



**Australian Government**

**National Rural Health Commissioner**

**Review of rural allied health evidence to inform  
policy development for addressing access,  
distribution and quality**

**Prepared by the  
National Rural Health Commissioner**



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## Acknowledgement of Country

The National Rural Health Commissioner (the Commissioner) acknowledges the Traditional Owners and Custodians of Country throughout Australia. The Commissioner recognises the strength and resilience of Aboriginal and Torres Strait Islander peoples and acknowledges and respects their continuing connections and relationships to country, rivers, land and sea. The Commissioner acknowledges and respects the Traditional Custodians upon whose ancestral lands our health services are located and the ongoing contribution Aboriginal and Torres Strait Islander peoples make across the health system and wider community. He also pays his respects to Elders past, present and emerging and extends that respect to all Traditional Custodians of this land.

## The Office of National Rural Health Commissioner

The *Health Insurance Act 1973* (the Act) provides the legislative basis for the appointment and the functions of the National Rural Health Commissioner (the Commissioner).

In accordance with the Act, the functions of the Commissioner are to provide independent and objective advice in relation to rural health to the Minister responsible for rural health.

In December 2018, Senator the Hon Bridget McKenzie, Minister for Regional Services, Minister for Sport, Minister for Local Government and Decentralisation issued a Statement of Expectations<sup>1</sup> to the National Rural Health Commissioner for advice on rural allied health workforce reform. This Review fulfills the first requirement of the Statement of Expectations to:

*Conduct a literature review to: explore the means by which allied health services are delivered in rural, regional and remote areas; identify existing or developing issues; identify potential duplication of services provided by the Commonwealth and jurisdictions; and provide an evidence base for advice to Government.*

This review is prepared for the Minister responsible for rural health, the Hon Mark Coulton, Minister for Regional Services, Decentralisation and Local Government.

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<sup>1</sup> Australian Government (2018) [Accessed 12 Sep 2019] Retrieved from: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/National-Rural-Health-Commissioner-publications>

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## Executive summary

In December 2018, the Rural Health Minister Hon Bridget McKenzie requested the National Rural Health Commissioner to work with the allied health sector to develop Advice about improving the access, distribution and quality of rural and remote allied health services. The Commissioner's Office has prepared this literature review to inform policy advice.

This document summarises the results of a scoping review of the published peer review literature (1999-2019). Included were 119 studies, 19 of which were other reviews and 100 empirical studies. Broad themes identified were: rural allied health workforce and scope of practice; rural pathways to train and support; recruitment and retention and; models of service.

## Snapshot of findings

### Workforce and scope of practice

More than half of rural allied health professionals work publicly; although those more privately based include optometrists, podiatrists, pharmacists, physiotherapists and psychologists.

Rural allied health workers commonly service large catchments, visiting multiple communities. They work across an extended scope using generalist and specialist skills to meet diverse community needs with limited infrastructure.

Particular skills used are in paediatrics, Indigenous health, chronic diseases, health promotion and prevention, primary health and health service management. In rural and remote communities, training local workers including Indigenous Health Workers and allied health assistants is important for increasing early intervention, prevention, service coordination and enabling culturally-safe care.

### Rural pathways to train and support

Based on a range of surveys, around half to two-thirds of rural allied health workers have a rural origin and half have some rural training experience.

Accessing tertiary allied health training is challenging for rural youth. Rural training opportunities have increased over time through University Departments of Rural Health (UDRH) (some disciplines of 12 months' duration), with signs that quality rural training impacts early career supply, after controlling for rural background.

Tertiary scholarships with rural return of service requirements and professional support could improve uptake of rural work. Intention to stay and turnover have the potential to vary between public and private sectors warranting tailored approaches.

### Recruitment and retention

Reduced turnover is predicted by commencing employment at a higher grade (2/3 compared with 1) or being aged >35 years (compared with <35).

Factors considered important for retention are having strong rural career pathways, access to relevant professional development and local colleagues, working in a supportive practice environment and the nature of work (independence in role, variety of work, its community focus and a feasible workload).

### Models of service

Available professionals (public and private), skills, infrastructure and the community need determine the allied health service platform for a regional catchment.

Patient-centred planning and partnerships between public hospitals and private providers (shared care) in regions can optimise use of the available workforce and promote access and quality.

Coordinated patient care depends on health service networks having strong leadership/coordination, patient information, clear referral processes and staff training.

Outreach and telehealth, along with viable business models, are important for increasing service distribution. They require an adequate staff base, strong community engagement and training for local staff who manage ongoing care between allied health service points.

### Summary

Australia is leading the evidence base with respect to rural allied health workforce and services. Findings suggest that allied health providers are working as generalists and need particular skills.

Access and quality depend on a critical mass of skilled providers, working in complementary teams to address needs of regional catchments. This can be aided by selecting rural background students, providing more rural-based training, rural curriculum, supported rural jobs and rural career pathways including addressing job satisfaction.

At the regional level, patient-centred service planning and coordination of public and private providers underpins access to more comprehensive and high quality services.

For smaller communities, outreach and virtual consultations are critical for early intervention and continuity of care, but viable business models and an adequate staff base are essential to improve service distribution.

## Introduction

There are around 195,000 allied health professionals and allied health workers make up 25% of Australia's registered health workforce, however, they remain poorly distributed in rural and remote areas (1, 2). In December 2018, the Rural Health Minister Hon Bridget McKenzie requested that the National Rural Health Commissioner (the Commissioner) consult with the allied health sector to develop advice about the current priorities for rural and remote allied health services by October 2019. To support this, the Commissioner's Office has prepared a literature review and policy options paper. This document describes the literature review. Section 1 outlines the scope of the review. Section 2 describes the collection of evidence. Section 3 describes the results and Section 4 discusses the policy implications.

## Section 1: Defining the scope of the review

### 1.1 Defining allied health

"Allied Health" describes a range of health professional groups involved in health service provision who are important for achieving comprehensive health and well-being outcomes outside of the boundaries of emergency, medical, dental and nursing care.(2, 3) In Australia, allied health professionals are trained in universities (faculties of health science, medicine, education, social sciences and University Departments of Rural Health (UDRH). Allied health assistants are trained by vocational training providers.

There are a range of allied health professions registered through the National Registration and Accreditation Scheme including psychologists, pharmacists, physiotherapists, occupational therapists, medical radiation practitioners, chiropractors, optometrists, podiatrists and osteopaths(Table 1).(1) In addition to the registered allied health professions, a large number of allied health professions operate under self-regulation.

These include speech pathologists, dietitians, social workers, audiologists, exercise scientists/physiologists, orthoptists, orthotists, prosthetists and sonographers. Allied health assistants work under supervision of allied health professionals in single or multi-disciplinary roles.

A number of stakeholders are involved in allied health policy development. In February 2018, AHMAC formally recognised the Australian Allied Health Leadership Forum (AAHLF) as the appropriate allied health forum for AHMAC and Health Service Principle Committee (HSPC) to seek allied health workforce specific advice. The Forum includes members of Allied Health Professions Australia (AHPA), Deans of Universities that have allied health courses, Chief Allied Health Advisers, Indigenous Allied Health Australia and rural and remote representation via Services for Rural and Remote Allied Health (SARRAH).(4) The Forum describes allied health professionals as university qualified with "skills to retain, restore or gain optimal physical, sensory, psychological, cognitive, social and cultural function of clients, groups and populations", being "client focused, using inter-professional and collaborative approaches related to client needs, the community, and each other". The AAHLF does not delineate the specific disciplines included.

Allied Health Professions Australia (AHPA) is a peak body representing 20 national allied health association members and 6 organisational friends. AHPA also defines allied health professionals as university qualified practitioners with specialised expertise in preventing, diagnosing and treating a range of conditions and illnesses, qualified at the Australian Qualifications Framework (AQF) (Level 7 or higher), who work in multidisciplinary teams to address patient priorities (included disciplines listed in Table 1).(2) Various states and territories (jurisdictions) also manage a range of allied health disciplines and other health workers under the banner of "allied health" (Table 1). The Department of Health and Human Services (DHHS) in Victoria noted that a multiplicity of professions, technical expertise, training pathways, sectors of practice and professional governance frameworks needs to be embraced within allied health policies. (3)

**Table 1 – Different groupings of disciplines registered, included or managed by jurisdictions for “allied health”**

National Registration and Accreditation Scheme (AHPRA)	Allied Health Professions Australia (AHPA)	Victoria #	New South Wales #	Queensland #
Chiropractic*	Audiology	Art therapy	Art therapy	Audiology
Medical radiation practitioners	Chiropractic*	Audiology	Audiology	Clinical Measurements*
Occupational therapy	Creative arts therapy*	Biomedical science*	Child Life Therapy*	Exercise Physiology
Optometry	Dietetics	Chiropractic*	Counselling	Leisure Therapy*
Osteopathy	Exercise & sports science	Diagnostic imaging medical physics	Diversional Therapy*	Music Therapy
Pharmacy	Genetic Counselling*	Dietetics	Exercise Physiology	Neurophysiology
Physiotherapy	Medical imaging and radiation therapy	Exercise physiology	Genetic Counselling*	Nuclear Medicine Technology
Podiatry	Music therapy	Medical laboratory science*	Music Therapy	Nutrition & Dietetics
Psychology	Occupational therapy	Music therapy	Nuclear Medicine Technology	Occupational Therapy
<i>Additional registered health workers that may be part of rural allied health teams</i>	Optometry	Nuclear medicine	Nutrition & Dietetics	Optometry
Dental hygienist*	Orthoptics	Occupational therapy	Occupational Therapy	Orthoptics
Dental prosthetist*	Orthotics & Prosthetics	Optometry	Orthoptics	Orthotics & Prosthetics
Dental therapy	Osteopathy*	Oral health (not dentistry)*	Orthotics & Prosthetics	Pharmacy
Oral health therapy*	Perfusionists*	Orthoptics	Pharmacy	Physiotherapy
Aboriginal and Torres Strait Islander Health Practitioners*	Physiotherapy	Orthotics & Prosthetics	Physiotherapy	Podiatry
	Podiatry	Osteopathy*	Podiatry	Psychology
	Psychology	Pharmacy	Psychology	Radiation Therapy
	Rehabilitation counselling*	Physiotherapy	Radiography	Radiography
	Social work	Podiatry	Radiation Therapy	Rehabilitation Engineering*
	Speech pathology	Psychology	Sexual Assault*	Social Work
		Radiation oncology medical physics	Social Work	Sonography*
		Radiation therapy	Speech Pathology	Speech Pathology
		Radiography	Welfare*	
		Social work		
		Sonography*		
		Speech therapy		

