Rural Health West

Rural and Remote Primary Health Care Workforce Planning: What is the Evidence?

December 2014

Rural Health West

Rural Health West is the trading name for the Western Australian Centre for Remote and Rural Medicine Limited. Rural Health West is a not-for-profit, membership-based organisation overseen by a Board of Directors. As this State's rural health workforce agency, the organisation receives core funding from the Australian Government Department of Health and the Western Australian Department of Health to deliver its core business activities of recruitment and retention of the medical, dental, nursing and allied health workforce in rural and remote Western Australia.

Rural Health West maintains databases of the general practitioner, specialist and nursing and allied health workforce in rural and remote Western Australia to support recruitment and to gather evidence to plan for future workforce requirements.

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AHPRA	Australian Health Practitioner Regulation Agency
AMWAC	Australian Medical Workforce Advisory Committee
ASGC-RA	Australian Standard Geographical Classification - Remoteness Area
BEACH	Bettering the Evaluation and Care of Health
DoH	Department of Health (formerly Department of Health and Ageing)
GPs	General practitioners
HWA	Health Workforce Australia
HW 2025	Health Workforce 2025 report, now known as Australia's Future Health Workforce (HW 2025)
MABEL	Medicine in Australia: Balancing Employment and Life
NHWDS	National Health Workforce Dataset
NHWPRC	National Health Workforce Planning and Research Collaboration
NRRHWIRS	National Rural and Remote Health Workforce Innovation and Reform Strategy
NRAS	National Registration and Accreditation Scheme
SARRAH	Services for Australian Rural and Remote Allied Health
SWPE	Standardised Whole Patient Equivalent

Definitions

Allied health professionals

A core group of professionals which includes but is not restricted to audiologists, dietitians, occupational therapists, orthoptists, physiotherapists, podiatrists, prosthetists/orthotists, psychologists, radiographers, social workers, speech pathologists, pharmacists, optometrists and oral health practitioners.[1]

Benchmark

Standard professional labour requirement likely to be required to meet identified public health objectives.[2]

Benchmarking "calculates the number and type of worker needed according to a model region, or a benchmark, that has proven to have an appropriate, affordable and sustainable number of workers to meet the health needs of the population in that region".[2]

The purpose of establishing benchmarks for medical workforce is to "provide the basis for predicting what workforce size and composition will be desirable in the future, and to monitor whether the desirable level has been achieved".[3]

Primary health care

A number of definitions exist about what constitutes primary health care. Definitions by the World Health Organisation and the Australian Primary Health Care Research Institute were explored in the 2009 report *Primary Health Care Reform in Australia: Report to Support Australia's First National Primary Health Care Strategy:* Commonwealth of Australia.

This report identified at page 22 that:

"from a theoretical perspective, primary health care is sometimes regarded as a spectrum ranging from comprehensive primary healthcare to selective primary health care to the medical model of primary health care" and

"For the majority of Australian health consumers … primary health care is a term that is nor widely used or even understood with most people simply distinguishing between the health care they receive in the community and the health care they receive in hospital."

An Expert Reference Group, established by Rural Health West in 2012 to support the development surveys and a database of the primary health care workforce in rural and remote Western Australia, defined primary health care very broadly as health care received in the community as contrasted with health care received in hospital as an inpatient or outpatient. This definition underpins this report. [4]

Rural and remote

All areas outside Australia's major cities. This includes areas under the Australian Standard Geographical Classification System − Remoteness Area (ASGC-RA) system that are classified as inner and outer regional (RA 2 and RA 3) and remote (RA 4) or very remote (RA 5).[5]

Please note: It is recognised that the seven category modified Monash Model will replace the ASGC-RA system in 2015.

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Executive summary

Introduction

The purpose of this report is to provide an overview of contemporary workforce benchmarks and their use in assisting planning methodologies for Australia's rural and remote primary health care sector.

The report examines contemporary benchmarks and planning methods; evidence that led to their development; locations in which they have been applied; and research on their utility and effectiveness.

The methods employed in the development of this report include a literature search; requests to relevant government and registration bodies and professional associations; discussions with researchers and association/department representatives; and a manual search of key articles recommended by professional contacts and peers.

Key messages

- The history of national workforce planning in Australia is "littered with examples of expensive errors based on inadequate data or fallacious assumptions".[6]
- There are currently no 'gold standard' benchmarks for Australia's health workforce. There is, instead, a lack of clarity and a good deal of uncertainty about appropriate benchmarks to utilise for effective workforce planning, particularly in the primary health care sector.
- In the absence of nationally agreed benchmarks for the primary health care sector, regional jurisdictions and community bodies have stepped into the national planning gap to develop their own models using different datasets, assumptions and methodologies.
- There is very little available evidence of systematic application or evaluation of the utility of these existing benchmarks in practice.
- Primary health care has been the 'Cinderella' sector when it comes to workforce planning with most models focussing on hospital services. Very few workforce models apply to the primary care setting.
- Although stakeholders broadly agree that the purpose of workforce planning is to have the "right number of people, with the right skills, at the right place, at the right time to deliver health services for the population needs, at an affordable cost",[7] the strategies to define what is needed to move toward this ideal are far from clear.
- Quality data, and the application of appropriate conceptual and analytical mechanisms to address current and future workforce needs, are the basis of valuable evidence-based planning.
- The development of workforce projections in Australia, as in most developed countries, has traditionally relied on supply-based models that use workforce headcount to population ratios. These approaches do not necessarily support the current complexities of the Australian rural and remote primary health care landscape.

