlines system interoperability and health information exchange as key features [120]. Future development priorities of the Agency must include building data infrastructure to enable exchange and interoperability between dental and primary healthcare systems at state/territory and national levels. This would require introduction of a standard dental diagnostic terminology to enable seamless data recording and sharing across different data management systems. For example, International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification) includes dental diagnostic codes, which can be adopted into data management systems.
- The MHR policy settings must mandate recording public oral health data within the system, with appropriate permission from patients, and due regard to confidentiality and privacy issues.

Recommendation 6. Improved access to oral health care under Medicare for rural and remote populations

- Oral health care services provided by rural and remote primary healthcare professionals and health services must be adequately reimbursed under Medicare's fee-for-service structure, including for the existing CDBS and any future schemes developed. New MBS items must be introduced to cover the costs of teledentistry services provided by primary healthcare professionals.
- The existing CDBS must be expanded to cover rural and remote loading, which accounts for higher service delivery costs in rural and remote areas (eg. higher staff salaries, retention bonuses, accommodation) and patient transport and accommodation. This will ensure increased uptake of the CDBS in rural and remote areas.
- A means-tested dental benefit scheme must be established under Medicare for identified vulnerable adults, particularly in rural and remote areas; for example, a scheme targeted at older adults or people living with chronic conditions [116]. The new scheme should duly incorporate considerations for clearly defined entry and eligibility guidelines and the scope of oral health services. Importantly, the scheme should have a clear framework on what oral health services are considered "essential" – i.e., services with clear evidence on oral health gains – such that the scheme can support expanded access and cost effectiveness.

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Appendix

Health Practitioner Regulation National Law 2009 – Section 121 [71]

A person must not carry out a 'restricted dental act' unless the person:

(a) is registered in the dental profession or medical profession and carries out the restricted dental act in accordance with any requirements specified in an approved registration standard; or

(b) is a student who carries out the restricted dental act in the course of activities undertaken as part of-

(i) an approved program of study for the dental profession or medical profession; or

(ii) clinical training in the dental profession or medical profession;

c) carries out the restricted dental act in the course of carrying out technical work on the written order of a person registered in the dentists or dental prosthetists division of the dental profession; or

(d) is a person, or a member of a class of persons, prescribed under a regulation as being authorised to carry out the restricted dental act or restricted dental acts generally.

''restricted dental act'' means any of the following acts:

(a) performing any irreversible procedure on the human teeth or jaw or associated structures

(b) correcting malpositions of the human teeth or jaw or associated structures

c) fitting or intra-orally adjusting artificial teeth or corrective or restorative dental appliances for a person

(d) performing any irreversible procedure on, or the giving of any treatment or advice to, a person that is preparatory to or for the purpose of fitting, inserting, adjusting, fixing, constructing, repairing or renewing artificial dentures or a restorative dental appliance.

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AHHA acknowledge the Aboriginal and Torres Strait Islander peoples as Australia's First Nation Peoples and the Traditional Custodians of this land. We respect their continued connection to land and sea, country, kin, and community. AHHA also pays our respect to their Elders past, present, and emerging as the custodians of knowledge and lore.