\* May not be on lists of other jurisdictions, AHPRA or AHPA as of 2019 (1, 5, 6)

# Not all disciplines managed by jurisdictions are considered allied health but are listed if they are managed by allied health advisors

## 1.2 Rural allied health and rural community need

Services for Rural and Remote Allied Health (SARRAH) emerged in 1995 as a grassroots organisation advocating for rural allied health workers (7). SARRAH includes a range of allied health professions including but not limited to: audiology, dietetics, exercise physiology, occupational therapy, optometry, oral health, pharmacy, physiotherapy, podiatry, psychology, social work and speech pathology.

Various jurisdictions have initiated rural training and support programs to achieve a skilled and distributed rural allied health workforce and services. The most advanced of these is the Queensland (led by James Cook University - JCU) rural generalist allied health training program. Within this program, “generalist allied health” is described as either a service, or a practitioner, responding to the broad range of healthcare needs of rural or remote communities by delivering services for people with a wide range of clinical presentations, across the age spectrum, and in a variety of clinical settings (inpatient, ambulatory care, community). The aim of allied health generalist services/workers is to deliver accessible, high quality, safe, effective and efficient care using strategies such as telehealth, delegation, extended scope of practice and partnerships (particularly for low volume but important areas of care).

The University Departments of Rural Health (UDRH) and their parent body, the Australian Rural Health Education Network (ARHEN) which was formed in 2001, represent rural nursing and allied health disciplines (8). The UDRH Program was established as a result of the 1996-1997 Federal budget after being identified as a key component of the Government’s Rural Workforce Strategy (9). In 2016, UDRH funding was incorporated into the Rural Health Multi-disciplinary Training Program (along with funding for rural medical and dental training). Around 16 UDRHs in Australia provide clinical placements in rural and remote locations for health science students and have a role in developing evidence to inform rural health system quality improvement (8).

Rural and remote communities have access to fewer allied health services. Despite more allied health workers being produced nationally in recent years, workforce statistics suggest poor distribution (10). In 2016, 83% of psychologists, 81% of physiotherapists, 79% of optometrists, 77% of pharmacists, and 75% of podiatrists worked in metropolitan locations (MMM1) where only 70% of the population resides (10). The ratio of allied health workers per 100,000 population diminishes with increasing remoteness. This absolute deficit is in addition to the large distances, population dispersion, lower socio-economic and health status and higher health risk behavior of rural and remote that also impact on shortfall of workers relative to the number required (10).

In 2012, core primary care services needed for rural and remote communities were defined using a Dephi method with 39 experts - ‘care of the sick and injured’, ‘mental health’, ‘maternal/child health’, ‘allied health’, ‘sexual/reproductive health’, ‘rehabilitation’, ‘oral/dental health’ and ‘public health/illness prevention’. The challenges of providing these services equitably in rural and remote areas required diverse strategies and strong service coordination (11). A follow up study identified that most of these core services were required even in communities as small as <1000 people (12).

Hospitalisation data reflects substantial unaddressed need within rural and remote primary care. One 2011-2013 study found that hospitalisations for oral and dental conditions were significantly higher for Indigenous infants and primary school-aged children from remote areas than age-matched metropolitan controls (13). Also over a one year period, a remote Northern Territory clinic transferred 789 children (aged <16 years - average age of 4.4 years) for care in a metropolitan centre (14).

Other literature directly reflects unmet need and barriers to accessing rural allied health services. O’Callaghan et al, identified that 85% of parents in rural NSW considered access to paediatric speech pathology services a prime concern, mainly related to lack of providers (15). Rural families faced long travel distances and costs for accessing services, lack of public transport, poor awareness of available services, and delays in treatment due to waiting lists. A further integrative review of the experience of rural mothers caring for children with chronic conditions identified that common challenges were accessing the right staff and resources, long travel times and social

isolation (16). Mitsch et al found there was limited access to rehabilitation for brain injury in rural and remote areas in New South Wales (NSW) related to funding, recruiting and retaining appropriately skilled health, rehabilitation and support staff (17). An international literature review reinforced the deficits in access to rehabilitation services in rural and underserved areas, mainly related to the supply and distribution of an appropriately skilled workforce (18).

Indigenous people are over-represented in rural and remote areas. Leach et al described otitis media which commenced in Aboriginal infants within 3 months of birth, progressed to chronic suppurative otitis media in 60% of the children and did not resolve throughout early childhood (19). Rural pharmacists identified that access and maintenance of medications with appropriate support was essential to manage the high burden of early onset chronic diseases experienced by rural Indigenous clients (20). Based on increased hospitalisations and deaths from suicide in remote Indigenous communities, Hunter identified more comprehensive upstream approaches were required rather than narrowly focused clinical services models (21). Another study identified that strong and collaborative workforce models were also important for improving the management and prevention of chronic diseases in rural and remote Indigenous populations (22).

Communities with younger populations relative to Australian averages may need early intervention services including for oral health. Gussy et al (2008) reported among rural Victorian parents (in towns 10-15,000 population) that tooth cleaning was done for 12-24 month year old infants “at least sometimes”, however a large proportion lacked confidence and this was significantly related to the frequency of the cleaning (23). In another study, with multivariate models controlling for Indigenous status, living in a fluoridated area, low socio-economic status (SES), and age and sex, the mean decayed/missing/filled teeth of 5–10 year old and 8–12-year-old children in 2009 were significantly higher for rural children compared with metropolitan (24). Children in remote areas fared worst, mainly related to having more filled teeth. In another study of adolescents aged 11-17 years in rural Victoria, early lesions were found in 60% of students and advanced decay in 28%, associated with diet, mothers’ education level being primary school and irregular check-ups (25).

Rural and remote service access is also affected by the health-seeking behaviour of rural and remote people. For small and dispersed populations who have lower access to healthcare, many working in self-employed industries, important health needs are not necessarily well-identified, nor acted upon. Rural and remote people tend to under-access health services due to poor health literacy, stigma, stoicism, long waiting lists, lack of medical providers as gate keepers, cost (time), distance (time), cultural safety and convenience (26-30). Unmet healthcare needs can in turn affect the ability to fully participate in education, work and community life (31).

### 1.3 The Commissioner’s focus

Under Part VA of the Health Insurance Act 1973 (the Act), the National Rural Health Commissioner is required to consider the needs of the entire rural health workforce. For this reason, the review was deliberately broad and inclusive of allied health disciplines as defined by AAHLF, thus excluding medicine, nursing, midwifery, dentistry, paramedicine and non-clinical roles. Given the rural context requires cost-effective and sustainable models that can operate well across geographically distributed populations, allied health assistants, oral therapists/hygienists and Aboriginal and Torres Strait Islander health Practitioners were included in the search terms. Given the Commissioner reports to the Minister responsible for Rural Health, the review predominantly focused on the health sector, rather than disability, aged care, justice and education areas. The Commissioner’s focus is on discerning policy options within the remit of the Commonwealth Department of Health, but the literature review was broader in order to understand the evidence from a whole of community perspective.

## Section 2: Collecting the published evidence

### 2.1 Review question and search strategy

Scoping reviews are an effective way to summarise existing evidence and inform real-life policy and program questions (32). The following questions were posed:

What are the characteristics of the rural allied health workforce and their scope of practice?

What is the range of evidence about the rural allied health workforce and rural allied health services for informing policy development, specifically about issues of access, distribution and quality?

In line with scoping review methods, questions guided all aspects of data collection and extraction. A range of search terms was mapped based on the review questions. These were then iteratively developed to ensure sensitivity to the range of disciplines and rural contexts of interest. The final search included three key concepts, allied health (not specific to discipline names) using terms like “allied health”, “health work\*” “therap\*”,

rural or remote practice, and training, recruitment, retention and service models. To ensure relevance of material to informing Australian policy, a fourth concept limited the material to high income countries where previous global scale literature reviews had identified the most evidence about primary care/allied health: Australia, New Zealand, Japan, Canada and the United States (33, 34).

Six databases were selected based on scope and relevance of literature content: *Medline, Social Science Citation Index, CINAHL, ERIC, Rural and Remote Health, Informit Health Collection, and the Cochrane Database of Systematic reviews*. The search included literature published between February 1999 and February 2019. A Boolean search was applied based on the terms in each concept. The final search was restricted to English, producing around 8,000 articles considered both feasible within a time-limited review, and found to be sensitive when checked against ten allied health articles of different disciplines, countries and topics, already known to the authors. Other key published texts were found by hand searching and identified by key informants. The literature was entered into Endnote and duplicates were removed.

