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Executive Summary

Health services in Western Australia (WA) are faced with many challenges including a rapidly growing and ageing population with longer life-expectancy, and an increasing burden of chronic conditions driving a growing demand for healthcare services. These challenges are coupled with a medical workforce shortfall, a lack of absolute and relative medical practitioner numbers required and an inequitable distribution of medical practitioners across regions and specialties. The Specialist Workforce Capacity Program (SWCP) projections in this report (Medical Workforce Report 2015/16) reveal, for the first time in some detail, the medical workforce issues being faced by the WA health system. This report shows the need to address these issues as a matter of urgency.

An overall estimated shortfall of 1,450 medical practitioners across all medical specialties in WA has been projected by 2025. Estimated WA trained specialist supply will not meet demand in 18 specialties by 2025 with the resulting risk of not being able to meet health service needs and compromising safety and quality of care. This significant projected shortfall includes 974 general practitioners. General practice is increasingly seen as an important area where effective treatment, advice and intervention can prevent costly inpatient hospital stays. General practice is being reviewed in greater depth and a separate report will follow.

Against a backdrop of increasing workforce pressures and tightened fiscal constraints these workforce shortfalls cannot be resolved or entirely managed by the five board-governed health service providers (HSPs) in isolation. This report reinforces the need for a considered and system-wide approach towards investing in the State’s medical workforce, ensuring it is of appropriate size, composition and distribution. The precise number of medical practitioners that will be required to accommodate WA’s future healthcare needs in the medium to long-term is still largely unknown, but the increasing number of specialties identified with projected shortfalls is of significant concern, see figure 1. Without intervention, based on current trends, supply will be insufficient to meet projected healthcare needs in those specialties.

Reliance on international medical graduates (IMGs) will continue to address short to medium-term shortfalls. It is important to understand the impact a reduction in recruitment of IMGs would have on our health system in the short-term with regard to junior doctor numbers and in our consultant staff in the medium to long-term. Policy changes or shortages in countries that traditionally supply our IMGs could have the potential to move a specialty from having a small excess to a shortfall within a very short time period.

Effective planning requires a dynamic system-wide model built on timely and accurate data incorporating a range of variables and projected scenarios to inform the planning of policies and processes. The development of supply forecasting methodology requires the inclusion of a range of possible variations enabling planning to be adapted accordingly.

The WA Department of Health (the Department), as System Manager, has a role to develop sustainable system-wide clinical workforce models, based on supply and demand scenarios, to strengthen evidence-based investment in a high quality and cost efficient health system. This can be achieved by maintaining strong and effective partnerships between the Department, HSPs, private sector organisations, medical colleges and national bodies in order to:

- effectively assess capacity of the public and private sector workforce
- advance collective capacity in developing system-wide projections
- inform national strategic planning from a WA perspective, on a discipline specific basis.

The Specialist workforce in Western Australia

The SWCP commenced in 2011 and expanded in 2013 and 2015 with strengthened methodology and greater stakeholder involvement, resulting in an increase in the breadth and quality of data available. SWCP 2015 provides shortfall estimates and projections across three time periods; 2015, 2021, and 2025 for 47 medical specialties.
Projections are based on a demand-supply model that projects the average number of graduating vocational trainees, the number of specialists expected to retire at 65, and the estimated demand for specialists across WA. At 30 September 2015, the specialist workforce in WA, excluding general practice, has been estimated to have the following key characteristics:

- 3,156 specialists in total
- 71% males compared to 29% females
- 36% work in the public sector, 28% in the private sector, and 36% work in both
- 89% of specialists work in the metropolitan area, 6% in rural areas, 5% in both
- 89% of specialists were aged 35 to 64, with 8% aged 65 years and over.

On a system-wide basis, analysis of the workforce data shortfall shows that general practice is the largest specialty group at risk in WA and the current vocational training program is failing to meet maintenance replacement requirements let alone the additional increases required by increasing demand.

**The future specialist workforce in Western Australia**

The current model for health workforce planning is on an unsustainable fiscal path. More strategic utilisation of healthcare professionals and a coherent understanding of future workforce trends, needs and resources will lead to a more effective healthcare system, increased savings, and more efficient use of constrained resources. Investments to strengthen the health workforce must be appropriately managed and targeted. This will be most effectively managed on a system-wide basis in the development of effective workforce strategies, budgeting, policy and education. As represented in the figure below, the number of specialties projected to be in critical shortfall risk, increasing from two specialties in 2015, to 18 by 2025.

The continued capture of timely, relevant and robust data across both public and private sectors is crucial to the ability of the Department to set the strategic direction for the WA health system, and to guide and influence the development of localised evidence based plans by the five board-governed HSPs. Challenges to sustainability and opportunities for increasing productivity and efficiency have been identified, culminating in this report. Future system-wide health workforce planning will incorporate a suite of health workforce strategies and scenarios to provide:
A complete picture of the health workforce and the drivers behind supply and demand, including:

- Monitoring medical graduates and their chosen specialities as they enter the WA health system, particularly with the introduction of Curtin Medical School and increased pressure on health services to provide additional clinical training and supervision. Medical graduates may ease future workforce shortfalls, but could also lead to surplus numbers in some specialties.
- Impact on the provision of service delivery, with registrars and IMGs as variables in the demand model.

Measures to reconsider the allocation system of vocational and non-vocational positions to resolve inequitable geographical and specialty distribution, and to increase the number of specialists in disciplines currently in shortfall.

Strategies to increase consultant numbers in specialties with workforce shortfalls by:

- upskilling senior registrars or IMGs to obtain fellowships and ensure there are sufficiently funded consultant positions available (short to medium term strategy)
- targeted interstate or overseas recruitment (short to medium term strategy)
- increasing vocational training numbers within those specialties (long-term strategy)
- reviewing and implementing changing models of care, incorporating greater incorporation of primary care and multidisciplinary teams where there is an increasing burden of chronic disease (long-term strategy).

Strategies to address gaps in workforce distribution and more effective integration and approach to primary care and specialty areas (i.e. aged care).

Implementation of evidence-based scenario testing across disciplines and, private and public sectors utilising a range of variables to identify the optimal mix of staffing and skill needed to continue to achieve good health outcomes.

A dynamic and iterative workforce demand projection methodology that captures underlying factors driving changes in health professional requirements, including:

- The impact of decreasing working hours by the ageing workforce combined with increased numbers of women entering the workforce and estimated shorter working hours. Projections are required to identify the increase in the number of medical practitioners required (headcount) to retain current full-time equivalent, if working hours remain constant.

The uncertainties regarding how, and the speed with which emerging care delivery models might affect consultant supply and demand combined with a better understanding of how clinicians and care settings will respond to economic and other trends will be addressed in future projections. Future SWCP analysis will look more closely at specific specialties and conditions that may portend future shortfalls, including disciplines in mental health or primary care with a focus on areas in which the illness burden is increasing such as, oncology and cardiology. These deficits in the knowledge base present opportunities for ongoing research on the workforce implication of the evolving healthcare system and underscore the need for timely updates for projections.

This important body of work should be of great interest to planners both at a System Manager and Hospital Service Provider level, interest groups such as medical colleges and even for individual junior and senior medical practitioners.

Professor Gary Geelhood
Assistant Director General Clinical Services and Research
Chief Medical Officer
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Introduction

The Medical Workforce Report 2015/16 (MW Report) includes the following interrelated sections that provide a comprehensive analysis and overview of the medical workforce to support HSPs with system-wide medical workforce planning.

Section 1: Profile, position and recommendations

Presents the context for Western Australia (WA) medical workforce planning including challenges and medical workforce strategic recommendations.

Section 2: Programs, projects and priorities

Overview of the Medical Workforce Branch (MWB) programs and projects, and identifies key priorities for 2016/17.

Section 2a: Specialist Workforce Capacity Program 2015

MWB principle program presenting 2015 analysis of the WA public and private sector in 48 medical specialties, including supply, demand, shortfall risk assessments and projections.

Section 2b: Specialist Workforce Capacity Program 2015 specialty profiles

Summarises each of the 48 specialties workforce characteristics, supply, demand and shortfall risk assessment and projections.

Section 3: Appendices

Provides supporting information for the development of the MW Report 2015/16, as well as data modelling information and the data that informs the Specialist Workforce Capacity Program (SWCP) 2015 findings and recommendation.
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Section 1: Profile, position and recommendations

Investment in a high quality, cost efficient health system, requires continuous improvement of systemwide workforce projection models based on the most current high quality data available. The data and information provided in this report can then be effectively used to inform workforce strategic planning processes.

The current uncertainty and volatility of the medical workforce makes planning more urgent and more critical than previously. Mapping the demand and supply projections in both the public and private sectors has provided an understanding of which specialties are in critical or high shortage, or alternatively are in balance or in surplus.
The specialist medical workforce in Western Australia

SWCP 2015 trends and observations
SWCP provides a system-wide picture of WA’s specialist workforce as at 30th September 2015. The following overarching trends and observations were identified.

*Note: observations exclude general practice unless otherwise stated.*

**Total specialist workforce**
There were 3,156 specialists working in WA across 47 specialties, in both the public and private sectors.

**Gender profile**
The composition of WA’s specialist workforce by gender is presented below in figure 1.

Figure 1. Specialist gender distribution

General practice has a higher number of females in the workforce and is the largest workforce in WA. Inclusion of the general practice workforce changes the overall split to 66% male and 34% female. The gender composition of each specialty varies with some specialties having a higher proportion of males or females. A breakdown of the workforce, by gender, is included in the speciality profiles (Section 2b). Top three specialties presenting a higher proportion of male or female composition is provided in table 1.

Table 1. Top three specialities presenting with a higher male or female composition

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic surgery</td>
<td>Sexual health medicine</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>Rehabilitation medicine</td>
</tr>
<tr>
<td>Otolaryngology, head and neck surgery</td>
<td>Public health medicine</td>
</tr>
</tbody>
</table>

**Employment sector distribution**
36% of specialists were identified to be working in the public sector only, 28% in the private sector only and 36% were working in both the public and private sectors, see figure 2.

Figure 2. Specialist employment sector composition

Inclusion of the general practice workforce skews the distribution towards the private sector (21% public, 50% private, 29% public and private).

**Employment location distribution**
89% of the specialist workforce was represented in the metropolitan area, 6% in the rural area and 5% worked in both sectors.

There are many specialties that are not represented, or are under-represented, in rural and remote areas of WA.

**Age profile**
89% of the specialist workforce was aged between 35 to 64. See figure 3 below.

Specially specific analysis indicated many specialties had specialists approaching retirement age (65 years or older), and were identified as being unsustainable, or at risk of unsustainability, without targeted intervention.

Figure 3. Specialist age distribution

**Shortfall risk assessment**
From a Statewide position (public and private sectors); two specialties were identified with a critical risk shortfall and nine specialities with a high risk shortfall in 2015, see table 2.
Table 2. Specialties with a critical or high risk shortfall

<table>
<thead>
<tr>
<th>Critical</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Clinical pharmacology</td>
<td>▪ Addiction medicine</td>
</tr>
<tr>
<td>▪ Rheumatology</td>
<td>▪ Clinical genetics</td>
</tr>
<tr>
<td>▪ Gastroenterology</td>
<td>▪ Gastroenterology</td>
</tr>
<tr>
<td>▪ Immunology and allergy medicine</td>
<td>▪ Immunology and allergy medicine</td>
</tr>
<tr>
<td>▪ Neurosurgery</td>
<td>▪ Neurosurgery</td>
</tr>
<tr>
<td>▪ Otolaryngology head and neck surgery</td>
<td>▪ Otolaryngology head and neck surgery</td>
</tr>
<tr>
<td>▪ Radiation oncology</td>
<td>▪ Radiation oncology</td>
</tr>
<tr>
<td>▪ Rehabilitation medicine</td>
<td>▪ Rehabilitation medicine</td>
</tr>
<tr>
<td>▪ Vascular surgery</td>
<td>▪ Vascular surgery</td>
</tr>
</tbody>
</table>

Changes between SWCP 2013 and SWCP 2015

Number of specialists
There was an approximate increase of 15% in specialists across the public and private sectors.