- Recent reforms in Australia's health workforce planning are attempting to address the complexities of national planning, adopting national datasets and applying consistent methodology and modelling tools to assess the future primary care workforce.
- The increasing sophistication in the approaches adopted, together with the National Health Workforce Dataset (NHWDS), engenders confidence for the development of effective workforce modelling for the rural and remote primary health care sector moving into the future.

Introduction

Purpose

The purpose of this report is to provide an overview of contemporary workforce benchmarks and planning methodologies available in the public arena for Australia's rural and remote primary health care sector.

The review reports on four main areas:

- Benchmarks and planning methods that have been developed for the rural and remote primary health care sector.
- Evidence that led to the development of those identified benchmarks and planning methods.
- Locations in which benchmarks and planning methods have been applied in the primary health care sector.
- Evidence/research available about the utility and effectiveness of those benchmarks.

Methodology

The following methods were employed in the development of this report:

- Literature search.
- Requests to professional associations and registration bodies and government departments for information on workforce benchmarks and planning methodologies and their websites examined for published information.
- Discussions with relevant researchers and association/department representatives.
- Manual search of key articles and items recommended by informal professional contacts and peers produced additional relevant references.

Background

Concerns about the current and future availability of Australia's rural and remote primary health care workforce are well documented, as are the consequences of failure to innovate and reform the systems that prepare and support the rural and remote health workforce.[8,33]

In acknowledging these concerns, stakeholders in the primary health care sector agree that appropriate, reliable and current health workforce data is crucial for governments and agencies to describe and analyse supply and demand, monitor outcomes and evaluate the impact of workforce initiatives. There is a widespread understanding that decisions based on this evidence can have a significant impact on the effective operation of the healthcare system, health outcomes and return on investment for Australian taxpayers.[10,11]

Whilst national health workforce planning has been a focus of political attention, particularly since the development of the Australian Health Ministers' Conference in 1995, the past history of health workforce planning is "littered with examples of expensive errors based on inadequate data or fallacious assumptions".[6] The development of benchmarks to provide the national standard for workforce supply has formed part of this chequered history.

Moreover, primary health care is the 'Cinderella' sector when it comes to workforce planning with the complexities for this sector highlighted repeatedly in recent workforce reports.[6] Most workforce modelling focuses on mapping and benchmarking hospital services where a clearer correlation between workforce and service access is less challenging.

More recently, Health Workforce 2025[8] was developed by Health Workforce Australia (HWA) as the first major, long-term national set of workforce profiles based on the use of national datasets and a consistent methodology. Crettenden et al.[12] cite the first projections for doctors, nurses and midwives over a planning horizon to 2025 as a significant platform in policy planning to meet community workforce needs.

The Mason Review[6] acknowledged the development of Health Workforce 2025 as on ongoing national health workforce planning tool as "a major step forward in establishing the evidence base for making policy and program-level decisions regarding the supply and distribution of the health workforce".[6] However, the same report reflected that "the recruitment and training of this number of health professionals is neither possible nor affordable and is predicated upon an unsustainable model of health care delivery".[6] Mason concluded that "the statistical and analytical basis of (such) predictive models will need to continue to be refined if major policy shifts and resource investment decisions are to be based upon them".[6]

Notwithstanding this, and other significant development in health workforce reform, such as the work of the Australian Institute of Health and Welfare (AIHW) and the introduction of the National Registration and Accreditation Scheme (NRAS), it is recognised that matching and forecasting the needs, demand and supply of health workers remains complex.

Please note: HWA closed in August 2014 and its essential functions transferred to the Australian Government Department of Health. The key report Health Workforce 2025 has been renamed as Australia's Future Health Workforce (HW 2025).

Current benchmarks

Overview

There are no 'gold standard' benchmarks currently in use to assist planning for Australia's rural and remote primary health care sector workforce. Rather, there are "various benchmarks for GP, there are some benchmarks for Aboriginal health workers and there is very limited benchmarking for allied health".[13]

Moreover, there is a considerable lack of clarity and some degree of uncertainty as to what are appropriate benchmarks to utilise more generally for effective workforce planning.