Concept 1	Concept 2	Concept 3	Concept 4
Rural OR remote	“health work*” OR “rural generalist” OR “allied health” OR “community health worker” OR “health assistant” OR “therap*”	train* OR curricul* OR develop* OR course OR placement OR immersion OR skill OR education OR qualification OR competen* OR recruit* OR retention OR *care OR *access OR model OR telehealth OR outreach	Australia OR New Zealand OR Japan OR Canada OR United States OR North America

## 2.2 Study selection

Study selection occurred iteratively, led by two team members and guided by whole-of-team weekly discussions. Titles and abstracts were screened and included if:

- Based in a rural or remote location
- Empirical study or literature review about allied health disciplines or services “in scope”
- Reporting outcomes
- Over 40% of results about allied health workforce
- From Australia, Canada, United States of America, New Zealand, Japan

Studies were excluded if:

- Low or middle income country
- Discussion or perspective only
- Clearly aged care, disability or education sectors
- Virtual service models not specific to supporting rural workforce or rural access
- <15 people in sample
- Full text not available (via find full text using Endnote, Google or direct library searching)

After abstract and title screening, relevant material was read in full text. All forms of investigation were considered potentially useful for informing policy directions. Data extraction criteria were determined based on the review questions, trialled and refined during first reading to ensure that they were fit-for-purpose. The following information was extracted:

- Country, location and year
- Health worker type/s
- Area of care
- Research question
- Study sample
- Study design / methods
- Outcomes
- Enablers or barriers

The extracted material was thematically analysed, firstly by reading the articles and recording preliminary ideas and thoughts, discussed at weekly team meetings. Secondly by re-reading and organising the material into themes (35).

## Section 3: Results

### 3.1 The range of evidence

Of 7,429 articles, 205 were relevant from initial abstract and title screening. Of these, 85 were excluded using the above criteria, leaving 118 meeting the inclusion criteria. Two additional studies, not already in the database, were included from stakeholders, resulting in a total of 120 articles. Of these, 101 were empirical studies, 19 were literature reviews; 83 (70%) were published recently (2009-2019).

Of the 101 empirical studies, 11 were from another country - 8 from Canada, 2 the USA, 1 from New Zealand. The other 90 were based in Australia – 6 of which were national scale studies and 84 from one or more state or territory jurisdictions. Of jurisdictional studies, most (n=24) were from Queensland (including one which also covered Northern Territory (NT)), (n=22) New South Wales (NSW) and (n=21) Victoria (Vic) (including one which also included Queensland). Only 16 of the 84 jurisdictional studies were state or territory-wide. The others were based in a region (such as a cluster of towns or health service/s). Most (n=85) explored both hospital and community (non-hospital) practice settings, a further 23 focused on community (non-hospital) and only 12 on hospital only care.

The main themes were: workforce and scope of practice (n=9); rural pathways to train and support (n=44); recruitment and retention (n=31) and; models of service (n=36).

Of empirical studies, 83 were cross-sectional designs. Many (n=64) involved questionnaires 33 interviews and 11 focus groups. Only 8 studies used multivariate analyses and 15 used comparison groups (metropolitan workers, regular care, public workers or pre and post intervention testing). Putting these quality measures together, only three used longitudinal designs, controlled for confounders and used comparison groups.

### 3.2 Findings

The findings are summarised according to theme.

#### 3.2.1 Characteristics of the workforce and their scope of work

The first theme described the characteristics of the rural allied health workforce and their scope of work.

### SNAPSHOT OF EVIDENCE

Cross-sectional surveys estimated that around 11-35% of various allied health professions worked in rural areas. More than half of rural allied health professionals worked in the public sector; those more privately based were optometrists, podiatrists, pharmacists, physiotherapists and psychologists. Commonly, rural allied health workers serviced large catchments, visiting multiple communities and around a third had more than one job. Rural allied health professionals covered an extended scope of work using generalist and specialist skills to meet diverse community needs with limited infrastructure. Particular skills areas included in paediatrics, Indigenous health, chronic diseases, health promotion and prevention, primary health care and health service management. Service prioritisation and cross-regional networking were used to cope with high service demand.

An allied health workforce survey from South Australia in 2009 included 17 disciplines and achieved 1,539 respondents (response rate could not be calculated). It identified that the proportion of allied health workers working in rural locations varied by discipline (between 35-11%) (36).

In a cross-sectional survey in 2005 of 451 rural allied health workers in NSW, including 12 disciplines to which 49% responded, more than half of the respondents worked exclusively in the public sector and 11% said that they worked in both public and private sectors. The highest proportions of privately based workers were based in optometry, podiatry, pharmacy, physiotherapy and psychology (37). Another survey of allied health workers in rural western Victoria in 2003 to which 28% (n=138) responded, identified that 69% worked in public sector positions (38). In a survey of 84 rural physiotherapists working in Shepparton, Benalla and Wangaratta (response rate 79%), two-thirds worked part-time with most in the public sector (70%), with one third holding more than one position (39). One-third considered themselves generalists and one-third specialists. In a 2008-09 NSW rural allied health survey from 21 different allied health occupations, 1,879 (around 44%) responded showing 84% worked in towns >10,000 population, and were employed publicly (46%), privately (40%) or in both public and private sectors (11%) (40).

A 2005 survey of rural and remote occupational therapy managers (44% response, n=18 people) in South Australia identified that the most prevalent services provided were in areas of rehabilitative, health promotion, prevention and remediation (41). The vast majority were servicing large geographical catchments (89% over 100km), with travel time and distance between clients a key consideration in the service model. Respondents described the challenges for service delivery included the wide range of services needed for diverse client groups, the high client to therapist ratio, and limited human resources.

Merritt et al undertook a national survey of 64 outer regional and remote occupational therapists identified through business listings, receiving 37 complete responses. No practices were based in very remote towns (42). One quarter of respondents visited at least five towns each week and one third had other paid employment.

Adams et al described, based on interviews and surveys with public and private physiotherapists in a large region of one Australian state, that the scope of services was rationalised based on the overall size and skills of the available workforce in both public and private sectors of the region (43).

Bent conducted 17 interviews with allied health professionals in speech therapy, occupational therapy and physiotherapy working in Alice Springs hospital, the work involved supporting many Aboriginal clients, managing a large caseload and geographic catchment, and addressing a wide range client ages and conditions (44). The job involved providing advice and support for health clinical staff, bush nurses, and Aboriginal health assistants in schools. This required clear communication, support and careful prioritisation of workload. Enablers of their work and retention were inter-disciplinary networking and cooperation across the catchment, along with inter-agency mentoring systems and becoming an "expert generalist". Of respondents, 59% liked the diversity of the workload.

In another 2012-13 semi-structured survey of 33 from 40 eligible nutritionists who worked in remote Northern Territory Aboriginal communities in last decade, identified through the Department of Health and by snowballing, it was found that the scope of their work was not supported by their training. They were working across public health approaches, with limited training in cultural awareness and relying on materials that were from the nutritional field pedagogy but did not incorporate Aboriginal concepts of health and healthy eating (45).

In a national cross-sectional survey of 4,684 registered chiropractors to which 41.7% responded and indicated their practice location, 22.8% (n = 435) were based in rural or remote areas, and 4.0% (n = 77) in both urban and rural or remote areas. Statistically significant predictors of rural or remote practice compared with metropolitan work included more patients treated per week, practising in more than one location, working with no imaging facilities on site, often treating degenerative spinal conditions or migraine, often treating people over 65 years, and treating Aboriginal and Torres Strait Islander people. This study provided insights into unique practice challenges for rural or remote chiropractors include a higher workload and fewer diagnostic tools (46).

Hoffman et al reported the results of a self-administered questionnaire sent to 608 occupational therapists (seeking to select those working in adult neurological rehabilitation) in all rural areas of Queensland. Overall, 39 responses were received from relevant practitioners (not possible to calculate the exact response rate). The scope of work involved mainly home visits and modifications, equipment prescription, client/family education, and activities of daily living assessment and retraining. They travelled long distances to see clients, managed large workloads and worked with limited resources (47).

In a study to identify relevant chronic diseases curriculum for remote settings, the Northern Territory and Queensland governments brought stakeholders together (35 key informants) using surveys with remote staff to identify their current scope of work. It was found that there was little difference in the training and skills for chronic diseases work by discipline, although few were trained in population health. There was an identified need to improve the scope of work being undertaken in prevention and early intervention (these components were seen as challenging compared with downstream chronic diseases management) (48).

In interviews and focus groups with 18 participants from 8 disciplines in allied health in remote northern Australia, unique factors related to remote work were being organized but flexible, exhibiting cooperation and mediation, being culturally aware, knowing the community, and showing resourcefulness, resilience and reflectivity. This included being able to be an agent in a system where there were low resources and use knowledge and awareness across communities for shared problem solving (49).

In interviews with 37 GPs, 19 Queensland Health mental health staff and 18 community organisation participants from 8 general practices, 3 mental health services and 2 non-government organisations in 8 rural Queensland towns, consensus was reached that there were significant problems with inter-service communication and liaison in mental health services across the region (50).

In a national survey of 184 public hand therapists (physiotherapists and occupational therapists) working in rural and remote public hospitals and identified through direct contact, 64 responded (17.2% were physios). Over half of respondents reported that their scope of work involved providing initial splinting and exercise prescriptions and over 85% reported that they administered exercise protocols (51). Barriers to providing services in rural/ remote locations included transport, travelling time, limited staff, and lack of expert knowledge in hand injuries or rural/remote health care.

In terms of the non-Australian literature, there were two studies about scope of work, both from Canada. In surveys about rural rehabilitation practice with 6 occupational therapists and 13 physiotherapists in rural British Columbia (BC), Canada, serving a total of 15 rural communities of population <15 000, participants considered their generalist practice was 'a specialty' requiring advanced skills in assessment. They described 'stretching their role' and 'participating in, and partnerships with, community' as ways to overcome resource shortages. Reflective practice, networking and collaboration were deemed essential to maintaining competence. Stretching roles was a way of remaining 'client focused' by not turning people away just because that task is normally done by someone in a sub-specialist unit in the city (52).