Employment sector
The impact of the overall increase was felt differently across the two sectors with an approximate 12% decrease of specialists in the public sector, and an approximate 54% increase in the private sector.

Employment location
There was an approximate 12% increase of specialists working in a metropolitan location and an approximate 2% increase of specialists working in rural locations.

Gender
Overall, male specialists increased by approximately 11%, and female specialists by approximately 26%.

Some of the specialties which showed the greatest increase in female participation included paediatric medicine, pathology and dermatology.

Age
There was an approximate 19% increase in the 35 to 64 year old age group, the largest proportion of the working workforce. Age group percentage differences are provided in table 3.

There was an approximate 9% increase in specialists over 65 years which may be reflective of ageing workforce trends observed in some specific specialties, such as oral and maxillofacial surgery, addiction medicine and obstetrics and gynaecology. The youngest age group of under 35 years showed an approximate 13% increase, which could be an indication of the addition to the younger, newly graduated, workforce.

Table 3. Age group percentage differences

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=34</td>
<td>13%</td>
</tr>
<tr>
<td>35-64</td>
<td>19%</td>
</tr>
<tr>
<td>&gt;=65</td>
<td>9%</td>
</tr>
</tbody>
</table>

Supply and demand
Despite the overall increase in specialists between 2013 and 2015, the gap between supply and demand continues to increase in some specialties. Demand is increasing across all specialties, while supply is impacted in some specialties by the insufficient throughput of vocational trainees and the long-term ageing trend in the workforce (retirements).

Summary of SWCP methodologies
There are many differing methodologies used for medical workforce planning processes. The modelling used for SWCP is a static model based on ‘a point in time’, utilising two sub-models, supply and demand, as a way of determining SWCP 2015 estimations and projections.

Demand
Weighted activity based (WAB) demand model
The WAB demand model estimates specialist service delivery demand by each medical specialty compatible with the Activity Based Funding/Management (ABF/M) framework, and maps activity data to each specialty to provide weighted volume of activity by specialty and average.

Supply
The stock and flow specialist supply model is provided in figure 4.
Supply assumptions
Supply modelling is based upon a number of assumptions in determining the number of specialists required to provide the services to meet the needs of the population. A full list of supply assumptions can be found in Appendix 2: data modelling.

Shortfall and shortfall risk assessment
Shortfall estimates are provided for 2015 and projections are made for 2021 and 2025 for each of the medical specialties (48 including general practice). Shortfalls are calculated as the difference between the demand and supply estimates rounded to the nearest integer and presented in the formula equation below.

\[
\frac{\text{supply of specialists}}{\text{demand for specialists}} \times 100\%
\]

A shortfall criterion was applied to estimates and projections to provide a shortfall risk assessment for each specialty. Shortfall risk assessment scale is provided in figure 5.

Figure 5. Shortfall risk criterion

Limitations
- SWCP 2015 is a static model, based on data ‘at a point in time’ (as at 30th September 2015).
- Due to difficulty obtaining private sector full-time equivalent (FTE) data, headcount was used. Comparison of headcount and FTE data can lead to conflicting outcomes.
- Use of public sector data only would not have captured accurate Statewide supply and demand projections by excluding private sector dominant services.
- Different methodologies were utilised between the SWCP 2013 and SWCP 2015 making direct comparisons difficult.
- Data quality issues were unavoidable with the range and scope of data sourced to populate the model with variances in terms of the time period.
- The modelling process was limited by the need to use assumptions.
- The focus was the specialist workforce only in isolation of the remainder of the health workforce.
- Estimates for future demand did not include role delineation, changing models of care, impact of implementation of multidisciplinary teams, changes in technology or procedures or changes in workforce requirements.
- The contribution to service delivery by registrars and international medical graduates (IMGs) was not factored in.
- SWCP 2015 was a static model. A dynamic model is proposed for future SWCP iterations and will have the potential to capture variables and provide a range of scenarios.
- Various sources have been utilised to capture trainee throughput data, however these were often contradictory or conflicting due to varying definitions of what constitutes a vocational registrar. For the purpose of this report data was sourced from medical colleges. Future reports will require significant work on ascertaining vocational and non-vocational registrars by hospital and by specialty to inform modelling and projections.
‘System Manager’ and strategic medical workforce planning

The WA Department of Health (the Department), in its role as System Manager, provides leadership and stewardship towards ensuring an effective and efficient medical workforce that is of appropriate size, composition and distribution to deal with increased demand for health services. This leadership and stewardship strongly links with strategic planning, encouraging innovation, identifying systemic priorities and using anticipated future trends to develop plans that seek to protect, preserve and enhance the sustainability of the WA health system.

The Department is responsible for guiding, influencing and setting the strategic direction for the WA health system. The role of Health Service Providers (HSPs) and other key stakeholders is to contribute to and implement WA health system wide plans, have localised strategies and ensure the workforce is engaged through promotion and consultation.

The medical workforce timeline

Developing a highly skilled, adequately supplied, medical workforce is fundamental to delivering high quality and effective health care. Many factors affecting medical workforce numbers are outside the control of planners and policy makers, including the time taken to progress through the training pipeline; approximately 13 years to train a fully qualified medical practitioner and up to 20 years to achieve a specialist qualification.

Medical graduate numbers have increased significantly over the last five years, and will continue to increase with the establishment of a third medical school in WA, Curtin Medical School (CMS). CMS will commence an undergraduate program in 2017 with 60 medical students, increasing to 110 medical students by 2022. The impact of increasing demand for internships and training positions is still unknown.

Medical students typically progress from prevocational training as an intern, to a resident medical officer (RMO), to vocational training (training registrar), to finally qualifying as a specialist (specialist) with fellowship of a medical college. Figure 6 illustrates the approximate time spent at each step along the medical workforce timeline. Medical training is delivered through complex channels involving the Australian Government, State and Territory Governments, and private and non-government agencies, making workforce planning challenging and impossible to deliver in isolation.

Increasing the number of medical school places is only one step towards reaching a sufficient supply of doctors to meet health delivery requirements. Australia is reliant on IMGs to not only meet service delivery in rural and remote locations, but to provide the right workforce skill mix in some specialties and to assist in training future specialists (e.g. neonatal medicine). Not all medical graduates progress to specialist positions, with some pursuing other hospital-based roles (e.g. district medical officers, senior medical practitioners).

Figure 6. Medical workforce timeline
Medical workforce challenges

The size and composition of the specialist workforce is largely based on historical recruitment and employment practices established 10 to 20 years ago, assuming the status quo with regards to the numbers newly entering the health system, hours worked and retirement patterns. The length of time required to train entry level doctors to specialist level, has resulted in changes to the profile of the medical workforce in the interim.

Demand continues to grow faster than supply and results in projected shortfalls in some specialties. Updated system-wide supply and demand projections, based on recent data, informed by wide consultation, provides a better understanding of how clinicians and healthcare settings will respond to economic and other trends.

Robust workforce planning models and effective workforce planning needs to take into account factors which will influence population demand for medical services and supply of medical practitioners to deliver these services, including:

**Specialist supply challenges**

- Distributional inequity;
- Retirements in the current medical workforce, associated with an ageing workforce;
- Recruitment and retention;
- Changes to working patterns, including a trend to lower average weekly working hours;
- International supply; and
- The vocational training pipeline/registrar workforce.

**Demand drivers**

Key drivers contributing to the increasing demand for accessible, affordable and an effective specialist workforce includes:

- demographic trends and changing population distributions
- changes in the burden of disease, including an increased prevalence of chronic conditions associated with an ageing population
- technological and medical advances and innovation, coupled with higher health care expectations from the consumer
- National and state health policy agendas, including changes in health infrastructure.

To address the projected shortfall of specialists in specific specialties, factors impacting on specialist supply must be addressed with system-wide workforce planning through the development of targeted strategies. The overarching issues and recommended strategies are further described in the following section.

**Specialist workforce challenges**

**Distributional inequity**

WA has among the lowest specialist to population ratios (SPRs)\(^1\) in Australia, indicating that WA’s population is serviced by proportionally fewer specialists than most other Australian States and Territories. SPR provides a basis for comparison between WA and other states and territories but no ‘ideal’ SPR benchmark has been identified.

Medical workforce shortages and lack of access to specialist care tend to increase with geographical remoteness, impacting particularly on the health and wellbeing of people in rural and remote

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\(^1\) Number of specialists per 100,000 of population
communities. There are also concerns about the equitable distribution of specialists in some outer-metropolitan and metropolitan areas.

Imbalances across medical specialties can have a direct cost to the health system with supplier induced demand often existing where workforce supply exceeds demand i.e. a medical practitioner may encourage the consumer to demand more services (such as follow-up visits) than required. This is less likely to occur if the workforce is in shortage.

WA’s current specialist workforce mix has evolved over time due a number of factors including isolated expansion based on historical practices of vocational training and specialist positions, vocational preferences of medical graduates and trends towards sub-specialisation.

Further information on SPRs is provided in the appendices.

**Age profile of the specialist workforce**

The specialist workforce shows many specialists approaching retirement age within the next 10 years with insufficient trainee throughput to meet either the status quo, or increased demand. This has implications for the provision of service delivery and the training of the future specialist workforce. The development of succession planning that incorporates increased demand for funded vocational training positions, upskilling of IMGs, or interstate/overseas recruitment strategies for anticipated retirements across identified specialties is essential.

Further information on the SWCP age distribution analysis is provided in the appendices.

**Recruitment and retention challenges**

The number of funded specialist positions in some specialties has not kept pace with demand or the increasing labour market competition for these positions. Data indicates there was workforce movement interstate and overseas due to factors that included a lack of employment and professional development opportunities in WA. The labour market in WA is strongly competitive with limited positions in the specialist training pathway, anticipated to increase with increasing numbers of medical graduates entering the health system.

**Lifestyle factors**

There is increasing value of work life balance with more male and female medical practitioners seeking less than full-time positions. A growing part-time workforce impacts on the supply-demand equilibrium, affecting time in training and coverage of rosters in some specialties. Specialties with a large demand for part-time positions (trainees and specialists) may find it difficult to balance supply and demand without a significant increase in trainee throughput, and specialties that are more able to accommodate work-life balance are more likely to be attractive career choices for junior doctors.

Taking into consideration the ageing workforce and reduction in work hours from both genders, the evidence is that the increased training, graduation and recruitment of health workers may, in many locations, lead only to a small net increase in the number of FTE practitioners.

For the purposes of SWCP 2015, part-time was defined as less than 35 hours and full-time as equal to 35 hours or more per week.