Service modelling conducted in 2010 for a new primary health care service in rural Western Australia identified that as well as there being no widely accepted benchmarks in Australia either for general practitioner to population ratios or the various allied health professionals to population ratios; there is also very little evidence of the application and evaluation of existing benchmarks in practice.[15]

Regional jurisdictions (state/territory governments) and community bodies have stepped into the benchmark gap at the national level, conducting health workforce planning for their own specific purposes, using different datasets, assumptions and methodologies. This has occurred particularly since the introduction of the Regional Health Strategy and planning associated with primary health care access programs.[6,16]

Whilst these approaches have the capacity to highlight local sensitivities that may not be visible in national data, this work has focussed attention on the critical need for quality data and national planning as a framework for localised primary health care services provision.

Benchmark versus health worker density

Traditional methods of health workforce supply and requirements have tended to use health provider to population ratios (existing and desired)[14] usually expressed as the number of health workers per 10,000 population.[9] This heath workforce indicator provides information on the stock of health workers relative to the population and can be used to monitor whether the size of the current workforce meets a given threshold.

The advantages of using a health worker density are that it is simple to calculate, may be used for comparative analysis over countries and across time and is easy to understand across a wide range of audiences.

The disadvantages are that it does not necessarily take into account factors other than population size (for example: level of morbidity, sex, ethnicity, socioeconomic indicators) nor address health system objectives with regard to accessibility, equity, quality and efficiency.

In contrast, a benchmark is a demand estimation intended to calculate the number and type of worker to meet the health needs of a specific population taking into account community size, geographical location and remoteness from other services ensuring equity of access, timely and effective models of service delivery.[16]

General practitioners

HWA[31] reflected that one measure of workforce availability was the ratio between the number of doctors and an area's population; while noting that there is no internationally or nationally agreed idea workforce to population ratio.

In 2013, Birrell asserted that there was no widely agreed benchmark as to how many general practitioners (GPs) are needed in Australia.[11]

In 1999, the Australian Medical Workforce Advisory Committee (AMWAC) General Practice Workforce Working Party was established with a mandate to provide a report to AMWAC on the optimal supply and appropriate distribution of GPs across Australia, including projections of future supply and requirements.

The General Practice Working Party presented a final report to AMWAC on 16 August 2000. The report identified that, nationally, the December 1998 level of general practice workforce supply in large rural centres best represented a situation in which the general practice workforce was likely to be in balance with assessed population need. That workforce supply ratio was 110.4 GPs per 100,000 population.[3]

In 2004, Econtech[18] developed benchmarks for the then Department of Health and Ageing on full-time GPs working in Aboriginal health services per population ratio. It recommended one general practitioner per 1,681 population for rural communities, one general practitioner per 689 population in remote communities and one general practitioner per 692 population in very remote communities.

In 2006, the Rural Doctors Association of Australia (RDAA), in association with Monash University[40], recommended one full-time general practitioner per 1,000 Standardised Whole Patient Equivalent (SWPE) in larger rural centres where practices are similar to the metropolitan areas. In communities where the practitioner is providing in-patient, emergency or after-hours services, one full-time general practitioner per 750 SWPEs is recommended and in small isolated communities, one full-time general practitioner per 500 SWPEs is recommended. The report acknowledges that as SWPEs are derived from Medicare servicing data, they may be less relevant in areas where limited Medicare billing exists.

Kamalakanthan and Jackson[17] reported that in 2008, the Australian Department of Health and Ageing, for the purposes of determining a District of Workforce Shortage (DWS), set a national average of 0.71 per 1,000 as the standard general practitioner to population ratio. This information is based on Medicare billing data and the latest Australian Bureau of Statistics (ABS) population data, and is updated regularly.[17,39] This ratio is lower than the 2001 ABS Census general practitioner to population ratio of 1.65 : 1,000.[17]

Mason[6] argued that the most significant health workforce issue, particularly in the area of general practice medicine, is not one of total supply but one of distribution. This is to say "inadequate or non-existent service provision to some rural and remote areas and to populations of extreme disadvantage, most particularly the Aboriginal and Torres Strait Islander communities and some outer metropolitan communities".[6] This position would support a strategy to ensure a minimum benchmarked level of service provision to these disadvantaged communities.

A summary of the general practice workforce national benchmarks that have been described is provided in Table 1.

Table 1: Summary of national benchmarks for GPs

Service context	Benchmarks	Source
All GPs − rural and metro	110.4 : 100,000 population	AMWAC[3]
Larger rural centres where practice similar to metro general practice	1 : 1,000 SWPE	Rural Doctors Association/ Monash University School of Rural Health[40]
Rural communities where practitioner provides inpatient, emergency or after-hours services	1 : 750 SWPE	
Small, isolated communities	1 : 500 SWPE	
Aboriginal communities − very remote	1 : 692 population	Econtech[18]
Aboriginal communities − remote	1 : 689 population	
Aboriginal communities − rural	1 : 1,681 population	

Bartlett and Duncan[26] used a practitioner-to-population approach, based on graded community size, to develop benchmarks for doctors in the Northern Territory. Seven scaled staff-to-population ratios were identified and applied to compare community access to primary health care.