Finally, in a self-completed survey of rural occupational therapists in working in rural Alberta and Saskatchewan, more than half worked in sole therapy positions, with challenges related to managing the generalist nature of rural occupational therapy practice. In terms of handling the scope of work, participants recommended "hands-on" experience during rural fieldwork placements, working in an urban setting prior to embarking on a rural career, coming from a rural background, and finding a mentor prior to working rurally. Some recommended increasing management and organisational skills content in the curriculum because they considered them essential skills for effective rural practice (53).

### 3.2.2 Assistants and training local staff to provide allied health services

There was a range of evidence covering the concept of allied health assistants (AHA) and training health workers in rural and remote locations for allied health tasks and working with visiting allied health teams.

#### SNAPSHOT OF EVIDENCE

Allied health assistants could be delegated around 17% of allied health work (same for rural and metropolitan areas). Highest delegation was possible in podiatry, speech and exercise physiology and included aspects like exercise, slings, functional therapies and excursions). However professional trust and governance (referral, tailored role, and supervision) are factors underpinning effective implementation. In rural and remote communities, training local health workers, including Indigenous health workers, for allied health tasks and working with allied health teams, facilitates improved early intervention, prevention, service coordination and enables culturally-safe care in areas like eye and oral health and access to medicines.

In Victoria, a state-wide study in 2009-2011 involving focus groups and a quantitative survey of allied health professionals in public health and community service positions, (783 rural respondents and 1,666 metropolitan), suitable allied health assistant (AHA) tasks were delineated along with how allied health professionals use their time. (54) This discerned that allied health professionals spend up to 17% of time undertaking tasks able to be delegated to an AHA (half were clinical tasks). This did not vary by rural or metropolitan context of work. Podiatry, followed by speech pathology and exercise physiology, recorded the highest percentage of AHA-attributable time that could be delegated. Tasks included exercise sessions, hydrotherapy, slings, community outings and functional therapy.

In 2009 in Queensland, 51 new allied health assistant roles were implemented in numerous hospital settings for 6-9 months at one of three levels: trainee, full scope, or advanced scope. There were generic position descriptions and task lists for each level. These were then audited over a two month period by trained allied health professionals working in pairs using systematic data collection methods (55). The main finding was that tailored (not generic) allied health

assistant position descriptions were needed to account for different disciplines and their work context and the level of training of the assistant. They also identified the need for supervision frameworks. There was not enough delegation from allied health professionals to the roles, partly due to professional trust and clarity about roles and responsibilities.

In terms of competence, a rural Queensland hospital found that a global nutrition assessment (SGA), applied to 45 patients by 5 AHAs with a Certificate IV in Allied Health Assistance, produced equivalent results as those of qualified dietitians (n=3) (56). Although AHAs reported significantly lower confidence than dietitians ( $t = 4.49, P < 0.001$ ), the mean confidence for both groups was quite high (AHA=7.5, dietitians = 9.0). There was some variation in the results of different components of the assessment tool between the two groups, but the results suggest that assistants could reliably undertake these assessments.

In an exploratory interview based study of 49 rural healthcare workers (including pharmacists) concerning access to community medicines in rural areas (<1500 population), it was found that maintaining continuity of access was challenging as patients moved between hospital and community (57). Generalist nurses and doctors were over-loaded and managing medications was an additional demand on their time. Solutions suggested were developing “extended community medication roles” with oversight of rural pharmacist, along with more long-term scripts.

Based on interviews with 32 health staff attending or working in remote clinics to provide oral care in 2005-2008, there was strong support for oral health roles for Aboriginal and Torres Strait Islander health practitioners (58). These roles could help to stem late intervention and reduce the demand on the visiting dental team along with aeromedical retrievals. Equally, to sustain access, partnerships and coordination of outreach and telehealth services, along with providing culturally safe care in Indigenous eye health, a literature review by Durkin et al considered there is potential to develop an Indigenous eye health role (59). This was particularly to address issues of prevention, early intervention and follow up.

### 3.2.3 Rural pathways to train and support

A range of literature was focused on factors related to rural pathways, including student selection, training, additional skills attainment and professional support.

#### Tertiary training

##### SNAPSHOT OF EVIDENCE

Around half to two-thirds of rural allied health workers had a rural origin and half had some rural training experience. Rural and remote youth had a limited frame of reference for allied health professions, lacked access to required subject choices for course eligibility, needed to relocate to study allied health and faced more costs to participate. University Departments of Rural Health (UDRH) have increased rural training volume but only some provide up to 12 months’ training for selected disciplines). One univariate study showed that up to 12 months’ training related to 50% working rurally compared with 24% average rural work outcome across the disciplines and another multivariate study identified that 2-18 week rural placement and their self-reported high quality were associated with graduates working in rural areas in their first postgraduate year, once rural background was controlled for. Rural settings provided a range of unique learning environments. Apart from rural clinical placements, UDRHs also provide support for research/teaching and career pathways for mid-career rural allied health professionals.

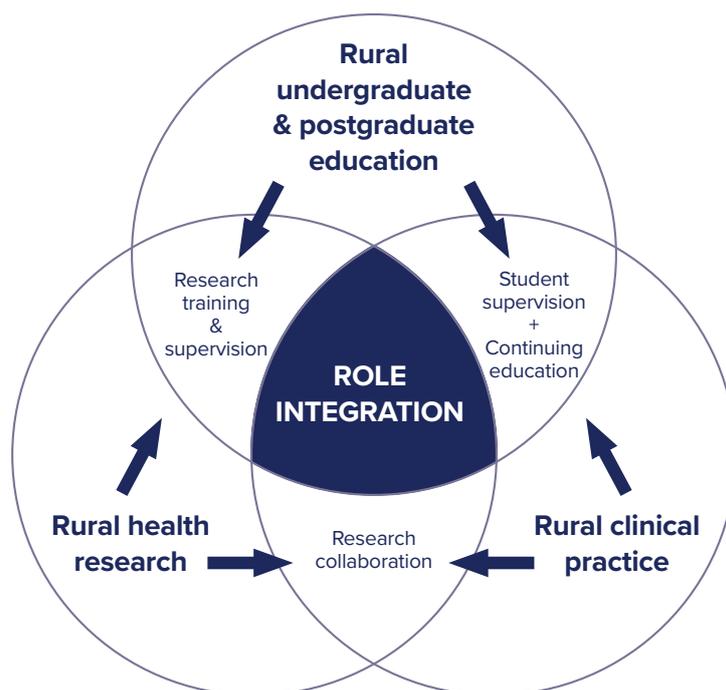
In a review of the evidence by Durey et al published in 2015, many factors considered effective for training rural doctors could also support the growth of the rural allied health workforce (60). Of 1,539 respondents to an allied health workforce survey in South Australia in 2009 (17 disciplines, response rate could not be calculated), 41% with a rural background and 17% with a metropolitan background worked rurally. (36) In a repeated cross-sectional survey of rural allied health workforce in one NSW region (>200 respondents spanning 12 disciplines with around 50% responding to first survey), the proportion of respondents of rural origin was about two-thirds in both surveys and about half had some rural experience during training (61). In a 2008-09 NSW wide survey of regional, rural and remote allied health professionals from more than 21 different allied health occupations contacted

via diverse communication channels, to which 1,879 responded (approximately 44% response rate), 60% had a rural background (40). Another cross-sectional survey of 605 rehabilitation professionals living and working in Northern Ontario, (occupational therapy, physiotherapy, speech–language pathology and audiology) in 2009 with 345 respondents, nearly two thirds were originally from Northern Ontario (62).

Attracting rural background students to allied health courses may be challenging. In interviews with 126 students in years 10-12, 52 parents, 10 grandparents, 76 teachers and 4 Aboriginal and Islander Education Officers (AIEO) from 15 secondary schools in rural and remote Western Australia in 2000, Durey et al identified structural and cultural barriers for rural and remote secondary students being attracted to and accessing health courses (63). Structural barriers included cost and information about courses and cultural barriers such as feeling capable and seeing allied health role models in the community. In terms of the rural training path, a national integrative review (up to 2012) of rural allied health training (14 disciplines) identified that pathways into tertiary studies in rural and remote communities were vague and often interrupted along with the return of graduates being haphazard (64). Rural secondary students had poorer access to subject choices for course eligibility and there were financial barriers to participating. Issues of daunting social isolation and separation from families and support systems are problematic to attend city-based courses. Students may also lack a frame of reference for accessing rural placement options. More tailored entry criteria, along with coordination and capacity building for rural training within rural courses were considered important.

Rural allied health training opportunities appear to be growing in Australia but many remain of short-duration. A survey of University of South Australia Division of Health Sciences Schools (training a range of allied health disciplines) in 2000, showed that between 5-20% of all allied health tertiary students did rural training, usually as a fieldwork placement in the final two years, but this was only short-term (65). The Schools identified strong potential to grow these opportunities. At the University of Newcastle, over a 12-year study period, the UDRH delivered 3,964 physiotherapy placements. Between 2003 and 2005 the average proportion of clinical placements occurring in metropolitan areas (MMM1) was 78% and in rural areas (MMM categories 3–6) was 22% (presumably no placements in MMM2 or 7 based on the location of the UDRH). In 2014, the proportion in MMM3-6 increased to 40%. There were also lower assessment marks for students trained in MMM1 than other categories (66). The UDRH model was conceptualised by Smith et al as facilitating all of clinical work, teaching and research, along with providing rural clinicians with career paths (schematically represented in Figure 2) (67). The article described an increase of rural placements (in placement weeks) at the University of Newcastle in dietetics, occupational therapy, radiography, pharmacy and physiotherapy from 300 in 2003 to nearly 800 in 2008. Another national cross-sectional survey of UDRHs in 2014-15, including 3,204 students who participated in rural training (46% were allied health respondents, the rest were from nursing/medicine), described strong ruralisation effects of rural training, with enablers being the quality of the experience, the supervisors and interaction with the community (68). Financial support, accommodation and internet were deterrents of ongoing rural practice intention.