**International supply of medical practitioners**

The recruitment of IMGs or overseas trained doctors is a key policy strategy aimed at improving the distribution of the medical workforce throughout Australia, to meet gaps in service delivery and address medical workforce shortages. A number of specialties have been identified at a national level as being highly reliant on IMGs across all locations and states and territories. In WA, IMGs are integral for

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meeting service delivery in the regional, rural and remote workforce as junior doctors or specialists. While the aim is for self-sufficiency in the future, given the increasing numbers of Australian medical graduates entering the specialty training pathway, WA is likely to remain reliant on IMGs in some specialties and locations in the medium to long term.

Recruitment from overseas is ad hoc, based on the need to fill a vacant position at hospital level, often within a short timeframe. A more effective strategy would be the development of yearly horizons, based on projected supply and demand, across the system. Based on this data, and estimated future workforce requirements, a whole of health IMG recruitment strategy would enable the early sourcing of candidates for ‘anticipated vacancies’ through specialised targeted marketing activities. The cost savings as the result of a system-wide recruitment drive would be significant.

The mechanisms utilised by WA Health for advertising overseas, and the associated links with Health Support Services to trigger recruitment processes have been explored but not implemented. Policy development around the appropriate use of international/labour market testing instruments, combined with endeavours to streamline the system and educate the users would reduce the current challenges associated with international recruitment.

Future Australian or international policy changes could potentially have significant impact on Australia’s access to recruitment from overseas. These unknowns need to be reflected in the succession planning process.

**Vocational training pipeline/registrar workforce**

The number of funded vocational training positions has not kept pace with the increasing number of medical school graduates entering the WA health system, resulting in more medical practitioners seeking a vocational training position than places available and a mismatch of funded specialist positions for vocational registrars to move into upon completion of training.

Increasing pressure on the vocational training pipeline is putting pressure on the capacity of health services to provide adequate supervision to junior doctors and IMGs, and as previously noted, the impact of CMS on demand is still unknown in terms of providing the necessary accreditation, training and supervision of additional interns as well as the flow through into the vocational training pipeline.

Supervision of junior staff in the clinical setting is complex and is a key component of both clinical training and patient safety programs. Supervisors of junior doctors have a responsibility to promote and ensure the provision of safe patient care. The Postgraduate Medical Council of Western Australia has developed a policy regarding the supervision of prevocational doctors and the Medical Board of Australia (MBA) has responded to supervision concerns regarding IMGs on limited registration with guidelines on the number of IMGs that can be allocated to a supervisor according to level of supervision required. Innovative models of supervision including expanding internships to rural and community settings and indirect and distance supervision (i.e. telehealth) are being explored and utilised.

**Demand drivers**

**Population growth and location**

WA had the fastest population growth rate in Australia between June 2001 and June 2011, with an estimated 24% growth in population. This trend of growth continued to 2014/15 and quarterly population growth estimates for WA suggest a 1.7% annual growth rate for 2015/16. High population growth implies

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a corresponding high demand for health services. This is particularly noticeable in some outer-
metropolitan areas of Perth, and in Mandurah, where rapid population growth has shown there are
insufficient local medical practitioners to meet demand.

WA has the second highest proportion (after the Northern Territory (NT) of its resident population
residing in remote and very remote locations under the National Health Reform zoning classification. An
estimated 40% of WA’s Aboriginal population resided in communities in remote or very remote locations
in June 2011\textsuperscript{7}. Aboriginal people make up 3.4% of the total WA population, and yet have the greatest
health needs of any group in the State\textsuperscript{8}. Providing equitable access to health care services in rural and
remote locations is problematic and there remains a significant gap between Aboriginal and non-
Aboriginal health outcomes in all locations.

\textbf{Ageing population and chronic conditions}

The impact of an ageing population on demand for services is well understood. An ageing population not
only increases demand for services but it changes both the mix and volume of medical procedures and
services required, particularly the general practice workforce. The ageing of the population and the
prevalence of chronic conditions are strongly correlated. The increased prevalence of chronic conditions
is currently one of the strongest drivers of demand for health services. Growth in health service delivery
based demand is higher for chronic conditions than for acute conditions. Chronic conditions is a major
contributor to premature death, long term disability, increased hospital admissions and increased health
expenditure; accounting for approximately 70-80\% of Australian health expenditure\textsuperscript{9}.

\textbf{Technological and medical advances and community expectations}

Innovation and reform in healthcare aims to provide a more effective, efficient and accessible health
service to better address community needs. This can be achieved through advances in medical
technology, improvements in models of care, maximising workforce capacity and changes to service
delivery.

Innovative approaches to improving access to health care for rural and remote communities have
included the establishment of primary health care networks including nursing outposts, visiting medical
practitioners (VMPs), co-ordinated drive-in-drive-out and fly-in-fly-out specialist services managed by WA
Country Health Service (WACHS), and the use of e-health technology. Alternative models of delivering
healthcare have been researched and/or explored to some degree by WA Health and further
consideration and research is needed to determine how alternative roles and expanded scopes could
apply in a WA Health context.

The Australian public expects equity of access and the provision of a quality health care service that will
be there when they need it. An increase in the volume of health information in the media, along with
improved public access to health services, rising incomes, and advances in diagnoses and treatments,
have led to increased consumer education, awareness and expectations\textsuperscript{10}. Australian consumers have
very specific expectations around healthcare financing, but healthcare funding is not infinite.

\textbf{National and state health policy agendas}

Changes in national and state health policy agendas and health infrastructure can have a major
influence on demand for medical services and in turn affect the supply of the medical workforce, such as
reconfiguration of governance structures for the Department and health services, and the introduction of
ABF/M.

\textsuperscript{7} Australian Bureau of Statistics (ABS). 2015. 3238.0.55.001 - Estimates of Aboriginal and Torres Strait Islander Australians, June 2011.
Canberra: ABS. \url{http://www.abs.gov.au/ausstats/abs@.nsf/mf/3238.0.55.001}
\textsuperscript{8} \url{http://ww2.health.wa.gov.au/~media/Files/Corporate/general%20documents/Aboriginal%20health/PDF/12853_WA_Aboriginal_Health_and_Wellbeing_Framework.ashx}
WA Health has been undergoing significant change in recent years to meet the demands of the State’s fast growing population, an increasingly constrained financial environment, and workforce pressures. In response to these budgetary pressures, the WA Government has commenced a number of financial reforms across the WA public service, aimed at making the delivery of services to the WA community more financially sustainable.

WA Health has invested more than $7 billion in building new hospitals and improving existing health facilities from 2008 to 2018, with support from the Australian Government and other partners; boosting and strengthening healthcare closer to where people live. These projects are being undertaken in the metropolitan and outer-metropolitan areas, as well as in rural and remote locations. New health infrastructure has the potential to support the more efficient delivery of healthcare and provide opportunities to explore alternative models of care and incorporate and expand the role of the multidisciplinary team. These infrastructure projects and the benefits they provide would have a positive influence of recruitment and retention of medical staff in WA.

In August 2011 the National Health Reform Agreement was signed by the Council of Australian Governments (COAG) to use ABF to improve patient access to services and increase public hospital efficiency, providing a more transparent and accountable way of funding health service delivery.

The Independent Hospital Pricing Authority (IHPA) was established under the National Health Reform Act 2011 to determine, among others, the national efficient price (NEP) for health care services provided by public hospitals where the services are funded on an activity basis, and the national efficient cost (NEC) for health care services provided by public hospitals where the services are block funded. The key difference between the NEP and the NEC is that the states and territories manage the total block funding amount provided to hospitals. This is determined through service level agreements that are made between the states and territories and the Local Hospital Networks. IHPA works with states and territories to develop appropriate data specifications, and to acquire, validate and maintain data in the IHPA information technology environment.

WA public teaching and non-teaching hospitals are provided with teaching, training and research (TTR) block funding, as a separate budget line item under the ABF/M model. TTR, which is allocated in WA using Departmental methodology, is not currently included in setting activity targets or expenditure limits for clinical service delivery. The allocation of TTR funding is at the discretion of HSP Chief Executives, as part of the budget process, and Service Level Agreements do not specify whether or how these funds should be used, although this is currently being investigated further at both State and National level.

TTR is integral to improving the quality and cost effectiveness of health care delivery and results in health, social and economic benefits to the community. The IHPA commissioned a Teaching, Training and Research Costing Study which produced a Final Project Report in July 2016. The Report is being reviewed by the Department.

Other demand drivers

Willingness or ability to pay is an increasingly important demand driver in an economically restricted environment. Most individuals have a limit of what they can afford or are willing to pay, and this is often the cause for persons presenting with increased severity of illness. This issue predominantly affects individuals in low to medium socio-economic populations, particularly in outer-metropolitan, rural and remote areas. Recent proposed co-payments for general practitioner (GP) visits by the Australian Government were met with strong opposition by the medical profession and the public.

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11 http://www.healtheconomics.com/wp-content/themes/HealthEconomics/heNewsletters/525F6EB2-C29B-8935-ADD5727491B0C65B.cfm
12 http://www.ers.usda.gov/media/1787630/aer784.pdf
Similar to willingness or ability to pay, willingness or ability to fund may result in patients presenting with increased severity of illness at increased cost. The proportion of Gross Domestic Product expended on health increased from 6.5% in 1989-90 to 9.7% in 2012-13 and 9.8% on 2013-14\textsuperscript{15}. The long-term fiscal sustainability of the health system is likely to be of increasing concern to Australian Governments. While governments have tended to rely on fiscal policy measures to contain costs, sustainability is multi-faceted and has fiscal, social, political, economic and clinical dimensions so a more sophisticated and collaborative approach to sustainability is required.

**Statewide medical workforce strategic recommendations**

The following strategic recommendations are proposed for the consideration of the Department, HSPs and other stakeholders for integration into medical workforce planning:

<table>
<thead>
<tr>
<th>Recommendation 1: Plan for the future</th>
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<tbody>
<tr>
<td>▪ A need for system-wide planning based on supply and demand projections to replace historical employment of medical practitioners.</td>
</tr>
<tr>
<td>▪ Build and maintain strong and effective partnerships between the Department, HSPs, private sector organisations, medical colleges and national bodies to:</td>
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<tr>
<td>▪ Assess the capacity of the workforce and improve workforce projections and projection models.</td>
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<tr>
<td>▪ Present new analyses based on research, data and consultation on specific topics to advance collective capacity in the development of system-wide projections.</td>
</tr>
<tr>
<td>▪ Inform national strategic planning by specialty, from a WA perspective.</td>
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<table>
<thead>
<tr>
<th>Recommendation 2: Annual SWCP workforce supply and demand projections</th>
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</thead>
<tbody>
<tr>
<td>▪ Update SWCP supply and demand projections based on most recent and best quality data and incorporate recommendations from previous reports.</td>
</tr>
<tr>
<td>▪ Provide medical workforce profiles and projections through Summary Sheets and Specialist Profiles.</td>
</tr>
<tr>
<td>▪ Continue to undertake specific research to strengthen future projections and support decision making processes.</td>
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</tbody>
</table>

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<tr>
<th>Recommendation 3: Prioritise strategic planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Develop dynamic modelling that incorporates various supply and demand scenarios that impact on the medical workforce.</td>
</tr>
<tr>
<td>▪ Develop Expanded Specialist Reports for identified specialties that are likely to have future shortages or be impacted by increasing burden of disease.</td>
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</tbody>
</table>

Section 2: Programs, projects and priorities

Located within the Office of the Chief Medical Officer (OCMO), Clinical Services and Research Division of the Department, MWB conducts strategic research, supply and demand analysis, to inform the planning and implementation of programs and projects, and support the optimisation of the specialist workforce (i.e. the appropriate size, composition and distribution) to meet the State’s healthcare needs.
Medical Workforce Branch

MWB has close strategic and operational links with a broad range of stakeholders, including HSPs, individual hospital sites, private sector health service providers, medical colleges, other jurisdictions and Australian Government agencies, which form the basis of extensive and ongoing consultation processes supporting MWB programs and project initiatives. MWB develops and implements an integrated body of work to contribute towards supporting and achieving the following WA Health strategic and business objectives:

- Inform workforce planning and the development of strategies to appropriately manage the workforce across the system and into the future (WA Health Strategic Intent 2015-2020).
- Provision of data and information to support the establishment of an adequate supply of an appropriately skilled workforce; and implement an integrated approach to planning, ensuring there is sufficient workforce resources (WA Health Clinical Service Framework 2014-2024).
- Inform workforce planning to support achievement of an optimal medical workforce mix through research, planning and projects (WA Health Reform Program 2015-2020).