The following table provides a sample of regional and community-developed benchmarks for the general practice workforce.

Table 2: Regional and community-developed workforce benchmarks for GPs

Service Context	Benchmarks	Source
Pilbara Region, Western Australia	19 : 2,272 population	Battye[24]
Northern Territory communities greater than 3,000	1 : 1,000 population	Bartlett and Duncan[26]
Northern Territory communities less than 75	1 : 400 population	

Aboriginal health workers

Some benchmarks have been developed for Aboriginal health workers working in Aboriginal communities.

Econtech[18] developed benchmarks for the then Department of Health and Ageing in 2004 on Aboriginal health workers working in Aboriginal Health Services. In this modeling, the relative health needs of the Indigenous and general population were taken into account. A limitation identified in this study was the general lack of readily available and reliable data on the health of Aboriginal and Torres Strait Islander peoples to provide meaningful comparisons.

A summary of these benchmarks is provided in Table 3.

Table 3: Summary of national benchmarks for Aboriginal health workers

Service Context	Benchmarks	Source
Aboriginal communities – rural	1 : 1,187 population	Econtech[18]
Aboriginal communities – remote	1 : 443 population	
Aboriginal communities – very remote	1 : 121 population	

Bartlett and Duncan[26] used a practitioner-to-population approach, based on graded community size, to develop benchmarks for Aboriginal health workers in the Northern Territory. Seven scaled staff-to-population ratios were identified and applied to compare community access to primary health care.

The following table sets out regional and community-developed benchmarks for Aboriginal health workers.

Table 4: Regional and community-developed workforce benchmarks for Aboriginal health workers

Service context	Benchmarks	Source
Pilbara, Western Australia	1 : 3,000 population	Battye[24]
Katherine, Northern Territory	1 : 300 population	Referenced in Battye[24]
Northern Territory communities greater than 3,000	1 : 350 population	Bartlett and Duncan[26]
Northern Territory communities 1,300-2,999	1 : 250 population	
Northern Territory communities 800-1,299	1 : 200 population	
Northern Territory communities 400-799	1 : 100 population	
Northern Territory communities 250-399	1 : 75 population	
Northern Territory communities 75-249	1 : 75 population	
Northern Territory communities less than 75	1 : 50 population	

Allied health professionals

There are very few benchmarks for allied health professionals.[19-21] In particular, there is very little data on benchmarking for most allied health services in rural and remote areas and a lack of comprehensive and accurate data on allied health activity in non-hospital environments.[21]

The evidence for use of staffing ratios for allied health practitioners is scarce and lags behind the fields of nursing and medicine.[22] In light of this absence, the Services for Australian Rural and Remote Allied Health (SARRAH)[1] called for the establishment of minimum allied health professional workforce benchmarks.

The work of Rob Curry[23] in the Northern Territory has been highly influential and is widely used by regional and local community bodies to inform the development of benchmarks for allied health professionals.[19 24]

In the absence of confirmed benchmarks, Battye[24] for the Pilbara Health Network in Western Australia and Battye and McTaggart[20] for North and West Queensland Primary Health Care used Curry's recommendations to calculate the appropriate full-time equivalent allied health professionals in their respective studies.

Curry's approach to benchmarking is based on the following determination:[19]

1. The minimum length of stay for each visit is determined by the size of the population of each community using the following formula.
    - Community population of 100-300 = 1 day visit (minimum)
    - Community population of 300-800 = 2 day visit (minimum)
    - Community population of 800-2,000 = 3 day visit (minimum)

2. One day of work on-site in a remote community generates an average of one day of non-clinical activity, that is, time spent on travel, report writing, equipment ordering, service meetings, health education planning, communications, etc.[23]

SARRAH[1] supports Curry's work emphasising that benchmarking for allied health professional services in remote areas must provide mechanisms for identifying the right allied health professional skill mix and number of positions required to meet the needs of the community being serviced, and recognise:

- Different mechanisms for the delivery of these services by the different professions (home base, outreach, through the use of information technology).
- Location (clinic based, in the home), the length of time required for the consultation/ treatment session (different for each of the individual professions within allied health).
- Amount of travel by the allied health professional to deliver the services.

A summary of known benchmarks is provided in Table 5.