**Figure 2: Adapted from Smith et al depicting the integrated rural health education, research and clinical practice of UDRHs (67)**



Two studies explored the quality of training for allied health workers in unique rural settings. One was of physiotherapists learning musculoskeletal therapy in rural emergency department. The training did not impact on the time it took to care for patients, and emergency department data showed that it provided an appropriate case-mix where the students gained experience for managing a range of conditions common in physiotherapy practice.(69) The other study was of training occupation therapists and speech pathologists in a brain injury rehabilitation unit in a regional hospital with supervisors who had dual roles of clinical work and case management. Focus groups and interviews identified that students placed with dual role supervisors gained a broad perspective holistic care (70).

Only two studies were identified which evaluated the outcomes of rural training on rural practice. Of 98 allied health students who completed 257 end-of-placement surveys (most completed one year of rural training) in Tamworth and Taree as of June 2014, 73% intended to work rurally at the end of the placement and by one year after graduation, 50% were working rurally compared with an average figure of 24% of graduates from the same disciplines (71). The other study, after controlling for rural background, identified that among 429 students from 12 health disciplines who did 2-18 week rural placements in Western Australia, rural placements and their perceived quality, related to working rurally in the first postgraduate year (72).

### Additional skills and professional development

#### SNAPSHOT OF EVIDENCE

Approaches to developing more skills for rural practice and ongoing professional development included examples of rural curriculum for clinical skills, safety and quality, equity and cultural safety, and primary care and other practice models. Educational modules were delivered online and face-to-face, and participants appreciated flexible delivery on the basis that it improved their capacity to access training around their workload. Programs structured around service objectives and professional's learning needs were successful. Victoria implemented 12 months' advanced regional paediatrics training helping the physiotherapists to meet client needs in a catchment and helping to keep skilled professionals in the region. For professional development, NSW and Qld both described rural staff rotating into other units, including metropolitan tertiary paediatric units, to address specific learning objectives and develop professional networks relevant to their rural practice.

There were several examples of training for qualified rural allied health workers to develop specific scope for rural practice, community work and rural-specific service models. These included a rural and remote distance education program

in mental health, delivered by technology in 1999 across 10 rural sites to 31 health professionals (including nursing, allied health and Aboriginal health workers). The program consisted of three formal modules of learning, 3 written assignments, five days of residential school (either at the psychiatric unit in a region or in the city) and five days of clinical practice in a mental health setting. Six tutors with extensive mental health experience provided support to students by responding to general enquiries, marking assignments, arranging and participating in group discussions and co-ordinating a week of local clinical community placements. Immediate post-course learning outcomes were high and at four months, participants reported more clinical practice in liaison with the mental health team (73).

A new Graduate Certificate in Health (Remote Health Practice – Allied Health) was introduced for rural allied health workers employed with Queensland Health in early 2000s. It was based on an environmental scan of existing courses (74). The qualification incorporated learning about personal organisation (time, case-load and information management), models of service delivery (primary care) for Indigenous and other rural and remote communities and opportunities for advanced clinical skills development through a clinical placement. Students enrolled in the training pilot included four social workers, four occupational therapists, two speech pathologists, one pharmacist and one physiotherapist. Based on a review of the course via teleconference, email feedback and a written survey, there was strong support and participants considered that it helped them to improve their primary care skills and culturally safe practice, areas where they had limited previous exposure. The assignments were relevant, feedback was timely, and the clinical placement opportunities of 2 weeks were valuable.

In Western Australia, a new competency framework was developed and released in 2009. It addressed learning needs of senior rural allied health practitioners, to guide training and performance monitoring (75). The competencies covered learning for audiology, dietetics, occupational therapy, podiatry, physiotherapy, social work and speech pathology (excluding mental health and aged care), covering 88 areas of practice (service delivery, equity, professional practice, ethical practice, development and support, quality and safety and clinical skills), delineated based on literature review and consensus.

In Victoria, new postgraduate paediatric physiotherapy training was implemented over 12 months in 2008 with pilot funding for two new senior positions (76). The program was developed in consultation with various committees and an expert reference group. Weekly tutorials, case studies and presentations formed an important part of clinical rotations between hospital outpatients, specialist schools and the disability sector. The program resulted in increased access to skilled paediatric physiotherapy services for the regional catchment. Training increased knowledge and confidence, and provided a career pathway for local physiotherapists. The senior clinicians valued the introduction of appropriately skilled younger peers to their clinical practice.

An Allied Health Rural and Remote Training Scheme (AHRRTS) was implemented in Queensland in 2010 to support education and professional support for rural and remote allied health professionals working within Queensland Health (77). It incorporated distance-based and face-to-face delivery covering eight domains of service delivery, equity and diversity, professional skills, ethical practice, development and support, quality and safety, and clinical management, in line with an Allied Health Capability Framework. Participation was flexible and tailored to requirements of each worker. The AHRRTS included options for participating in the Allied Health Education Program (AHEP) as well, which was a clinical learning placement with an experienced professional. The AHEP was rolled out over two years across Queensland since July 2009 (78). In the rollout phase, 170 of 380 eligible allied health professionals participated. A review of barriers and enablers for accessing the program via 55 stakeholders semi-structured interviews suggested that flexible (online as well as FTF) delivery was important (some people like to get away from work, others couldn't access it unless online options were available), support from employers, particularly line managers, and time to participate.

Another educational secondment model was described in 2001 in Queensland. This involved 29 rural and remote Queensland speech pathologists, occupational therapists and dieticians spending time in a tertiary paediatrics specialist practice environment for two weeks over a 2-6 month period (79). The program enhanced clinical skills in clinical areas of interest (through observation, sharing ideas, practice and learning) along with networking and liaison between rural and metropolitan participants. Participants valued the support and the locum coverage provided by the Program.

NSW also developed a new educational secondment model to enable allied health staff in rural and remote areas to access tertiary-level hospitals or specialist health facilities to learn and network in areas of care important for their scope of practice for paediatric care (80). The 'Allied to Kids' program, a collaboration between the Children's Healthcare Network and NSW Health, involved rural clinicians nominating a learning objective and undertaking a secondment for up to 5 days, with travel and accommodation paid by the program. Of 106 expressions of interest over 2011-2014, 89 were eligible and could be supported and were completed – most were physiotherapists and speech pathologists. Pre and post program evaluations showed that secondments improved skills and confidence, extended networks and increased development of resources for rural units.

There was limited information about allied health mentorship and supervision, however, a review of the literature by the UDRH in Shepparton included 39 articles to discern models of mentorship that would be applicable to rural and remote settings. Four models identified were cloning, nurturing, friendship and apprenticeship. The latter three were considered applicable for rural and remote early professional learning. These need to be trialled and evaluated (81).

### 3.2.4 Recruitment and retention

#### SNAPSHOT OF EVIDENCE

Tertiary scholarships with rural return of service requirements could increase the uptake of rural work if coupled with the right support. Only one study measured retention longitudinally in rural health services, showing that between 2004 and 2009, median turnover of dieticians was 18 months, physios 3 years and social workers 4 years. Reduced turnover was predicted by employment at higher grade (2/3 versus 1) or aged >35 years. Part-time work did not predict turnover but turnover tended to increase with remoteness. Factors related to retention had substantial overlap across the literature (mainly cross-sectional surveys and interviews). These were broadly related to career path, access to relevant professional development (topic, time and cost), working in a supportive practice environment (clearly documented role, orientation to workplace, culturally safe work environment, having professional colleagues and allied health involved in decision-making) and the nature

of work (independence in role, variety of work, community focused and a feasible workload). Social and personal determinants were also factors. Intention to stay and turnover have the potential to vary between public and private sectors warranting tailored approaches.

One survey, conducted with international physiotherapy graduates (Victoria) seeking to be assessed on the Standard Pathway to become registered for practice in Australia found that, of fifty-seven (from 73) participants who responded to the question about work location, 56% said that they would consider working in a rural location (>100km from central business district). (82) Of those not open to working in a rural location, 12 cited family reasons.

Another study outlined a 2010 review of the Queensland Health Rural Scholarship Scheme (Allied Health) (QHRSS-AH). The Scheme involved two years' of university scholarship funding valued at \$21,000 per year for applicants agreeing to a 2-year rural return of service period upon graduation (83). The scholarships started in 1998 for students in physiotherapy, occupational therapy, speech pathology, social work, podiatry, psychology, pharmacy, radiography, sonography, and nutrition and dietetics. Participant data (n=146) and semi-structured interviews suggested 69% had completed or were completing the service period and of these, 86% were working rurally (57% rural or remote and 29% regional). Only 14% did not complete the return of service obligations and 3% deferred. Rural training during the undergraduate degree, health service orientation, mentoring and professional support were considered important for enhancing the program's outcomes.

A range of other studies explored recruitment and retention issues. One study outlined six focus groups with a total of 30 individuals from nine allied health professions and some managers in rural NSW (who had self-nominated from a 2008 NSW rural allied health workforce survey) to reach consensus about recruitment and retention factors (84). The key factors related to recruitment and retention were categorised as: personal (from rural area or attracted to rural life); workload related (breadth of clinical work and high demand/workload); professional development, career progression and recognition; and management-related including effort to recruit vacant positions. Key recommendations to address these factors were summarised:

- Involve local communities in attracting rural allied health workers
- Regionally-based universities
- Access to CPD through back-fill, travel subsidy and management
- Develop regional professional networks
- Invest in IT infrastructure
- Support extended practice roles and career development options
- Address workplace culture and stress management
- Train allied health managers and involve them in decision-making
- Preserve clinical work roles for allied health managers (84)

In a survey of rural physiotherapists based in regions of Shepparton, Benalla and Wangaratta, recruitment and retention issues noted included lack of career path, professional support, access to professional development and postgraduate education (39). Additional issues were the costs and time to attend courses, travel/distance and inadequate resources. Positive elements of rural practice were part-time employment opportunities, independence as primary health providers, practice variety and community recognition.