Key programs and projects undertaken by MWB, supporting the optimisation of the specialist medical workforce in WA are outlined further in this section, and include:

The **Specialist Workforce Capacity Program** which informs the following key outputs:

- Medical Workforce Report
- SWCP summary sheets
- SWCP specialty profiles
- Expanded specialty reports (planned)
- One-page snapshot for the Medical Careers Expo (planned)

**Other programs** that inform SWCP, and assist in planning for the medical workforce in WA, are:

- Specialist Training Program
- Area of Need
- Workplace Based Assessment.

**Specialist Workforce Capacity Program**

Initially commenced in 2011, and then expanded in subsequent years, the SWCP undertakes extensive consultation across the private and public sectors in WA to provide a system-wide comprehensive snapshot of the specialist workforce. Prior to the SWCP, system-wide data and information were not previously collected and analysed in WA, nor were Statewide supply and demand projections developed.

SWCP is produced biennially and maps WA’s specialist workforce to inform the development of supply, demand, shortfall risk assessment projections for the specialist workforce, supporting the following key priorities:

- To effectively inform and influence specialist workforce planning in WA, including succession planning.
- Identify distributional inequities of the specialist workforce by specialty and location in order to facilitate:
  - career profiling for junior doctors to inform career decisions
  - discussions with medical colleges to advise on supply and demand issues.
- Facilitate effective coordination and management of the registrar workforce to align with specialist workforce supply and demand.
- Develop strategies and recommendations to strengthen the sustainability of the specialist workforce.
- Recognise changing lifestyle needs and part-time workforce preferences of the specialist medical workforce and incorporate into supply and demand models and strategy development.
- Identify and progress areas of research on specific topics that affect each specialty to inform future projections.
- Facilitate discussions with medical colleges, HSPs and specialist representatives to develop recommendations, and identify issues and potential improvements.
- Provide a detailed WA perspective of the specialist workforce to inform national planning and identify WA specific issues/differences.
- Develop marketing strategies for the dissemination of specialist data and analysis for the HSPs to inform system-wide planning, and to increase the attractiveness of less popular subspecialties as a career pathway for junior doctors.

The SWCP informs the development of the biennial Medical Workforce Report which includes the development of summary sheets and specialty profiles for 48 specialties, and a range of state and national workforce reports.

**Medical Workforce Report 2013/14**

The Medical Workforce Report 2013/14 (MW Report 2013/14) was developed to inform the planning process to meet the demand for healthcare services and to support the optimisation of the specialist medical (i.e. appropriate size, composition and distribution) to meet the health care needs of WA.

The key strategies identified in the MW Report 2013/14 included:

**Optimising the specialist workforce**

The WA Health Medical and Dental Optimisation Executive Committee (OEC) was established in 2015, as a recommendation of the MW Report 2013/14, as the peak body comprising key decision makers to provide leadership and engagement towards facilitating an integrated approach to medical workforce planning.

The OEC assists in improving the medical workforce volume and mix and is informed and influenced by SWCP and other MWB programs and initiatives for the purposes of optimising WA Health’s medical and dental workforce investment through:

- addressing medical workforce demand and supply issues at a Statewide and system-wide level;
- increasing medical workforce numbers effectively from within existing budgets through system-wide planning
- facilitating effective communication across WA Health to achieve an optimal medical workforce.

**Integrated Registrar Reform Program**

System-wide registrar workforce reform has commenced to align vocational trainee throughput with specialist supply and demand. The Integrated Registrar Reform Program (IRRP) concept was developed by MWB to optimise capacity of the registrar workforce by addressing medical training pipeline issues and providing opportunities to facilitate integrated coordination of training, recruitment and selection.

Data on the registrar workforce, coupled with the findings of the SWCP, will inform and support:

- Identification of WA’s capacity to train the future medical workforce and deliver services.
- Development of best practice medical establishment ratios by role (intern: RMO: registrar: specialist) and prevocational and medical college supervisory requirements taking into consideration patient safety expectations.
- Development of specialty supply and demand frameworks that identify the optimal number and allocation of vocational training positions for each specialty.
• Development of a system-wide approach towards the management of the registrar workforce to achieve the optimal number and allocation of vocational training positions across WA Health to meet specialist demand.
• Potential opportunities for the formal Continuing Medical Education of service registrars.

Summary sheets and speciality profiles
Key outputs of the SWCP are the summary sheets and profiles for 48 specialties.

• The SWCP summary sheets are located on the Department’s SWCP webpage\(^{16}\) and provide an overview of each specialty highlighting information including; specialist demand and supply projections, workforce location distribution, vocational trainee information, age and gender distribution, retirements and shortfall risk rating.

Initially developed as a career planning resource for medical students and junior doctors as part of the SWCP 2013, the popularity of the summary sheets has seen them become a significant resource for the specialist workforce as a mechanism to assist in understanding and achieving a balance in the medical workforce, specifically in specialties identified to be at risk of workforce shortages.

• The SWCP specialty profiles located in section 2b provide more in-depth information on each of the specialties including; SPRs, specialist demand and supply projections, workforce characteristics (age, gender, employment location and sector), retirements and shortfall risk assessment for each specialty. Stakeholder consultation has commenced on the SWCP 2015 specialty profiles and will inform development of the Expanded Specialist Reports.

Expanded Specialty Reports and one-page snapshot

• Expanded Specialty Reports will be developed in 2016/17 collaboratively between the Department, medical colleges and specialty representatives from the private and public sectors for identified specialties.

• One page snapshots will be developed identifying specialties in critical and high shortage to inform career choices of junior doctors for the 2017 Medical Careers Expo.

Other programs

Specialist Training Program

The Australian Government introduced the STP to assist in expanding specialist training capacity in light of the increase in graduate numbers and the increasing pressure on existing supervisors. The STP is aimed at enhancing workforce distribution through opportunities for vocational training registrars in rural areas and areas of workforce shortage, and increasing the capacity and quality of specialist training in expanded settings where work may be sought at the completion of fellowship such as community health settings.

The Australian Government’s Department of Health develops a priority framework and requests applications for training in expanded settings from health care providers, facilities or organisations, rated by the medical college, and jurisdictions. Medical colleges determine if the proposed position meets their standards, while jurisdictions determine the availability of registrars to fill the proposed position and areas of workforce need; both taking into consideration the priority framework. The Australian Government’s Department of Health then reviews and approves the highest ranked applications and

\(^{16}\) http://www2.health.wa.gov.au/Articles/S_T/Specialist-Workforce-Capacity-Program-SWCP
creates a reserve list for unfilled posts; dispersing funds for approved positions to the relevant medical colleges. STP provides partial funding of $100,000 per FTE. Posts in rural locations may also be provided with rural loadings, of up to $20,000 per FTE.

MWB has undertaken Statewide demand and supply modelling, and consultation across 48 medical specialties. This data and consultation has informed the ranking of STP applications and assisted WA to receive funding for 114 of 900 posts Australia wide (12.7%) for private and rural placements from 2011 to 2014, as shown in table 4.

### Table 4. STP application round outcomes

<table>
<thead>
<tr>
<th>STP Application Round</th>
<th>Total Registrar STP posts funded Australia wide</th>
<th>Total Registrar STP posts funded in WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>518</td>
<td>71</td>
</tr>
<tr>
<td>2012</td>
<td>82</td>
<td>9</td>
</tr>
<tr>
<td>2013</td>
<td>150</td>
<td>12</td>
</tr>
<tr>
<td>2014</td>
<td>150</td>
<td>22</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>900</strong></td>
<td><strong>114</strong></td>
</tr>
</tbody>
</table>

On 19 March 2015, the Hon. Sussan Ley MP, Australian Government Minister for Health and Minister for Sport, announced that there would be a consultation with medical colleges and other stakeholders regarding reforms to the STP, the Emergency Medicine Program, and the newly introduced Integrated Rural Training Pipeline with funding of current STP positions to continue for 12 months pending the outcome of the review process and a recommendation to the Australian Government Minister for Health. The Department will continue to be involved in this process.

STP funding is crucial to establishment of new vocational training positions in WA, and at approximately $100,000 per post, this equates to $11,400,000 that WA has received since 2011, with potential to receive around 10% of any future STP funding.

### Area of Need

Specialist workforce shortages in some specialties and the distributional inequity of the medical workforce continues to impact health services’ ability to provide adequate and timely care to patients, particularly in rural and remote, and some outer-metropolitan areas. Where Australian qualified medical practitioners cannot be recruited, IMGs make an important contribution in supporting health service delivery.

Australian and State Governments have utilised District of Workforce Shortage (DWS) and AoN respectively to support the recruitment of IMGs to public and private health service employers. They are separate processes but both play an integral part in the overall recruitment and employment of IMGs as follows:

- **DWS** is administered by the Australian Government to locations where Medicare statistics indicate there is an insufficient number of medical practitioners in a geographical location to service a population. It is linked to the provisions in the Health Insurance Act 1973, specifically section 19AB, to enable an IMG to access a Medicare Provider Number (MPN) and Medicare benefit arrangements. Further information on DWS, including a DWS locator map, is available at the Australian Government’s Department of Health DoctorConnect website.

- **Section 67(5) of the Health Practitioner Regulation National Law (WA) Act 2010**, provides for the declaration of AoN in a specific location where there is a demonstrated workforce shortage. A determination of AoN enables;
Public and private health service employers to extend their recruitment program to IMGs for a location experiencing a workforce shortage in a particular specialty for a defined period.

IMGs to apply for limited registration AoN with the MBA to work in that location for the duration of the determination.

MWB manages the Department’s AoN program, a state based mechanism to enable the recruitment of an IMG to public and/or private health service providers in locations identified as experiencing a medical workforce shortage.

Employers must apply to the Department and meet the AoN assessment criteria to have a location determined as an AoN. In 2016 the AoN application guidelines were revised to align with national MBA registration standards and provide flexibility to be responsive to labour market changes with the increasing number of Australian-trained doctors entering the workforce. The following key changes were integrated:

- AoN is no longer a requirement for the recruitment of overseas trained RMOs or registrars.
- Competent authority IMGs are granted provisional registration with the MBA then can obtain general registration after 12 months without further assessments being required.
- The postgraduate training or supervised practice registration category with the MBA can be utilised by IMGs without requiring AoN status.

The review of the AoN assessment process has resulted in increased transparency and rigor:

- Determinations are assessed on a case-by-case basis and must comply with labour market testing requirements, including proof of advertising in three appropriate forums.
- Determinations pre-dating 1994 without expiry dates have been repealed and replaced with two year determinations which require labour market testing.
- An overarching determination for general medical services in the State of Western Australia excluding the Perth Statistical Division, the City of Busselton and the Shire of Augusta-Margaret River has been established, eliminating the necessity for small rural and remote locations to submit a separate submission given the demonstrated shortage of rural GPs.