Table 5: Regional and community-developed workforce benchmarks allied health professional

Profession	Service context	Staff : population benchmarks
Audiology	Katherine, Northern Territory	2.0 : 20,000
	Pilbara, Western Australia	2.4 : 24,000
Diabetes education	Katherine, Northern Territory	2.0 : 20,000
	Pilbara, Western Australia	2.4 : 24,000
Dietetics	Katherine, Northern Territory	5.0 : 20,000
	Pilbara, Western Australia	1.25 : 24,000
Occupational therapy	Katherine, Northern Territory	7.0 : 20,000
	Pilbara, Western Australia	8.4 : 24,000
Podiatry	Katherine, Northern Territory	2.0 : 20,000
	Pilbara, Western Australia	2.4 : 24,000
Physiotherapy	Katherine, Northern Territory	7.0 : 20,000
	Pilbara, Western Australia	8.4 : 24,000
Social work	Katherine, Northern Territory	5.0 : 20,000
	Pilbara, Western Australia	1.25 : 24,000
Speech therapy	Katherine, Northern Territory	6.0 : 20,000
	Pilbara, Western Australia	7.2 : 24,000

Source: Battye[24]

Dentists

Tennant et al.[25] identified in 2013 that most of Australia's largest states have a ratio of approximately 50 dentists per 100,000 people, based on practitioner-to-population ratios. They identified that this benchmark does not discriminate between metro and rural areas and does not account for unevenness of population distribution.

Based on Australia's unique blend of high wealth and poverty, coupled with vast distances, Tennant et al.[25] argue for the development of a dental practice-to-population ratio as a yardstick for dental workforce. Their study across two states (New South Wales and Western Australia) showed that the lowest practice-to-population ratio was in rural and remote Australia where the ratios were very low and, in many cases, zero.

In 2004, Econtech[18] developed benchmarks for dentists working specifically in Aboriginal communities, as a full-time practitioner to population ratio. It recommended:

- 1 practitioner per 10,088 population for rural communities
- 1 practitioner per 6,205 population in remote communities
- 1 practitioner per 4,842 population in very remote communities.

In this modeling, the relative health needs of the Indigenous and general population were taken into account. A limitation identified in this study was the general lack of readily available and reliable data on the health of Aboriginal and Torres Strait Islander peoples to provide meaningful comparisons.

A summary of national benchmarks is provided in Table 6.

Table 6: National workforce benchmarks for dentists

Service Context	Benchmarks	Source
All Dentists – rural and metro	50 : 100,000 population	Tennant et al.[25]
Aboriginal communities − rural	1 : 10,088 population	Econtech[18]
Aboriginal communities − remote	1 : 6,205 population	
Aboriginal communities − very remote	1 : 4,842 population	

Nurses

There is a dearth of benchmarks for the nursing workforce in primary health care settings. The most available indicator is workforce density for the nursing profession as a whole across all work settings.

AIHW[27] identified in 2005 that a population-standardised headcount may be a more valid measure to compare the supply of nurses over time (the nursing rate). In 2013, AIHW reported that[41] the overall supply of employed nurses and midwives in Australia increased from 1,117.8 full-time equivalent per 100,000 population in 2008 to 1,123.6 per 100,000 population in 2012. The supply of all nurses across remoteness areas in 2012 ranged from 1,071 : 100,000 in *outer regional areas* to 1,302 : 100,000 in *very remote areas*.

Econtech[18] developed specific workforce benchmarks for the nursing workforce in Aboriginal health services. A summary of these benchmarks is provided in Table 7.

Table 7: Summary of national workforce benchmarks for nurses

Service context	Benchmarks	Source
Aboriginal communities – rural	1 : 2,242 population	Econtech[18]
Aboriginal communities – remote	1 : 1,551 population	
Aboriginal communities – very remote	1 : 151 population	

Bartlett and Duncan[26] used a practitioner-to-population approach, based on graded community size data, to develop benchmarks for nursing in the Northern Territory. Seven graded benchmarks are provided ranging from communities greater than 3,000 to less than 75 people.

Bartlett and Dunca's benchmarks proposed for nurses in the Northern Territory are set out in Table 8.

Table 8: Regional and community-developed workforce benchmarks for nurses

Service context	Benchmarks	Source
Northern Territory communities greater than 3,000	1 : 500 population	Bartlett and Duncan[26]
Northern Territory communities 1,300-2,999	1 : 450 population	
Northern Territory communities 800-1,299	1 : 300 population	
Northern Territory communities 400-799	1 : 200 population	
Northern Territory communities 250-399	1 : 200 population	
Northern Territory communities 75-249	1 : 150 population	
Northern Territory communities less than 75	1 : 150 population	

Planning approaches

Although stakeholders broadly agree that evidence-based planning is essential to have the "right number of people, with the right skills, at the right place at the right time to deliver health services for the population needs, at an affordable cost",[7] the strategies to define what is needed to move towards this ideal are far from clear.[28]

The literature indicates that the value of evidence-based planning rests in the:

1. Use of valid, relevant data; and the
2. Application of appropriate conceptual and analytical mechanisms to address the current and future rural and remote primary health care workforce needs.

Valid relevant data

A basic requirement for effective planning is that all the key drivers of supply and demand are identified and that there is ongoing, systematic collection of good quality data to monitor trends over time.[29]

The main data source currently used by researchers to develop workforce benchmarks is that held by the AIHW. Most AIHW data and information is published as reports and bulletins.

Other sources featured in the literature include: Bettering the Evaluation and Care of Health (BEACH) program; ABS; Health Insurance Commission; Medicare Australia; and Medicine in Australia: Balancing Employment and Life (MABEL).