A review of international literature (up to 2009) about recruitment and retention of the occupational therapy and physiotherapy rural workforce identified 12 included articles (qualitatively focused) which suggested that the biggest factors related to recruitment and retention were practice support and career growth (85).

Keane et al identified different retention efforts needed for public and private sector rural allied health workers using data from the NSW rural allied health workforce survey inclusive of n=833 public and n=756 private allied health workers (86). Multivariate analysis showed that high clinical demand predicted intention to leave rural work both public and private allied health models (odds 1.4 and 1.6 respectively) and professional isolation and participation in community (OR 1.4 and 1.6) also contributed to private practitioner's intention to leave. In another cross-sectional survey of 451 rural allied health workers (12 disciplines) in NSW in 2005 (50% response rate), the mean time in current position was 10 years and half intended to leave in five years (37).

In a state-wide questionnaire distributed to 2,736 allied health professionals across Tasmania, identified from registration boards, professional associations, yellow pages directories and the Principal Allied Health Advisor in 2008 (response rate of 45%), univariate analysis showed retention (intention to stay for next two years) is multifactorial. Using multivariate analysis, job satisfaction was the strongest independent predictor (odds of staying 6 times higher if satisfied) (87).

A literature review (up to 2017) including 15 articles, identified that the factors important for the retention of Aboriginal and Torres Strait Islander health practitioners have some similarities and differences with those of non-Indigenous health workers. Notable factors were the need for a supportive and culturally safe workplace; clear documentation and communication of roles, scope of practice and responsibilities; and being appropriately supported and remunerated (88).

The only study to predict turnover using longitudinal data was based in Victoria. Eighteen health services were invited and 11 participated by providing de-identified individual level employment entry and exit data for dietitians, occupational therapists, physiotherapists, podiatrists, psychologists, social workers and speech pathologists employed between 1 January 2004 and 31 December 2009 (total of 901 allied health workers) (89). The median survival in the job by podiatrists and dietitians was lowest (18 months), then physiotherapists (3 years) and social workers (4 years). Proportional hazards modelling indicated profession and employee age (over 35) and grade (2 or 3) upon commencement were significant determinants of lower turnover risk (better retention). Turnover was not associated with part-time employment. Median costs of replacing allied health workers were between \$23-47,000 per worker depending on remoteness of health service (direct and indirect costs of turnover).

Based on interviews with 17 of 20 invited participants in a remote health service in 1997 (physiotherapy, speech pathology and occupational therapy), Bent indicated that lack of supportive management was a barrier to staying in remote allied health work, along with absence of orientation, delays in recruiting positions, and high turnover from lack of adequate professional development or support. Overall, 40% staff intended to leave in next 3 months.(44)

In a study with 26 nursing and allied health professionals (inclusive of 19 social workers, psychologists, Aboriginal Mental Health Workers and diversional therapists) in their first 5 years of work in community mental health services in rural New South Wales, issues for retention were: workplace conditions, career advancement opportunities and social and personal determinants (90). A “turnover theory” was developed positing that the gap between individuals’ professional and personal expectations and the reality of their current employment and rural-living experience stimulates turnover. In adjustment phase, this gap was mainly impacted by professional factors but in the adapted phase, personal factors become more important.

In terms of non-Australian studies, qualitative interviews with 26 long term employed allied health workers in rural Canada (6 speech language pathologists, 4 psychologists, 4 occupational therapists, 8 social workers, and 4 physiotherapists) revealed that they worked rurally because they could access rural education where they currently work, had a rural background, had positive rural experiences and recognised a community need for healthcare professionals (91). Variety and challenge of work, as well as enjoyment of adventure were other reasons.

Finally, a survey study of allied health workers in south-western Victoria in 2003 to which 28% (n=138) responded, identified that 69% worked in public sector positions. Only 53% (n = 50) of the professionals in the public sector intended to stay more than 2 years in their present position, compared with 84% (n = 27) of the professionals who worked privately (38). Reasons for intending to leave were mainly lack of professional support, poor management, lack of career structure and personal factors. Receiving orientation was related to increased intention to stay in the job.

### 3.2.5 Models of service

#### SNAPSHOT OF EVIDENCE

The number and range of allied health services available in regional catchments depends on the number and mix of professionals, their skills and local community need. Partnerships and networks between public and private providers and hospitals regionally, including shared care, maximises utility of available workforce for more comprehensive services. A rehabilitation network of 5 rural hospitals involving a

team leader/coordinator, clear referral pathway and staff training, also provided first ever access to rehabilitation in a rural catchment. Critical success factors included information and referral for eligible rural participants, staff education and leadership. Access to services in smaller communities is effective through outreach, telehealth and consideration of viable business models. For example, Medicare funded Chronic Disease Management was the main income source for 50% of occupational therapists working in outer regional/remote. Individual and home based cardiac rehabilitation (internet and phone-based) can be as useful as hospital-based models. Online consultations could provide equivalent quality service to that provided face-to-face for diabetic foot healing, rehabilitation and speech pathology. Some services need face-to-face delivery and providers and clients may prefer this. Where outreach and telehealth were used, training local staff to maintain service engagement and foster ongoing participation was important for success. An oral therapy program for Indigenous children was successfully implemented in Canada by using trained community workers who identified and engaged people for treatment by visiting dental therapists and hygienists.

The theme about models of service identified the importance of models of care for increasing access and maximising the comprehensiveness of services within limited resources. In a 2012 survey (n=34) and in-depth interviews (n=19) with physiotherapists and health service managers in regional, rural and remote services in Queensland, it was found that the physiotherapy services provided were decided based on available staff and their skills, along with the community need. (92) Overall public service decisions were driven by organisational priorities whereas private ones were driven by financial viability and skills. In a further article using this data, a matrix for decision-making showed the complexity of rural health service decisions.(93) Further work identified that public sector physiotherapists were more focused on acuity, relying on private physiotherapists to support the outpatient load. (94)

In terms of promoting patient care pathways, one NSW study identified, based on interviews and focus groups with 78 carers and 10 rural clients needing rehabilitation services, that many people were regularly: (i) travelling to access therapy; (ii)

waiting a long time to get therapy; and (iii) getting limited access to therapy after early childhood (95). A person-centred model was proposed for planning increased access to address client needs (Figure 3). It identified building the right services involved using multiple resources - local resources, travel, online service options and responsive outreach.

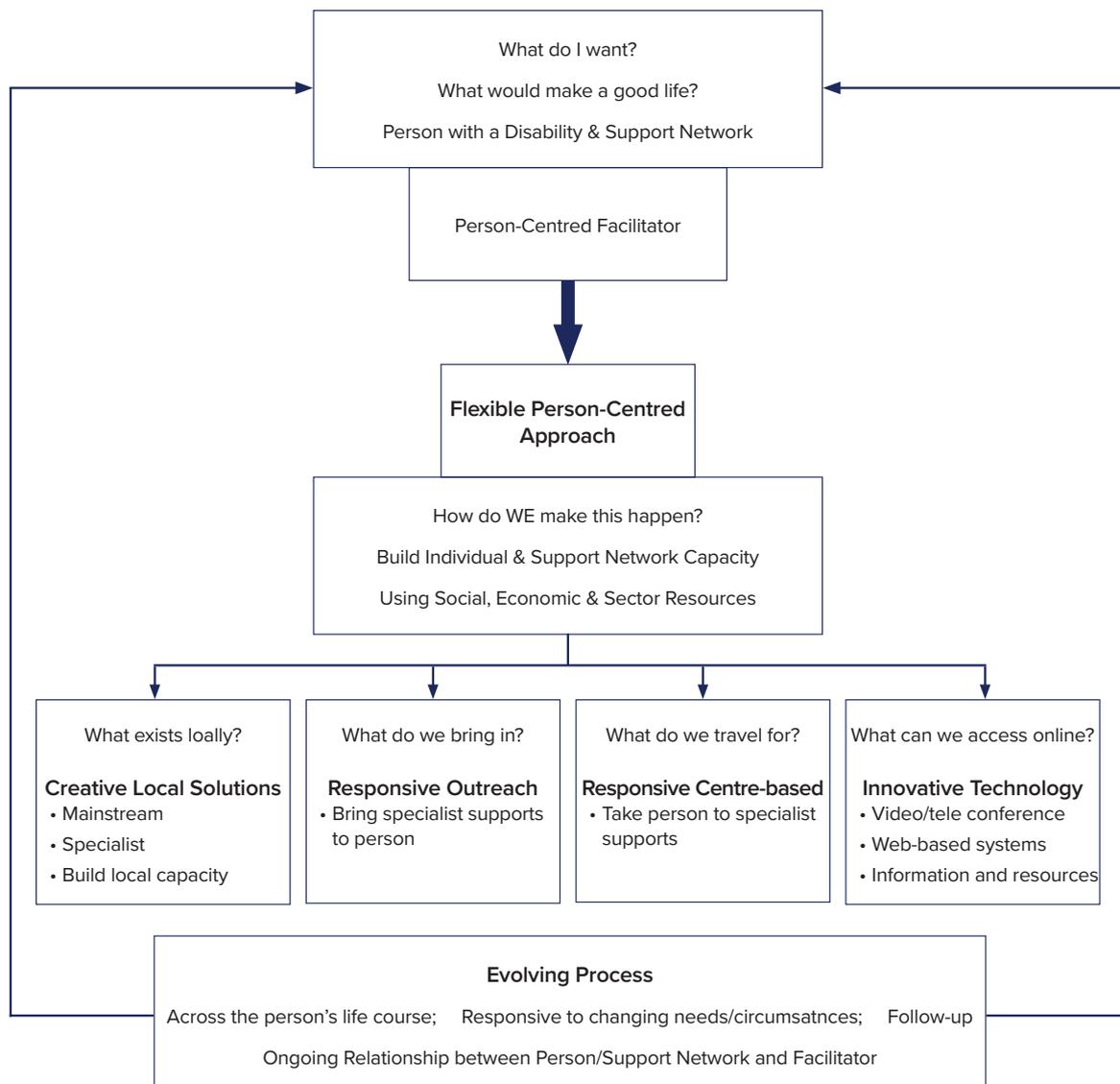
To cope with large geographic catchments and high client to occupational therapist ratios, a South Australian study identified using less labour-intensive service delivery models, multi-skilling of staff (recruiting right range of people skilled in different areas), networking (to manage waiting lists and access enough support for diverse client needs), and problem-solving (41). Further, to cope with barriers to accessing hand therapy rehabilitation (occupational therapy and physiotherapy) in rural/ remote locations, the service model incorporated flexible and realistic