While AoN determinations provide an indication of workforce shortages in specific specialties, and IMGs are recruited accordingly, the Department is not advised of the outcomes of employers’ recruitment processes. A full list of AoN determinations is available on the Department’s AoN webpages.

The lack of alignment between DWS and AoN processes is an ongoing issue. Practices demonstrating long-term difficulties in the recruitment of doctors are generally unwilling to recruit from overseas without DWS even with a current AoN determination, as the IMG would not be eligible for a MPN and Medicare benefit arrangements. DWS is based on Medicare billing information only, with the Australian Government not being influenced by a determination of AoN in a location based on local workforce shortages. An example of this lack of alignment between AoN and DWS is in Geraldton which is covered by an overarching AoN determination for general medical services (GPs) in the State of Western Australia17, but has lost its DWS status for GPs. The existing model of care whereby Geraldton-based GPs service outlying districts, communities, and the Royal Flying Doctor Service (RFDS), falsely inflates Medicare billing information, with no mechanism for consideration of this unique situation.

A national review of these joint processes commenced with the AoN – DWS Principal Committee Working Group but no agreed changes have been implemented. Alignment of the two processes,

17 Excluding the Perth Statistical Division, the City of Busselton and the Shire of Augusta-Margaret River
combined with a review of the methodology of determining DWS, has the potential for streamlining so they meet and reflect both current and future medical workforce trends.

In the future, AoN is less likely to be used as a mechanism to solve distribution issues in specialties.

Workplace-based Assessment

IMGs with limited registration are on a four year pathway to gaining Australian qualifications, whether general or specialist registration. The WBA program is a standard pathway alternative to sitting the Australian Medical Council (AMC) clinical examination and achieving general registration, for IMG’s with limited registration. In WA, WBA is a structured 12 month assessment program with the standard of assessment expected as ‘that of a graduate of an Australian accredited medical course at the end of postgraduate year one’.

Strategic development of WBA is managed by the MWB in collaboration with the AMC. Implementation is managed and coordinated at site level by hospitals that have been accredited by the AMC to offer WBA. The Department has been accredited by the AMC for the overarching development of WBA in WA, and reports to the AMC annually and as required, for accreditation purposes.

The three rural sites in WA that currently implement WBA are the Bunbury, Geraldton and Kalgoorlie hospitals. The AMC approved the development and implementation of a hybrid model in WA, where candidates are typically assigned to a clinical area and gain exposure to other clinical areas by attending ward rounds, external clinics and junior doctor training and development sessions.

WBA has a high success rate, with 97.5% of candidates achieving the AMC certificate between 2011 and 2015, compared to the latest AMC clinical examination pass rate of 31%.

The Lost in the Labyrinth report provided support for the WBA program and recommended expansion nationally as part of the COAG health workforce agenda.

Feedback provided by candidates indicates that WBA provides excellent support mechanisms and helps prepare for practice in rural locations. Undertaking WBA assists candidates to develop adequate and appropriate clinical skill sets and to obtain the essential professional qualities to practise safely within the Australian health care environment and the cultural setting of the broader Australian community.

Candidates receive guidance and regular feedback with opportunities to self-assess, self-correct and reflect, as needed, across the six clinical areas of child health, adult medicine, adult surgery, women’s health, mental health and emergency medicine.

Demonstrated additional benefits of WBA for both the candidate and the employers include:

- WBA has become one of the most effective recruitment and retention tools for rural hospitals in WA, providing a consistent workforce for a minimum of 12 months.
  - In March 2016, 67% of candidates who completed WBA from 2011 to 2015 listed their principal place of practice with the Australian Health Practitioner Regulation Authority (AHPRA) as a rural location; supporting anecdotal evidence that WBA is an important strategy in rural recruitment and retention.

Recruitment and retention of a well-trained workforce in rural and remote locations is of prime importance to a sustainable health care system. Poor retention results in loss of skills and experience, compromises continuity of health care and increases recruitment.
costs. Retention does not imply employment in one location ‘forever’ but refers to a minimum length of stay in a location or with an employer or organisation\(^{20}\).

- Provision of a mechanism to identify underperforming candidates and supporting the implementation of performance improvement action plans with ongoing opportunities for review and feedback.
- Support for candidates to familiarise themselves with the hospital environment by:
  - establishment of a collegial support network
  - integration into the local community
  - assimilation into the Australian health workforce.
- Development of a system affording candidates multiple opportunities to enhance skills in all six clinical areas.
  - Some WBA candidates have only had previous exposure to one clinical setting for a number of years and require intensive support and mentoring to gain confidence and expertise in other clinical areas. They may have previously unsuccessfully sat the AMC clinical examination.
- The utilisation of assessment and feedback methods that provide consistency of supervision and assessment techniques within the wider hospital community (i.e. all medical practitioners receiving and providing supervision and assessment).

A sustainable funding model to support implementation of the WBA program at hospital level was proposed and implemented from January 2015. Candidate fees were increased to $10,000 to offset the cost of the 12 month program. The fees go directly to the hospital providing the program to support the appointment of a part time Program Director, part time Administrative Officer and external assessor.

Priorities for 2017/18 include:
- identifying opportunities to expand WBA in regional WA
- Identifying opportunities to apply WBA principles to optimise training capacity and supervision and assessment processes, to strengthen and provide consistency of processes for all junior doctors.

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## Medical Workforce Branch priorities for 2016/17

<table>
<thead>
<tr>
<th>WA Health Strategic Intent Enabler</th>
<th>Key Priorities</th>
<th>Reform Strategies</th>
</tr>
</thead>
</table>
| **Specialist Workforce Capacity Program** | To effectively influence specialist workforce planning in WA health services. | Short to medium term  
  - Build and maintain strong partnerships across the public and private sectors  
  - Identify strategies to achieve a balance between supply and demand across all regions in WA. |
|  | Address distribution inequalities of the specialist workforce across specialties and location. | Long term  
  - Support implementation of strategies to achieve optimisation of the medical workforce at a system-wide level.  
  - Increase medical workforce numbers effectively from within existing budgets through system-wide planning. |
|  | Drive support towards achieving a diverse, effective, efficient and balanced medical workforce across WA Health. | |
|  | Develop and implement a system-wide integrated medical workforce planning model. | |
|  | Facilitate effective coordination and management of the registrar workforce to align with specialist workforce supply and demand. | Short to medium term  
  - Identify specialties with sufficient trainee throughput to meet future demand and identify specialty shortfalls. |
|  | Develop opportunities to optimise capacity of the registrar workforce in WA. | Long term  
  - Take a system-wide approach to align vocational trainee throughput with predicted specialist supply and demand to achieve system-wide balance.  
  - Facilitate implementation of system-wide registrar reform. |
|  | Continued professional development for non-vocational registrars. | |
| **Workplace Based Assessment** | To provide opportunities for eligible international medical graduates to achieve general registration with the MBA. | Short to medium term  
  - Identify opportunities to expand WBA in regional WA.  
  - Identify opportunities to apply WBA principles to optimise training capacity. |
| **Area of Need Program** | Provide a mechanism to support recruitment of international medical graduates to areas that demonstrates a workforce shortage. | Short to medium term  
  - Continue to collaborate with the Australian Government to work towards consistency between AoN and DWS programs. |
|  |  | Long term  
  - Continue to work towards a balanced medical workforce informed by the SWCP. |
| **Specialist Workforce Capacity Program** | Strengthen the sustainability of the specialist workforce. | Short to medium term  
  - Explore incentives to encourage recruitment and retention (e.g. models of employment, continuing professional development, research opportunities etc.)  
  - Continue career profiling to support junior doctors to make informed decisions. |
|  |  | Long term  
  - Identify scenarios to be incorporated into dynamic modelling to support sustainability. |
<table>
<thead>
<tr>
<th>WA Health Strategic Intent Enabler</th>
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</table>
| **Workforce**<br>(Provide more opportunities for professional development through teaching and training to achieve a more engaged, skilled and satisfied workforce) | • Acknowledge and consider the changing lifestyle needs of the medical workforce | **Short to medium term**<br>• Identify strategies to increase flexibility within the medical workforce.  
**Long term**<br>• Identify scenarios to be incorporated into dynamic modelling to support flexibility. |
| **Specialist Workforce Capacity Program** | • Develop opportunities to optimise training capacity.  
• Facilitate centralised management of training, recruitment and selection of the registrar workforce. | **Short to medium term**<br>• Inform the development of potential career and training pathways.  
• Support the extension of current ICT processes and feedback of data to the SWCP.  
**Long term**<br>• Identify scenarios to be incorporated into dynamic modelling to support medical workforce optimisation. |
| **Specialist Training Program** | • Identification of opportunities to maximise training capacity and achieve workforce balance. | **Short to medium term**<br>• Collaborate with stakeholders to ensure potential positions are ranked according to priority and suitability.  
• Provide SWCP data to support applications. |
Section 2a: Specialist Workforce Capacity Program

Medical workforce planning and analysis is undertaken at a ‘whole-of-health’ and statewide level as there is a strong interdependence between the public and private health sectors including the employment of cross-sector staff and the associated infrastructure, roles and responsibilities.
Specialist Workforce Capacity Program 2015

SWCP 2015 includes detailed information on the public and private sectors, aligning with specialist workforce modelling undertaken at a national (e.g. National Medical Training and Advisory Network) and international level (e.g. Association of American Medical Colleges). A number of different SWCP data sources were cleansed and validated, then utilised in modelling to identify specialist workforce demand, supply and shortfall risk assessments for WA.

A comprehensive overview of SWCP 2015 supply and demand data sources, modelling, shortfall risk methodology and criterion, and identified limitations are provided in the appendices.

**SWCP 2015 Key findings**

- At 30 September 2015 there were 3,156 specialists working in WA and 2,230 GPs.
- The specialist workforce\(^{21}\) increased by 420 (15%) between SWCP 2013 and 2015.
- 2,372 specialists identified in WA in 2013 were retained in their principal specialty of practice in 2015, but there was a threefold increase in the number of specialists changing their principal specialty of practice between 2013 and 2015, most noticeably among dual trained general medicine physicians.
- There was a significant movement of specialists from public to private sector employment between 2013 and 2015.
- Over a quarter of specialties in WA had a workforce age distribution that was unsustainable or at risk of becoming unsustainable.
- Specialists are underrepresented in rural locations, with only general medicine having a rural SPR comparable to its SPR for metropolitan locations.
- Vocational trainee throughput in 2015 was insufficient to cover expected growth in approximately two thirds of specialties, and in excess of projected workforce requirements in approximately 27% of specialties.
- Given the length of training programs, interventions to improve vocational training capacity will have little impact to 2021 so any shortfall in specialists will need to be met from interstate and overseas in the short-to-medium term.
- Two critical risk and nine high risk specialties were identified in 2015 for WA Statewide (public and private). This is expected to increase to 18 critical and 10 high risk specialties by 2025, with only one surgical specialty not at high or critical risk.
- The gap between supply and demand for most specialties in 2015 was wider than that for SWCP 2013, indicating greater shortfalls. This was due in part to continuing lower than required vocational trainee numbers in many specialties.
- Projections indicate that without intervention 15 specialties will show no increase in specialist numbers by 2025 despite increasing demand, including eight of 10 surgical specialties, the medico-surgical specialties, and pathology, addiction medicine, immunology and allergy, neurology and rheumatology.
- Public sector shortfall and shortfall risk assessment estimates for 2015 and projections for 2021 and 2025 were worse than for WA Statewide. Without intervention, there is a projected decrease in public sector specialist numbers by 2025 for 19 specialties.
- In general, private sector shortfall risk assessments were similar to those of the public sector but the level of risk increases earlier in the public sector in private-dominant specialties.