Recurring themes about the current lack of quality data to inform workforce planning in Australia are described below.

'Consistently inconsistent' data

Current approaches to health workforce planning in Australia are limited due to the prevalence of 'consistently inconsistent' data.

Scott and Cheng[21] identified in 2010 that, while the NRAS provides a landmark opportunity to remedy failures in national data collection for allied health professionals, it is not currently known, with any precision, how many allied health professionals are working in Australia, the volume of activities they perform or how these are changing over time.

Mason[6] confirms that there are currently no reliable data sources that indicate the level of employment of the allied health workforce across the different sectors and settings. Similarly, NRRHWIRS[33] cites "a lack of detailed workforce data on specific professions for rural and remote areas, in particular the allied health professions" as a barrier to the delivery of sustainable health services in rural and remote Australia.

HWA has subsequently made inroads to improving the quality of workforce data for the majority of health professions with the establishment of the National Statistical Resource. This resource includes the NHWDS.*

* See: *Beyond Traditional Approaches* section of this paper.

Lack of access to data

Issues with gaining access to service utilisation and practice data for private providers is a problem common to much health services research.[30] HWA also recognised in the preparation of HW 2025, that national data sets are limited for the health workforce and a key outcome of the HW 2025 report was "to surface data limitations with the aim of future improvement".[8]

Limited range of data

In 2004, Econtech[18] found there was a dearth of data and its occasional poor quality also challenged researchers to make the most of the information that was available.

More recently, Tennant et al.[25] confirmed the need for more high-resolution accessible detail in rural and remote communities, and especially rural Aboriginal communities, to further the research landscape in dental population health.

Lack of definitional consistency

Schoo et al.[32] identify that the lack of definitional consistency about workload measurement is hampering workforce planning.

Lack of expertise

Stakeholder feedback to the NRRHWIRS[33] purported a current lack of expertise and experience in health workforce planning and modelling in Australia, particularly with reference to benchmarking to inform workforce planning models in the rural and remote context.

Time lags

Many databases do not provide data in real time, compelling planners to work on the basis of a picture of a situation that has already changed. To date, there has been a significant lead time between data collection and availability through the NHWDS: for example, the 2012 data for most professions not being available until late in 2013 and 2012 medical practitioners' data uploaded in January 2014.

The application of appropriate conceptual and analytical mechanisms

Matching and forecasting the needs, demand and supply of health workers is complex. Dussault et al.[28] observe that no country in the world does workforce planning in a manner that can be referred to as “best practice”.[28]

There is no single accepted approach to health workforce planning. Various approaches and methodologies have been proposed over the years and their definitional representation in the literature as models, approaches, methods or methodologies is inconsistent. Most approaches largely appear to relate to four types: practitioner-to-population ratio; utilisation and demand approach; service target approach; and, health and service needs approach.[28]

See Appendix A for an overview of these approaches.

Methodologies usually applied to these approaches appear to be: ratio-based; procedure-based; categories of care; diagnostic or case mix-based; and, mixed methodologies.[32]

See Appendix B for an overview of these methodologies.

The focus of health workforce planning is largely on issues about the forecasting of requirements. Health workforce forecasts in Australia, as in most developed countries, have largely been supply-led and resource-driven, with projections represented as workforce headcount to population ratios.

Generally, the development of benchmarks has been based on historic patterns of service utilisation and the supply of particular service provider groups with a focus on supply issues such as training, recruitment, retention, career paths and practice activity.

The link between forecasts of supply and forecasts of utilisation is usually expressed as full-time equivalent.

Cautionary tales

There are numerous cautionary tales about the limitations of using relatively simplistic approaches to develop benchmarks and assess workforce projections in a complex context like the Australia health sector. Some germane comments from the last decade include:

- Joyce et al.[29] expressed disappointment with the fragmentation and narrowness of scope of medical workforce planning models in Australia and the lack of integration into a "big picture" of the total Australian medical workforce.
- Ridoutt et al.[35] note that the content of mental health nursing, for instance, is not easily captured by models that allocate resources on the basis of the average time taken to perform tasks. This view was supported by Simmons and Kuys[36] who identified that models which aim to benchmark allied health professionals need to take the complexities of the work context into account.
- Specific warnings about the use of ratios or ratio forms indicate that, whilst they provide broad rules of thumb, they are less likely to identify particular groups of service consumers with specific health problems and most are affected by labour inadequacies. Segal and Bolton[34] expressed scepticism about the use of simple population-based ratio methods of estimating workforce demand, citing a particular weakness of such ratios as having no mechanism to adjust for changing community expectations, disease profile, etc. Tennant et al.[25] also indicated that whilst dentist-to-population ratio was a very widely accepted planning technique, this ratio risks insensitivity to the complexity of the dental workforce planning process.
- Scott et al.[10] contend that these traditional models of workforce planning have often been simplified to make them easier to use, rather than designed to properly understand the complexities of health workforce dynamics. They point out that countries with poor data tend to rely on simple measures such as staff to population ratios and benchmarking.
- Scott et al.[10] also point out that traditional approaches largely ignore the complex relationships between the range of variables that influence health workforce supply and demand, and how these influence population health and equity.
- The NHWPRC[37] expressed concerns about inconsistent definitions and interpretation of terminology applied to planning, particularly around demand, utilisation and need, which makes the results of forecasting models difficult to interpret.
- Mason[6] emphasised that distribution, rather than total supply, is the most significant health issue in the general practice workforce, pointing out there is "inadequate or non-existent service provision in some rural and remote areas, and to populations of extreme disadvantage, most particularly in Aboriginal and Torres Strait Islander communities".