goals and interventions, along with a shared care approach between metropolitan/regional and rural/ remote therapists (51). Shared care approaches were also suggested to address earlier intervention in mental health, based on a study of rural services in Queensland, involving interviews with 37 GPs, 19 Queensland Health mental health staff and 18 participants from community organisations (50).

In Victoria, a survey of private rural rehabilitation therapists (physiotherapists, occupational therapists and speech pathologists) (40% response rate), about policies to support access to rural services, identified that more partnerships between private and public practitioners in rural and regional areas is likely to increase the comprehensiveness of programs (more available skills, supervision options and better service coordination). (96)

**Figure 2: Rural and Remote Person-centred Approach**

Adapted from Dew et al depicting a person-centred approach to planning (95)



Collaboration between rural hospitals was equally important. In south-western Victoria five rural hospitals worked together to deliver the first ever rehabilitation service in the area (97). The model was based on a local assessment of community needs and health service capacity. The aim was to address functional recovery goals by delivering services across the rehabilitation team (different hospital sites and across a multi-disciplinary workforce), with dedicated project leadership. It involved staff education, team meetings, early intervention, and discharge planning. It achieved 112 admissions (2005-2006), (median clients aged 74 years), mainly for orthopaedic rehabilitation. Participants improved functionally at least as well as the Victorian State average for similar client groups (BI change 26.5 compared with 22.3 points,  $p < 0.001$ ), with a shorter length of stay (13.8 compared with 22.3 days). Enablers were an approachable team leader and cross community referral pathway systems. Barriers were that rehabilitation beds were set up in the acute ward and not all staff were on board with a rehabilitation mindset.

In an integrative review (16 included studies) to identify barriers, enablers and pathways to cardiac rehabilitation for adults living independently in rural and remote areas of high-income countries, including Australia, it was found that access was driven by being referred to the rehabilitation program and knowing that it existed in the first place (98). The following recommendations were made for rural rehabilitation models:

- Eligibility criteria
- Flexible programs, face-to-face, internet and phone
- Education about cardiac rehabilitation for clinicians, patients and families
- Systems for easy referral and improving access by Indigenous populations
- Comprehensive programs - primary and secondary prevention, risk factor management
- Improved funding

Outreach services were one model for increasing access to allied health services in smaller communities. A study was undertaken on outreach service planning for allied health chronic disease management across a large geographic catchment in Queensland (99). Consensus based planning identified that outreach services were best if regular, reliable, included case conferences and in-service education for local workers involved in ongoing local care.

A successful oral therapy outreach model for Indigenous children was implemented in Canada using trained community workers who identified and engaged people for screening by visiting dental therapists and hygienists (100). Piloted in 41 communities in 2004, the program was rolled out to 320 communities by 2012 and achieved screening and treatment of 23,000 Indigenous children.

Online services were also described as alternatives to face-to-face models. A systematic review analysed the international evidence for the effectiveness of alternative models of cardiac rehabilitation, including 83 articles published since 1999. Eight models emerged, but only individualized telehealth (telehealth addressing multiple risk factors and providing individualized assessment and risk factor modification) and community- or home-based cardiac rehabilitation were considered effective alternative models of cardiac rehabilitation, producing similar reductions in cardiovascular disease risk factors compared with hospital-based programmes (101).

Other studies considered the validity and applicability of online consultations in allied health. In Ottawa, Canada, online consultations with 12 allied health disciplines were made available to primary care providers (doctors and nurse practitioners) in a metropolitan and rural region in 2011-2016 (102). Primary care providers submitted requests online and allied health workers had 7 days to respond. Good uptake was demonstrated with minimal demand for additional face-to-face consultation and good resolution of the referral problem. The main services accessed were clinical pharmacy, addiction support and musculoskeletal services.

Another scoping review of Australian literature (44 studies published up to 2015) suggested that services provided by online consultations were equivalent in quality with face-to-face services for diabetic foot healing, rural rehabilitation and speech pathology (103). Some aspects of allied health work were suggested to not be amenable to online delivery. This was reinforced in another study of 5 allied health disciplines who undertook a health assessment on each of 12 patients in a high dependency unit 250km away through online (video) consultation and the following week, the same assessment face-to-face (104). In 35 cases out of 60, two independent raters agreed that the therapists' care plans were the same using the different methods. However, the providers preferred face-to-face work (based on Likert scale agreement). In each case, only the dietician's assessments did not differ significantly between the two modalities (as opposed to other disciplines - occupational therapy, physiotherapy, podiatry and speech pathology).

The costs of video-consultation based service delivery were deducted from real costs of face-to-face delivery of speech, podiatry, physiotherapy, occupational therapy and dietetics services (from a metropolitan hospital to a rural high dependency facility) over a three month period in Queensland (105). Costs were estimated based on fixed and variable components. Given an annual workload of 1,000 occasions of service (estimated based on three months' services), each video-based assessment was identified as costing \$84.93, compared with \$90.25 for face-to-face assessments.

A cross-sectional survey was done of 600 clinicians in around 2000 in NSW, inclusive of 125 allied health staff (e.g. psychologists, social workers, play therapists), along with doctors and nurses working in paediatrics aimed to understand attitudes to telemedicine by discipline, distance, and sector of practice (106). Based on a 31% response rate, the highest application of telehealth was for education, rather than patient management. Medical staff, and those in private practice considered telehealth had lowest utility for their practice. Rural clinicians had similar attitudes. Telehealth was considered to have limited capacity to replace traditional methods of face-to-face contact, phone and letter.

"Come N See" was a video-conferenced allied health speech therapy services from Sydney to rural and remote school children in NSW, with email follow-up (107). Over a 12-week period, children were offered therapy blocks of six fortnightly sessions, 30 minutes long. Sessions were delivered via low-bandwidth videoconferencing, with email follow-up. Instructions were provided to a therapist assistant and family member supporting the child. Interviews with school executives and therapy assistants noted that the program addressed a number of unmet needs for speech services, however, communication could be strengthened between providers.

In Victoria and Queensland, community participation in the implementation of oral health initiatives was enabled where the program was perceived as viable, sustainable and relevant to their needs, and when trusting relationships occurred with "the right people" and advisory groups (108).

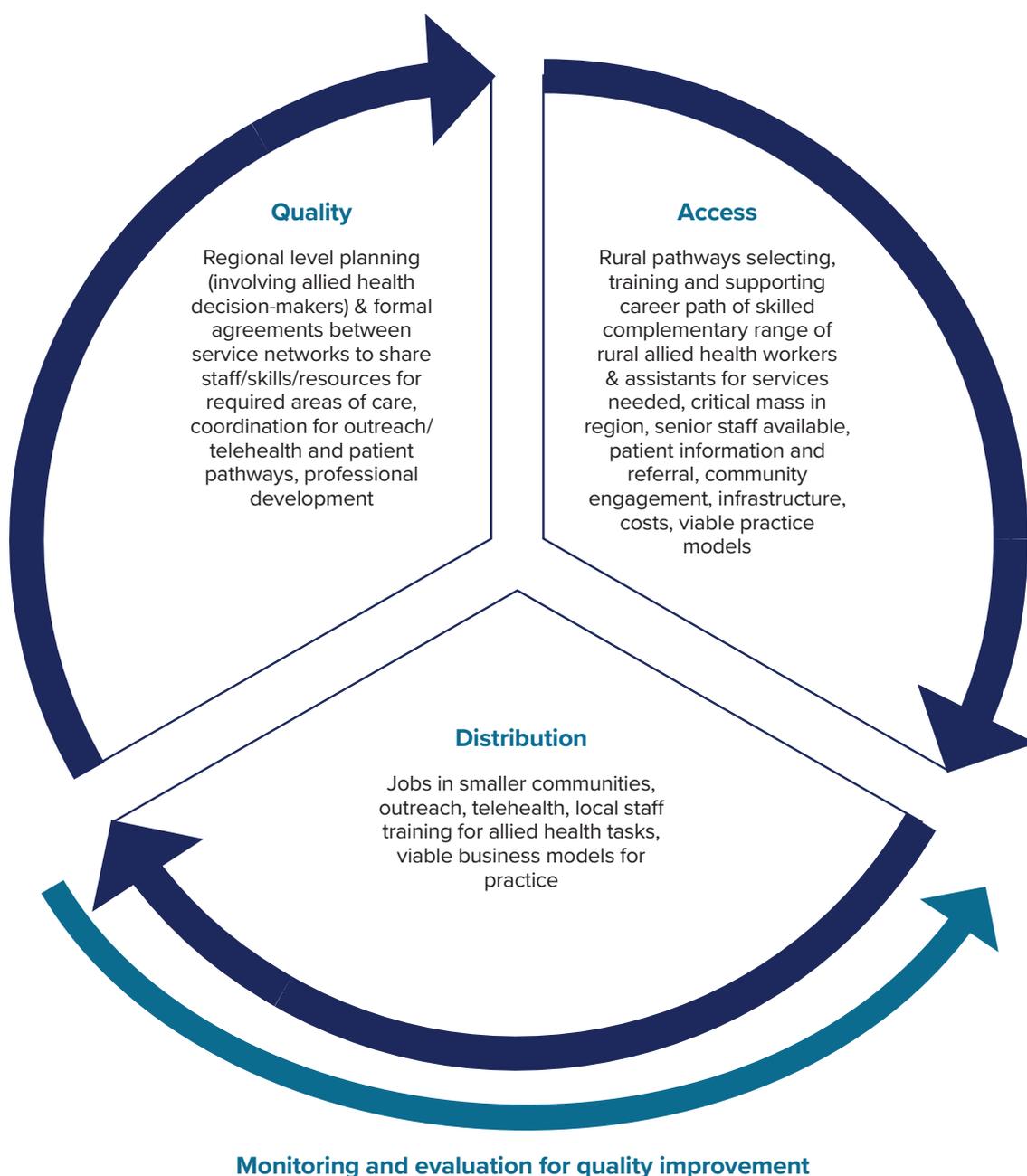
Viable models of funding was an important source of income for occupation therapists working in smaller communities. Medicare Chronic Disease Management was the main income source of around half of occupational therapists working in this context (42).