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\(^{21}\) Excludes general practitioners.
Analysis and findings by specialist workforce profile 2015

Age distribution

To identify those specialties in which future retirements and anomalies in age distribution are likely to significantly impact upon workforce planning, an analysis of the age distribution by specialty was conducted.

A sustainable workforce distribution is one where the commencement of young specialists is more than sufficient to replace the departure of older specialists, i.e. the number of specialists under 40 years of age is significantly greater than the number of specialists aged over 60 years. An ideal specialist workforce distribution (volume of specialists 20 or more) displays a rapid increase in specialist numbers in the younger age groups to a peak, preferably in the 45 to 49 age group, and displays a gradual decrease in specialist numbers in the older age groups. Further information is provided in appendix 5.

Specific age distribution information for each of the specialties is provided in appendices 4 and 6: A table of specialist age profiles by specialty, including median age and percentage of the workforce over retirement age (65 years).

A graphical series of the age distribution for each specialty, colour coded for sustainability, with explanatory notes and implications for workforce planning is provided in the profiles in section 2b.

An unsustainable specialist workforce has an age distribution with insufficient specialists in the younger age groups to replace specialists in the older age groups upon retirement, or an age distribution that exhibits an abnormal peak or trough.

It should be noted that although specialty shortfall risk assessments were calculated using alternative methodology and different datasets, there is a strong correlation with the colour coded aged distributions (workforce sustainability) and current/projected specialty shortfall risk assessments (see appendix 15).

Key findings

- Specialties that were identified as being unsustainable or at significant risk of unsustainability in SWCP 2015 are included in table 5.
- Retirements are projected to have a significant impact on supply in some specialties, highlighting the need for informed succession planning, by specialty. Specialties with specialists approaching retirement age may have the opportunity for new appointments and potentially change the age distribution for those specialties.
- Workforce planning for each specialty should consider the need for succession planning and the benefits of a sustainable age distribution.
Table 5: SWCP 2015 unsustainability risk

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Issue/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction medicine</td>
<td>60% of specialists (n=8) were aged between 58 and 62 years inclusive and are likely to retire in rapid succession in the near future (abnormal peak).</td>
</tr>
<tr>
<td>Cardiothoracic surgery</td>
<td>A bimodal age distribution with a significant volume of approaching retirements.</td>
</tr>
<tr>
<td>Clinical pharmacology</td>
<td>Small volume specialty with approaching retirements. The loss of any specialist is a significant issue.</td>
</tr>
<tr>
<td>Gastroenterology and hepatology</td>
<td>Relatively uniform distribution of specialists across age groups. Is at risk of becoming an aged workforce.</td>
</tr>
<tr>
<td>General practice</td>
<td>Large volume specialty at risk of becoming an aged/unsustainable workforce. Unsustainable age distribution in all rural health regions with insufficient young GPs in rural locations.</td>
</tr>
<tr>
<td>Medical administration</td>
<td>An aged workforce with a significant volume of approaching retirements. This is not unusual for this specialty.</td>
</tr>
<tr>
<td>Neurology</td>
<td>Medium volume specialty with both a distinct bimodal distribution and a relatively large volume of approaching retirements. The specialty is at risk of depletion.</td>
</tr>
<tr>
<td>Obstetrics and gynaecology</td>
<td>Large volume specialty with a significant shortage Too few young specialists in the workforce to replace approaching retirements.</td>
</tr>
<tr>
<td>Occupational and environmental health medicine</td>
<td>A significant volume of approaching retirements. Most are current or former GPs.</td>
</tr>
<tr>
<td>Pathology subspecialties</td>
<td>Approaching retirements in the low volume forensic pathology. An aged distribution in general pathology with half the current workforce expected to retire within the next decade.</td>
</tr>
<tr>
<td>Pathology subspecialties</td>
<td>A bimodal immunopathology age distribution with approaching retirements. An ageing microbiology workforce.</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>A significant number of approaching retirements. Is at risk of becoming an aged workforce.</td>
</tr>
<tr>
<td>Public health medicine</td>
<td>Too few young specialists in the workforce to replace approaching retirements. A significant number of specialists aged 55-59 are expected to retire within a short time interval (12 of 27).</td>
</tr>
<tr>
<td>Rheumatology</td>
<td>Medium volume specialty with an erratic (not smooth) age distribution. Both an aged and a rapidly depleting workforce. Retention of young specialists is an issue. Centres of excellence in Singapore and Melbourne are common destinations for newly qualified specialists.</td>
</tr>
<tr>
<td>Sexual health medicine</td>
<td>Small volume specialty with approaching retirements. The loss of any specialist is a significant issue.</td>
</tr>
<tr>
<td>Sports and exercise medicine</td>
<td>Small volume specialty with approaching retirements. The loss of any specialist is a significant issue.</td>
</tr>
</tbody>
</table>
Gender and age distribution
An analysis of gender and age distribution was undertaken to identify trends for medical workforce planning. The retirement age of specialists is assumed by the SWCP to be 65 years for both female and male specialists, but it should be noted that some workforces with a high proportion of female specialists may be at increased risk of shortfall as the average duration of specialist workforce participation is likely to be shorter. Consequently SWCP risk assessments should be considered conservative (see appendix 15).

Specialty specific information on gender including age distribution is provided in appendix 6: Tables of male and female specialist age profiles by specialty, including median age and percentage of the workforce over retirement age (65 years).

Key findings
- The number of female specialists increased in the younger age groups to peak near 42 years, and then decreased quickly to age 60 years. There were few women working beyond age 60, the exception being in general practice.
- The number of males increased in the younger age groups to peak near 51 years, and slowly decreased to age 65 years with many men working beyond age 65. In general, male specialists remained in the medical workforce longer than female specialists.
- Approximately a third of WA’s specialist workforce (including GPs) was female with a strong female presence in general practice, psychiatry, obstetrics and gynaecology and paediatric medicine.
- Gender composition varied significantly by specialty, with a few specialties predominantly female, some specialties presenting an evenly distributed male and female workforce, and most specialties predominantly male.
- The proportion of females varied by specialty partition, with the highest proportion of females located within the medical (physician), core support services and surgical workforces, respectively.
Employment sector distribution

An analysis was undertaken to determine the specialty specific composition of the WA workforce by employment sector to identify trends in changing workforce patterns.

Information by specialty of the number of specialists providing services in the public sector, private sector or both sectors, and the estimated public/private sector workforce percentage (by headcount) is provided in appendix 7. Graphs providing the employment sector split for each specialty are included in the profiles in section 2b. Each specialty was allocated a percentage of public and private employment by assuming that specialists who worked in both sectors spent an equivalent time in each sector.

A separate analysis was undertaken to compare the data and outcomes of SWCP 2013 with SWCP 2015 by employment sector. Specialty specialist employment distribution across sectors was identified and analysed for the interim SWCP period and is provided in appendix 8.

Observation

The WA Health restructure and public sector financial reforms in the inter-SWCP period may have had an impact on the workforce balance between the public and private sectors; the opening of Fiona Stanley Hospital (FSH), coincided with many specialists previously employed in hospitals north of the Swan River ceasing or reducing their private sector commitments.

Key findings

- Approximately 36% of the specialist workforce (excluding GPs) was working in the public sector, 28% were in the private sector, and 36% were working in both sectors.
- The aggregate results (excluding GPs) for percentage of public and private sector specialist employment was 54% public to 46% private.
- Overall there was an increase of 420 WA specialists in 2015, representing a decrease of 151 specialists in the public sector and an increase of 309 specialists in the private sector.
- 40 specialties had an overall increase in public and private sector workforce between 2013 and 2015.
- There are many significant employment sector increases and decreases at specialty level;
  - 21 specialties had a decrease in their public sector workforce. Specialties with the highest reduction in public sector specialist numbers were psychiatry, medical imaging, anaesthesia and cardiology.
  - 32 specialties had an increase in their private sector workforce. Specialties with the highest increase in private sector specialist numbers were psychiatry, anaesthesia, medical imaging, and obstetrics and gynaecology.
Metropolitan and rural distribution
There are many specialties that are not represented or are under-represented in rural and remote areas of WA. An analysis of SWCP 2015 data was undertaken to estimate the specialty specific composition of the resident WA workforce by principal place of practice and identify trends in changing workforce patterns. Estimates of the number of specialists that were providing services in metropolitan, rural and a mix of both locations, and the estimated metropolitan/rural workforce percentage (by headcount) for each specialty are provided in appendix 9.

Key findings
- There was a distributional inequity of resident specialists between WA metropolitan and rural locations. Approximately 89% of the specialist workforce was located in the metropolitan area, 6% in the rural area, and the remaining 5% worked in both locations.
- Only general practice and public health medicine had greater than 20% of their specialist workforce identify a rural location as principal place of practice.
- General surgery, general medicine and obstetrics and gynaecology had greater than 10% of their specialist workforce identify a rural location as principal place of practice.
Specialist headcount trend analysis between 2013-2015

A separate analysis of the two year period between SWCP 2013 and SWCP 2015 was undertaken to identify changes in medical specialist headcount in WA and trends over the interim period. Appendix 13 provides, by specialty, the number of specialists: retained from 2013 in 2015, new to the WA workforce in 2015, and departed from the workforce between 2013 and 2015.

While the different methodologies utilised between the SWCP 2013 and SWCP 2015 made direct comparisons between the two periods difficult, the results of this separate analysis align with other analyses in revealing an increase in the overall specialist workforce in WA and a significant movement of workforce between the public and private sectors. Key influences that may have precipitated the changes identified in SWCP 2013 and SWCP 2015 were:

**The commissioning of Fiona Stanley Hospital in November 2014**

Specialists working at FSH were personnel (and service units) who either transferred from other Perth metropolitan hospitals as part of the planned restructure of WA Health's clinical services or applied for advertised positions at FSH. Many specialists who commenced work at FSH in the reporting period either ceased or reduced their private sector commitments in other locations.

The closure of Swan Districts Hospital and the opening of St John of God (SJOG) Midland Public Hospital occurred after SWCP 2015 data collection therefore these changes have not been captured in the SWCP 2015 data. The impact which will be captured in SWCP 2016 is expected to be minimal with most specialists previously employed at Swan Districts Hospital transferring to the nearby SJOG Midland Public Hospital.

**Budgetary pressures in the public sector**

The public sector employment freeze was introduced after SWCP 2015 data collection and was therefore not captured. The impact of the freeze is outside the scope of this report and will be included in SWCP 2016/17.