Whilst quantitative models to forecast health workforce supply and demand have continued to be the traditional form of empirical evidence used, Scott el al[10] argue there is a growing recognition of the weakness of this evidence base and data infrastructure to inform health workforce planning.

Beyond traditional approaches

There is increasing emphasis in the literature of the importance of a health outcomes approach, as opposed to an inputs model of workforce planning, indicating that the latter model is inconsistent with an industry purportedly driven by patient outcomes.

As part of their assessments of traditional approaches to workforce planning in Australia, a number of representative studies and reports over the last decade have provided suggestions about shifts in direction for better workforce planning practices:

- Joyce et al.[29] contended that a systems perspective, integrating medical planning with workforce planning for other health professionals, could increase the buffer so that sharp rises in demand or drops in supply could be absorbed more easily.
- Segal and Bolton[34] emphasised the importance of demand in workforce planning and argued for evidenced-based approaches to estimating health workforce demand; one that builds on population health status and an understanding of best practice cost-effective care and prevention and which can model alternative technologies for service delivery.
- Scott et al.[10] asserted that workforce forecasting needs to move beyond descriptions and headcounts of the workforce and adopt conceptual and theoretical frameworks that understand the drivers of health workforce and change.
- The NHWPRC[37] highlighted a number of issues with assumptions that underpinned traditional models of benchmarking for the health workforce, especially those influencing future changes in utilisation, work-life balance, earnings and interactions with other health professionals. Of further concern to the NHWPRC was the lack of sensitivity analysis undertaken in traditional planning models to quantify the amount of uncertainty around forecasts.
- The NRRHWIRS[33] concluded there was a need to develop models that look beyond traditional professional demarcations and organisational structures to enable planning across different health professions and health settings especially in rural and remote planning.

In the recent past, there have been important developments in national workforce planning that involve consideration of a broad range of literature relating to health workforce planning and modelling, including the assessments outlined above.

Australia's Future Health Workforce (HW 2025)

The publication of HW 2025[8] Doctors, Nurses and Midwives in 2012, now known as Australia's Future Health Workforce (HW 2025), moved workforce planning beyond simple supply modelling and estimated national health workforce projections up to 2025 for a number of groups.

Initially for doctors, nurses and midwives, the scope of HW 2025 was expanded to include dentistry and a number of selected allied health professions.

In the modelling adopted, demand was measured by utilisation and a stock and flow approach for determining supply, together with scenario analysis. The supply modelling tool used a dynamic version of the stock and flow approach, while demand modelling was based on applying service utilisation rates together with population projections to derive the rate of change in demand over the projection period.

A summary of the methodology employed by HW 2025 Doctors, Nurses and Midwives is provided in Table 9.

Table 9: Methodology applied in HW 2025 (now Australia's Future Health Workforce)

Method	Purpose	Strengths	Limitations
Simulation modelling using a stock and flow approach, together with scenario analysis, supported by the use of national datasets	Present and measure possible future health workforce outcomes and training implications under a range of workplace planning scenarios	Consistency of approach enables meaningful comparisons and policy considerations at a national level	Other existing data sources − state/ territory/local − providing greater detail or accuracy could not be used. Reliance on AIHW data. Does not address need for care or utilisation of services in the population.

The population-based approach adopted by HW 2025 has, however, come under criticism, as it fails to accommodate the health needs of the population across the gamut of service providers.

Mason[6] contends that service sector workforce planning – looking at community needs for care and utilisation of allied health disciplines, rather than the HW 2025 approach, "would provide more meaningful information and assist with supply and demand projections for the different allied health professional groups".[6]

Birrell[11] asserts that HW 2025 also understates the International Medical Graduate presence in Australia because it has based its scenarios on incorrect assumptions that the size of the pool of temporary migrant GPs will not change over time.

HWA itself has acknowledged that its demand projections could be improved through better national data collections and improved estimation methodology for demand.[38]

National Health Workforce Dataset

The NRAS for health practitioners commenced on 1 July 2010. There are fourteen professions currently regulated under the NRAS. Each profession has a National Board which regulates the profession, registers practitioners annually and develops standards, codes and guidelines for the profession.