## Section 4: Discussion

This scoping review has uniquely drawn on the most up-to-date published evidence about rural and remote allied health workforce and services to inform Australian policy. With 89% of the evidence from Australia, our country is relatively advanced in rural allied health research. Nineteen other literature reviews were identified, but this review included the largest volume and range of material. With a diverse range of allied health disciplines and rural contexts included, the findings provide an important backdrop for policy-making, and key inter-related factors for addressing access, distribution and quality can be deduced (Figure 4).

Based on the evidence, increasing access is likely to rely heavily on increasing skilled rural workforce development and retention by rural training and career pathways including more senior staff availability. Distribution of services requires jobs in smaller communities along with viable business models, training and service models like telehealth. Finally, quality demands a degree of integration of skilled providers and their coordination to address the patient pathways for rural and remote people. This is challenging given the multiplicity of professions working in different sectors, practice models and remuneration structures, but not impossible and strong examples were evident in the literature.

**Figure 4: Matrix of factors to consider for quality, access and distribution based on the literature**



As depicted in Figure 4, monitoring and evaluation underpins the achievement of access, distribution and quality. There are a number of elements required to strengthen the current evidence base in this field: both quantitative and qualitative studies, multi-disciplinary and outcomes-focused methods, and national scale. This will be enhanced by broader access to routinely collected data, linked data and an impetus to target evidence towards understanding impact of training, career support and employment and service models on access, distribution and quality. Understanding the effect of policies and programs helps to target interventions and optimise cost-benefits. UDRHs could lead this evidence generation, given the right resources and systems, noting that in 2008-2010 only 56% of UDRH research output was about rural health issues.(109)

Critically, the evidence suggests that accessible and high quality rural allied health services is depicted by: *An appropriately skilled and distributed workforce, working in viable, regionally-coordinated ways, to promote prevention, early intervention, and appropriate follow up and referral for additional care as required, through a closely networked array of services, suitable for the population's needs.*

#### 4.1 What are the policy implications of these data?

Although there were few metropolitan to rural workforce comparisons, the rural allied health providers described had distinctive scope of practice fit to providing a breadth of services for wide population needs and using additional skills. Defining and recognising these rural skills could be a key driver of training for and uptake and retention in rural and remote allied health work. A key enabler would be to agree on rural practice credentials in key disciplines and relevant training and professional development avenues. Developing and recruiting more allied health generalist workers needs to also accommodate a sufficient staff base to release people for additional roles in training, teaching/supervision, telehealth and multi-site practice.

The largest critical mass of rural allied health services is publicly based and this needs to be continually fostered through jurisdictional approaches. Importantly, growing the primary health service base should complement salaried roles and provide a crucial buffer for more upstream prevention/management services. Private growth opportunities is particularly relevant for enabling

access to optometry, pharmacy, psychology, physiotherapy and podiatry. Opportunities for integration with the NDIS, My Aged Care and other sector revenue streams could also enable greater growth in the private sector.

Training and using allied health assistants and potentially micro credentialing of other health workers to undertake allied health tasks is likely to improve access to allied health services across wider catchments. It may useful to adopt national frameworks for this to occur over time, ensuring roles are adaptable to context and discipline (public and private sector), in consultation with rural health services and allied health professionals.

The evidence clearly points to the need for rural pathways to train and support rural allied health workers. Pathways start with attracting rural youth to allied health careers and connecting them with virtual or local mentors and rural pathways. Evidence in medicine demonstrates that return to region is enhanced by selecting and training people from the region (110). Rural scholarships and course bridging opportunities allow interested rural students to access integrated pathways between rural secondary and technical schools, rural TAFE (allied health assistant courses) and universities.

Agreeing national targets and incremental growth for the selection of rural background students and longer, high quality distributed rural training is important. These could particularly target rural primary care workforce development for vision, hearing, mental health, maternal and child health, rehabilitation, chronic disease and Indigenous health outcomes as well as access to medicines and relevant (non-dentistry) oral health options. The current requirement under RHMT is to provide “placement weeks” but “academic years” may be more valuable for rural return based on the emerging allied health literature and lessons learnt from rural medicine (111-113). Commonwealth RHMT Program funding to the may require specific delineation and possibly augmentation for this to be achieved (111). A range of issues including course accreditation, partnerships, placements, accommodation and supervisors may require targeted policy work and investment.

Implementing rural-facing curriculum to address the workforce and service needs of rural communities is also important (9). Evidence has shown that high quality rural allied health training can occur in non-traditional clinical settings (including primary and community care), beyond

hospital training commonly occurring in cities (69). Enabling medical students to experience a mix of distributed primary care and regional hospital placements improves their distribution compared with regional hospital placements alone (113). To achieve this in allied health, the RHMT Program staff may need more formal roles within curriculum and rural curriculum development for the various allied health professions.

Rural pathways include allied health workers being able to access jobs where there is senior clinician along with professional development. Good examples were of professional exchange programs where learning needs specific to the local service were addressed with flexible, tailored education modules for rural practice. Selected UDRHs and the Queensland rural allied health generalist pathway also have good professional development models for early career allied health workers (67). The RHMT Program could extend the expectation for activity in this area. The Government's Health Workforce Scholarships Program, which is well subscribed, supports professional development for allied health workers engaged in any private allied health work, but its outcomes haven't been published (114).

Scant evidence suggests that any compulsory rural return of service scholarships may be effective if coupled with the right support. Evidence from medicine suggests that bonded places have a mild positive impact on rural supply (113). However, medical students participating in rural training through real-time choice can achieve better distribution outcomes than contracting people to it (115).

The evidence suggests that building the size of allied health teams, including recruiting senior allied health worker roles (in public and private practice), can improve retention. Senior professional positions increase the potential for regional supervision and career advancement opportunities. All services, whether public or private, could improve orientation processes, provide clear positions for interesting jobs, give autonomy in role and involve allied health in decision-making. Bundled retention incentives have been suggested to work best for rural primary care, allowing tailored response to individual needs (116).

To attract and retain private providers, viable practice models are critical, including access to Medicare benefits that fit with population need and complexity. Allied health assistants may be useful to supplement private allied health teams in some instances, especially if they have cross-disciplinary roles of carrying out care plans in multiple sectors.

Integrating local providers for particular models of service can optimise patient care pathways in a region. Regional level planning of teams around catchment priorities, with clear eligibility and referral improves coordinated services. The different drivers at play in the public and private systems (financial viability) and the unique disciplinary practice models require consideration for brokering networked services. Dew provided a useful framework for patient-centred planning around what can be provided locally, supplemented by outreach or telehealth and what needs to be sought elsewhere through travel (95). This is acknowledged to be more complicated when public and private entities and multiple sectors are working to different agendas.

Outreach and telehealth are important options for extending the distribution of selected services. They work best if supported by a sufficient volume of staff, visiting regularly and providing training and real-time support for local health workers who implementing allied health care plans between visits. The Commonwealth currently funds a range of rural outreach programs, however, these have the potential to be expanded to more specifically address service coordination roles and effective sustained allied health multi-disciplinary teams (117). Telehealth items and its associated infrastructure are a clear way of promoting its use, however uptake depends on relevance, clinical equivalence, cost, provider interest and patient satisfaction.

Viable business models for practising sustainably in smaller communities is an important consideration for the Commonwealth. Policies such as strengthening access to Chronic Disease Management and Medicare telehealth items may help, along with subsidies or grants to cover travel time and infrastructure.

## Conclusion

Australia is leading the evidence base with respect to rural allied health workforce and services. Findings suggest that allied health providers are working as generalists and need particular skills to maximise their effectiveness. Access and quality depends on a critical mass of skilled providers, working in complementary teams to address needs of regional catchments. This could be aided by selecting rural background students, providing more rural-based training, rural curriculum, supported rural jobs and rural career pathways including addressing job satisfaction. At the regional level, patient-centred service planning and coordination of public and private providers underpins access to more comprehensive and high quality services. For smaller communities, outreach and virtual consultations are critical for early intervention and continuity of care, but viable business models and an adequate staff base are essential to improve service distribution. A number of these areas have direct application to Commonwealth Department of Health policy and equally require strong engagement with jurisdictions and rural representation across the sector.

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