Ideally a trend analysis of the specialist workforce should be undertaken on an annual basis as current data collection fails to identify a significant proportion of specialists who commence employment and subsequently depart WA without being identified during the two year period, particularly recent vocational trainee completions.
Key findings

- The specialist workforce increased from 2,736 in 2013 to 3,156 in 2015 (an increase of 420 or 15%).
- 2,372 specialists identified in SWCP 2013 were identified in the same principal specialty of practice in 2015.
- 722 specialists ‘new’ to their specialty workforce were identified in SWCP 2015. Of these, 145 were specialists identified in 2013 that were new to a different principal specialty of practice in 2015.
- 453 specialists identified in SWCP 2013 were no longer identified in that specialty in 2015. These included:
  - 152 retirements
  - 107 interstate or overseas departures
  - 49 other departures, including 14 confirmed (e.g. deceased, long term illness, non-practising) and 35 unknown (see data notes).
  - 145 specialists who changed their principal specialty of practice between 2013 and 2015.
- There has been significant movement within the WA specialist workforce since 2013. The 145 specialists changing their principal specialty of practice between 2013 and 2015 represent an almost threefold increase in change of principal place of practice compared to 2011 and 2013.
- Many dual or multi-trained specialists changed their work patterns or gained employment in an alternative specialty of qualification. The most noticeable change was in general medicine where there has been a shift among dual or multi-trained general medicine physicians to their second specialty.
- Increased numbers of specialists were employed in the private sector.
Vocational trainee throughput analysis

An analysis of vocational trainee throughput was undertaken to identify which specialties were self-sufficient in producing enough WA trainees to meet future growth in service based demand and expected retirement based demand. The vocational training throughput rate should, at a minimum, exceed growth in service based demand and retirement based demand for all specialties, as any shortfall in specialists must be sourced from outside WA.

Growth in service demand does not impact on a day to day basis, except for trends in seasonal demand, but has a significant effect over time. An analysis of growth in service demand across WA indicated:

- The expected annual increment in growth in demand for the specialties ranges between 2.4% and 4.5% per annum, with most specialties in the range 3.0% and 3.5% per annum, due mainly to population growth and ageing, and the impact of chronic conditions.
- WA’s population growth has averaged 2.8% for the past decade but has decreased to near 1.7% over the past two year period.
- WA has an aging population which adds significantly to the growth in service demand.

Anticipated vocational trainee throughput

The number of vocational trainees in accredited training programs is known at any point in time with precision, however vocational training completions are unpredictable with significant discrepancies between the number of trainees completing vocational training in WA and the number of specialists commencements in WA within any time period (after adjustment for IMG’s). Projections for 2025 are based on the most recent years’ data with adjustment for course duration and historical pass rates by specialty.

Expected retirement based demand

The methodology used to estimate retirements is known to be theoretically false but has been shown to be accurate as a proxy in practice. It should be noted that most “retirements” go unnoticed and occur as resignations from the WA specialist workforce at younger ages.

Expected growth in service based demand.

This is the most accurate, but least visible, component of this graphic series; calculated utilising WAB modelling. Further information is provided in appendix 2.

Many of WA’s specialist workforce issues, particularly shortfalls, stem from historical ad hoc allocation of vocational training numbers at specialty level rather than a whole of health approach to medical workforce planning.

With the SWCP informing the whole of health approach to registrar workforce planning there should be an improvement in training capacity and an optimisation of funded vocational training positions to match WA’s future workforce requirements. It should however be noted that those interventions will have minimal impact to 2021 due to the duration of medical vocational training, therefore in the short-to-medium-term any shortfall in specialists will need to be met from interstate or overseas.

A graphical representation is provided in the profiles in section 2b for each specialty.

Key findings

- Vocational training throughput was estimated as being insufficient to cover expected growth in demand and/or retirements in 33 of the 48 specialties.
- 8 of 10 surgical specialties were estimated to have insufficient trainee throughput to meet growth in demand.
- Vocational training throughput was estimated to be near ideal for two specialties (infectious diseases and medical oncology).
- 13 specialties were estimated to be producing trainees in excess of projected workforce requirements.
Demand, supply and shortfall risk assessments

The SWCP provides specialty specific demand, supply, shortfall and shortfall risk assessment estimates for 2015 and projections for 2021 and 2025.

Demand figures were calculated for each specialty using the WAB demand model. Supply figures were ascertained utilising the supply model. With projected levels of demand and supply established for each specialty, shortfalls were estimated and a standardised risk assessment methodology was applied to ascertain the level of risk shortfall.

The following sections provide demand, supply, shortfall and shortfall risk assessments for the WA medical workforce as a whole (public and private sectors), the public sector, and the private sector, respectively.

WA risk assessments

This section presents the data and analysis for the total WA specialist workforce (public and private sectors). Specialty-specific information on WA demand, supply and shortfall risk assessments are provided in the following appendices:

- Appendix 14: A table of WA supply estimates for 2015 (including the number of specialists, number of trainees, vocational training program length and graduates per year) and projected supply for 2021 and 2025 (including projected retirements and new specialists).
- Appendix 16: A table of WA supply, demand and shortfall estimates for 2015 and projections for 2021 and 2025.

A graphical series comparing estimated and projected supply and demand for each specialty is provided in the profiles in section 2b.

Key findings

- The specialties that did not have estimated shortfalls in 2015 or projected shortfalls in 2021 and 2025 due to sufficient vocational trainee throughput are listed in table 6. These specialties, where supply is equal to or greater than demand, have a low shortfall risk assessment.
- The remaining specialties have a low (supply ≥ 90% demand), medium, high or critical risk shortfall assessment depending on their shortfall proportion. Further information is provided in appendix 2.
- A list of high and critical risk specialties by year of estimation/projection and partition is included in table 7.
Table 6. Specialties without estimated/projected shortfalls

<table>
<thead>
<tr>
<th>2015</th>
<th>2021</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Anaesthesia</td>
<td>▪ Anaesthesia</td>
<td>▪ Clinical Pharmacology</td>
</tr>
<tr>
<td>▪ Dermatology</td>
<td>▪ Clinical Pharmacology</td>
<td>▪ Emergency Medicine</td>
</tr>
<tr>
<td>▪ General Medicine*</td>
<td>▪ Emergency Medicine</td>
<td>▪ General Medicine*</td>
</tr>
<tr>
<td>▪ Haematology</td>
<td>▪ General Medicine*</td>
<td>▪ Geriatric Medicine</td>
</tr>
<tr>
<td>▪ Infectious Diseases</td>
<td>▪ Infectious Diseases</td>
<td>▪ Infectious Diseases</td>
</tr>
<tr>
<td>▪ Medical Administration</td>
<td>▪ Intensive Care Medicine</td>
<td>▪ Intensive Care Medicine</td>
</tr>
<tr>
<td>▪ Occupational and Environmental Health Medicine</td>
<td>▪ Medical Administration</td>
<td>▪ Medical Administration</td>
</tr>
<tr>
<td>▪ Plastic and Reconstructive Surgery</td>
<td>▪ Medical Oncology</td>
<td>▪ Medical Oncology</td>
</tr>
<tr>
<td>▪ Public Health Medicine</td>
<td>▪ Neonatal and Perinatal Medicine</td>
<td>▪ Neonatal and Perinatal Medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Occupational and Environmental Health Medicine</td>
<td>▪ Occupational and Environmental Health Medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Paediatric Medicine</td>
<td>▪ Paediatric Medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Palliative Care medicine</td>
<td>▪ Palliative Care medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Public Health Medicine</td>
<td>▪ Public Health Medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Rehabilitation Medicine</td>
<td>▪ Rehabilitation Medicine</td>
</tr>
<tr>
<td></td>
<td>▪ Sport and Exercise Medicine</td>
<td>▪ Sport and Exercise Medicine</td>
</tr>
</tbody>
</table>

* General medicine supply based on headcount has a low risk shortfall identified in 2015, 2021 and 2025 but there is an undersupply in general medicine based on FTE. General medicine specialists are in strong demand across WA and there are high risk shortfalls in most rural locations. General medicine trainees are also more likely to be dual training and may not necessarily practice in general medicine upon qualification.

- The contribution to service delivery by registrars and IMGs was not factored into estimations/projections.
### Table 7. High and critical shortfall risk specialties 2015, 2021 and 2025.

<table>
<thead>
<tr>
<th>Surgical</th>
<th>2015 (estimated)</th>
<th>2021 (projected)</th>
<th>2025 (projected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Critical</td>
<td>High</td>
<td>Critical</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td></td>
<td>General Surgery</td>
<td>Cardiothoracic Surgery</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td></td>
<td>Paediatric Surgery</td>
<td>Neurosurgery</td>
</tr>
<tr>
<td>Vascular Surgery</td>
<td></td>
<td>Urology</td>
<td>Otolaryngology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vascular Surgery</td>
<td>Plastic and Reconstructive Surgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core support services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Medicine</td>
<td>Pathology</td>
<td>Medical Imaging</td>
<td>Pathology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction Medicine</td>
<td>Clinical Pharmacology</td>
<td>Clinical Genetics</td>
<td>Cardiology</td>
</tr>
<tr>
<td>Clinical Genetics</td>
<td>Rheumatology</td>
<td>Endocrinology</td>
<td>Endocrinology</td>
</tr>
<tr>
<td>Gastroenterology and Hepatology</td>
<td></td>
<td>Gastroenterology and Hepatology</td>
<td>Gastroenterology and Hepatology</td>
</tr>
<tr>
<td>Immunology and Allergy</td>
<td></td>
<td>General Practice</td>
<td>General Practice</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td></td>
<td>Nephrology</td>
<td>Nephrology</td>
</tr>
<tr>
<td>Rehabilitation Medicine</td>
<td></td>
<td>Obstetrics and Gynaecology</td>
<td>Respiratory and Sleep Medicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychiatry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Radiation Oncology</td>
<td></td>
</tr>
</tbody>
</table>

- The contribution to service delivery by registrars and IMGs was not factored into estimations/projections.

Although the total number of critical and high risk specialties is similar to SWCP 2013, the difference between supply and demand (i.e. the level of shortfall) has increased significantly since 2013 for some specialties.

The following specialties have a worse shortfall percentage risk (supply as a proportion of demand) in 2015: cardiothoracic surgery (32%), rheumatology (37%), neurosurgery (48%), ophthalmology (52%), and otolaryngology (56%), suggesting these specialties should be priorities for intervention to decrease shortfall levels.

Projections indicate that without intervention 15 specialties will show no increase in specialist numbers by 2025 despite increasing demand, including eight of 10 surgical specialties, the medico-surgical specialties, and pathology, addiction medicine, immunology and allergy, neurology and rheumatology.

Detailed information by specialty can be found in the specialty profiles in section 2b.
WA public sector risk assessment

This section presents the data and analysis for the WA Health specialist workforce only. Specialty-specific information on public sector demand, supply, shortfalls and risk assessments is provided in the following appendices:

- Appendix 17: A table of public sector supply estimates for 2015 (including the number of specialists, number of trainees, vocational training program length and graduates per year) and projected supply for 2021 and 2025 (including projected retirements and new specialists).