AHPRA administers NRAS and provides administrative support to the National Boards.

The data from the annual registration process, together with data from a workforce survey that is voluntarily completed at the time of registration is collated to form the NHWDS. Each year, AHPRA sends these two de-identified datasets to the AIHW where they are merged into the national data set known as the NHWDS.

Data in the NHWDS includes demographic and employment information (for example: labour force status, location of main job, area of practice, work setting) for registered health professionals.

This national data set as it has developed provides more consistent and timely data about the characteristics of the workforce and offers opportunities to enhance workforce planning in the primary health care sector.

However, there are a number of allied health professions (including Aboriginal health workers, audiologists, dietiticians, social workers and speech therapists) who are not currently registrable through the NRAS.

Mason[6] identified that allied health professional groups expressed a sense of grievance that the need for coherent data for their sector had not yet been addressed, particularly for professions not covered by NRAS.

Conclusion

The current Australian health landscape is complex and, even more so, the rural and remote primary health care sector which has been a neglected area in national workforce planning.

This review found that Australia has seen a range of diverse and inconsistent approaches and methodologies employed to develop national benchmarks and that there is limited confidence in the validity of these standards as the basis for future workforce planning.

Notwithstanding the improvements in national workforce planning introduced in recent history by HWA, significant improvements are still required in data quality and the sophistication of conceptual and analytical mechanisms adopted, if major policy shifts and resource investment decisions are to be based confidently upon this evidence.

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Appendices

Appendix A: Overview of workforce planning approaches

The following overview is a list of typical, but not necessarily exclusive, approaches to workforce planning.

Approach	Description	Advantages	Limitations
Practitioner to population ratio	Simplest and most commonly used. The desirable ratio can be defined according to criteria set by the government, by the professionals themselves, by some technical agency or by using other countries as a reference.	Offers a simple and easy to calculate, and understand, indicator.	Does not reflect the real capacity of production or the real needs for services. Difficult to interpret because of problems with: • The numerator, eg practitioners are considered as a homogeneous category: variations in terms of level (number of hours worked) and type (clinical or other) of activity or in productivity are not reflected in the numerator. Differences in the definition and scope of practice of various occupational categories, as well as in job descriptions, roles and responsibilities, training, and settings appear. • The denominator, eg does not consider the population's demographical, epidemiological and social profile or its patterns of utilisation of services.
Utilisation and demand approach	Estimates future requirements on the basis of current levels of service utilisation, adjusted to future projections of demographic profiles.	Useful in estimating future pressures on services in the context of, for example, an ageing population. May alert policymakers to the extra costs that will need to be assumed if the supply of practitioners grows at the same rate as demand.	• Information about utilisation and demand is not always available, particularly the utilisation of private services. • Assumes that the observed utilisation and demand are appropriate and efficient. • Ignores the gap existent between demand, utilisation and needs for services.

Approach	Description	Advantages	Limitations
Service-target approach	Sets targets for the production and delivery of specific services and converts them into staffing and productivity standards (minimum staffing servicing a population of xx persons or per types of facility).	Relatively simple and politically appealing as populations easily understand the targets.	• Assumes that needs are the same everywhere and that all providers are equivalent; for example, it assumes there will be no variations in productivity or in practice style. • The criteria to define the targets are not always explicitly stated. • If unrealistic standards are defined, the result will be the creation of expectations that are impossible to fulfil.
Health and service needs approach	Estimates future health workforce requirements on the basis of the projected health and service needs of the population. It defines 'service needs', in function of age and sex-specific morbidity trends and of service norms, and then converts them to staff requirements, using professionally defined productivity norms.	Attempts to overcome limitations of above approaches. Health needs which correspond to gaps between observed and desirable health status, expressed in quantitative indicators (incidence and prevalence rates, standard mortality rates) constitute the basis from which service needs are derived. They represent the gap between services available to those necessary to meet health needs.	Most difficult approach to operationalise: • Knowledge of health needs is very imperfect. Providers often disagree amongst themselves on how to define needs. • Measurement of needs is challenging. • Knowledge about the capacity of specific services to meet health needs is imperfect. • Health and services needs change and mechanisms are required to monitor these changes in real time.

Source: Dussault et al. (2010)[28]

Appendix B: Methodologies for calculating benchmarks

The following overview is a list of typical, but not necessarily exclusive, methodologies used for calculating benchmarks.

Category	Description
Ratio-based methodologies	Utilise a comparatively simple ratio of staff to activity
Procedure-based methodologies	Take into account work performed in delivering health care services in terms of procedures, functions, broader areas of work or tasks
Categories of care-based methodologies	Employ a ratio approach of staff to patients. Different patient conditions, basic care needs and/or therapeutic intervention requirements are taken into account
Diagnostic or case mix-based methodologies	Workload estimates are linked to diagnostic sub-groups
Mixed methodologies	Using components of two or more methodologies

Source: Schoo et al.[32]

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