**Key findings**

- Retirements are expected to exceed the number of vocational training graduates in some specialties.
- Despite growth in demand increasing for all specialties, there is a projected decrease in public sector specialist numbers by 2025 for 19 specialties.
- It is projected that without intervention eight of the 10 surgical specialties and the 2 medico-surgical specialties will have fewer specialists in 2025 than in 2015.
- An additional 10 specialties show minimal, or no, increase in specialist numbers between 2015 and 2025 with supply essentially flat-lined for the next decade.
- In the public sector 2 critical risk and 7 high risk specialties were identified in 2015.
- Without intervention in the form of increased vocational training numbers and additional funded public sector specialist positions, it is projected that there will be 22 critical risk and 6 high risk specialties by 2025, with 13 specialties indicating supply at less than 60% of demand. Critical risk shortfalls of 70% or below imply that without intervention the workforce is in danger of being unsustainable and the continued provision of those services may be impacted.
- For some medical specialties a critical risk shortfall may result in expensive cross-border referrals.
- The following 8 specialties are projected to have supply at less than 60% of demand within the next five years (i.e. by 2021); cardiothoracic surgery, neurosurgery, otolaryngology, paediatric surgery, immunology and allergy, ophthalmology, radiation oncology and rheumatology suggesting these specialties should be priorities for intervention to decrease shortfall levels.
- Specialties that are projected to become critical risk between 2021 and 2025 are addiction medicine, immunology and allergy, obstetrics and gynaecology, ophthalmology, pathology, psychiatry, urology and vascular surgery.
- The 2015 estimates and projected 2021, 2025 shortfalls and risk assessments are worse in the public sector than for WA Statewide. Two interrelated reasons for this are:
  - The specialty specific age distributions of specialists in the public sector are older than in the private sector, and there are a disproportionately greater number of retirements expected in the public sector over the next decade. In some specialties employment opportunities for younger specialists are limited by older specialists remaining in the workforce.
  - Budgetary pressures may have impacted the retention of newly qualified or younger specialists in the public sector.
**WA private sector risk assessment**

This section presents the analysis for the private sector specialist workforce only. Specialty-specific information on private sector demand, supply, shortfalls and risk assessments is located in the following appendices:


In general, the private sector shortfall risk assessments were similar to those of the public sector but in private sector dominant specialties, including the surgical and medico-surgical specialties (ophthalmology and obstetrics and gynaecology) higher risk will occur earlier in the public sector than the private.

**Key findings**

- In 2015 there were 2 specialties at critical risk (immunology and allergy and rheumatology) and 7 high risk specialties in the private sector.
- In 2021 there will be 5 specialties at critical risk (cardiothoracic surgery, neurosurgery, otolaryngology, pain medicine and rheumatology) and 11 high risk specialties.
- General practice is a private sector dominant specialty that is projected to reach high risk in 2021. Given it is high volume specialty this may have a significant impact on service delivery.
- In 2025 there will be 13 specialties at critical risk and 8 high risk specialties.
Specialist to population ratios
Distributional inequality has been identified as a key challenge for WA. One measure of medical workforce availability by location is SPR which is calculated by dividing the estimated population by the number of specialists and expressing the result as a rate per 100,000 of population.

National crude specialist to population ratios
To support a comparison of WA’s specialist workforce with that of other states and territories, specialist numbers published by AHPRA were used by MWB in June 2015 to produce the Australia wide Crude SPR series\textsuperscript{22}. The AHPRA data includes all specialists registered with qualifications in a specialty, but they may not necessarily be ‘active and practising’ in the workforce.

WA’s Crude SPR data is not an SWCP output and is provided for comparative purposes only.

\textbf{Crude specialist to population ratios key findings}
A comparison of WA’s Crude SPR data with that of other states and territories from June 2015 indicated:

- WA was above the national average in 6 of 48 medical specialties.
- WA was below the national average in all 10 surgical specialties.
- WA had the lowest SPR in Australia for general surgery, endocrinology, general medicine, general practice, intensive care medicine, nephrology, radiation oncology, and rehabilitation medicine.
- WA SPRs were generally only above those of the NT. WA had higher SPRs than NT for 32 of 48 medical specialties.
- WA had lower SPRs than Tasmania for 32 of 48 medical specialties, including 9 of the 10 surgical specialties.
- A comparison of WA’s Crude SPR data from June 2014 and June 2015 indicated:
  - In a majority of specialties, SPRs decreased between 2014 and 2015, meaning there were proportionally less specialists available in WA to meet the health care needs of the population in 2015 than in 2014.
  - For the surgical specialties, SPR had decreased marginally. This is important when the role of the surgical specialties as a high revenue earner under ABF/M is considered.
  - For the medical specialties, SPR had decreased significantly.
  - For the core support service specialties, SPR remained stable.

Further information on WA crude SPR data sources and data considerations are provided in appendix 3. The SPR graphical results are also located in the specialty profiles in section 2b.

Interregional specialist to population ratios
Specialty specific SPRs by WA rural health region and metropolitan population division have been used to quantify distributional inequity and identify gaps in health service delivery across WA.

SPR’s in this section were calculated using the WA interregional comparison model developed by MWB. The model utilises geographic information from the Australian Statistical Geography Standard Volume 1 – Western Australia Maps (July 2011), population data from the Australian Bureau of Statistics (ABS), and validated SWCP 2015 specialist workforce data. This is a SWCP output.

Further information on modelling is provided in appendix 10.

\textsuperscript{22} Non-validated and non-adjusted.
Interregional metropolitan SPRs are important in identifying distributional inequity across WA’s metropolitan locations. Analysis is provided for the metropolitan population divisions (subregions) of Perth (Perth Inner, Perth North East (NE), Perth North West (NW), Perth South East (SE) and Perth South West (SW)) and Mandurah. Information on Perth’s subregions and exclusions is provided in appendix 10.

Appendix 11 provides the following information by specialty:

- Table 18: A headcount of metropolitan specialists by principal place of practice
- Table 19: The SPR of each metropolitan subregion and in total, expressed as specialists per 100,000 of population.
- Figure 391: A graphic series comparing metropolitan SPRs by subregion, total Perth, total north and south, and total metropolitan.

### Key findings

- Metropolitan SPR’s indicate where hospitals (and medical specialists) are located rather than where the population may reside.
- Perth Inner SPRs are exceptionally high, meaning the smallest resident population has access to the most medical specialist services. For some specialties the principal place of practice for the entire specialist workforce is within this subregion. Perth Inner contains most of the major metropolitan hospitals (public and private) and is the northern Perth hub for medical specialist activity.
- Perth SW consistently has the second highest SPR by specialty and is the southern Perth hub of medical specialist activity.
- Perth NE, the more populous Perth NW, and Perth SE have relatively few specialists and low SPRs, but most of the population is within close proximity to the north or south medical specialist hubs. Hospitals in these three regions (outer-metropolitan hospitals) are recipients of significant VMP specialist services.
- Mandurah includes Peel Health Campus and is part of the South Metropolitan Health Service. Mandurah’s SPR is indicative of a large rural hospital with resident specialist services restricted to the minimum subset of specialties expected to be present in a rural location. Mandurah is a recipient of significant VMP specialist services.
**Rural**

The rural medical workforce is strongly general practice-oriented with resident specialists mostly made up of the following specialties; anaesthesia, emergency medicine, general medicine, paediatric medicine (general paediatrics), general surgery, obstetrics and gynaecology and psychiatry, with principal place of practice coinciding with the location of major regional referral hospital(s). Principal place of practice understates the significant volume of VMPs providing services in the rural health regions.

It should be noted that many procedural GP’s provide valuable services at rural hospitals that might otherwise be provided by other resident specialists or VMPs.

SPRs are provided for the following seven rural health regions; Kimberley, Pilbara, Midwest, Goldfields, Wheatbelt, Great Southern and the South West. Appendix 12 provides the following information by specialty:

- Table 20: A headcount of rural specialists by principal place of practice.
- Table 21: The SPR of each rural health region and in total, expressed as specialists per 100,000 of population.
- Figure 392: A graphic series comparing SPRs by rural health region, total rural and WA. Procedural GP SPRs have been included for anaesthesia, obstetrics and gynaecology and general surgery.

**Key findings**

- A comparison of WA’s rural and metropolitan SPRs indicates that rural SPRs are lower for all specialties.
- Only general medicine SPRs are at a comparable level (2.83 per 100,000 population for metropolitan and 2.76 per 100,000 population for rural).

*Note: For more information on the rural workforce please refer to WACHS and Rural Health West.*
Future SWCP expansion and improvements
To make investment for a high quality, cost efficient health system, workforce projections and modelling methodologies must be regularly updated and improved. The SWCP 2015 data collection, validation and analysis process, identified a number of potential areas for inclusion in future reports. The following recommendations will be reviewed for the next SWCP.

Developing a highly skilled, adequately supplied, medical workforce is fundamental to delivering high quality and effective health care. Significant demographic shifts affecting supply and demand support the need for system-wide strategic medical workforce planning moving forward.

Expansion and improvements

1. Annual analysis of SWCP data
The validation of SWCP 2015 data identified an unusually high (non-seasonal) number of specialists employed at 30 September 2015 were no longer employed in WA by March 2016, possibly due to the WA public sector employment freeze and commissioning of the SJOG Midland Public Hospital which both occurred in the interim.

The impact of this movement of the workforce is not captured in the 2015 report.

SWCP data is accurate at the point in time in which it was collected. The benefits of an annual rather than biennial SWCP analysis include:

- The most recent and best quality data are available for medical workforce planning;
- The ability to capture personnel that arrive and leave WA within the two year period, particularly IMGs; and
- Improved understanding of the impact of structural changes and events on the medical workforce.

It is recommended that SWCP data is collected and analysed annually, and formally reported every two years; starting with the preparation of a Draft Interim SWCP Report for 2016 and the biennial MW Report for 2017.

2. Expand SWCP modelling
The SWCP currently uses a static model which assumes continuation in the number and characteristics of medical practitioners, self-sufficiency in that WA’s future specialist workforce is provided through WA vocational trainees, and retirement patterns (supply). This model will be the baseline for the development of a dynamic model in 2016, to provide improved workforce projections based upon multiple supply and demand scenarios.

A dynamic model providing different scenarios based on variables, such as; the impact of IMGs, service delivery by vocational/non-vocational workforce, chronic conditions, changing models of care, role substitution, simulation training and morbidity and mortality may provide a more realistic impact of changes which may occur in the future.
Data notes
Further information on data sources and considerations are provided in appendix 1, and data modelling are provided in appendix 2.

Changes from SWCP 2013
A number of changes recommended at the conclusion of SWCP 2013 have been integrated into the SWCP 2015. Key changes include:

2013
- Paediatric medicine did not include neonatal medicine, paediatric emergency medicine and paediatric medicine physician subspecialties in 2013. These were included within other specialties or reported as a specialty in their own right. Estimates and projections were for a reduced subset of the paediatric medicine specialty.
- Pathology did not include haematology and many immunology, chemical pathology and other pathology personnel who were also physicians in 2013. These were included within other specialties or reported as a specialty in their own right. Estimates and projections were for a reduced subset of the pathology specialty.

2015
- GP data was sourced for medical workforce planning and analysis in 2015, acknowledging general practice vocational trainees require placements within WA Health hospitals, and specialist GPs provide services to both public and private hospitals, particularly in rural and remote WA.
- All paediatric medicine and pathology subspecialties have been included in 2015. Specialties such as neonatal medicine and haematology (which have been included in the paediatric medicine and pathology counts, respectively) are reported twice but not double counted. Similarly, for immunology and allergy medicine, as an example, if a specialist is both an immunology and allergy physician and an immuno-pathologist they will be reported in both specialties but if they only practice in one specialty they will be counted in that specialty. This preserves the integrity of each specialty.
- Radiology has been replaced by the term ‘medical imaging’, and nuclear medicine physicians have been reported separately.
- Oral and maxillofacial surgery has been included in 2015.

Headcount and full-time equivalent data
In terms of analysing the medical workforce, headcount data is used more often than FTE data if providing information on a Statewide and medical specialty/subspecialty specific level, although the utilisation of productive FTE data is generally preferred, if available. Productive FTE is FTE attributed to earnings codes rolling up to the ordinary or overtime application groups, which relate to time spent performing the duties of an employee’s role.

In WA, good quality public sector aggregate FTE data is available from the WA Health Human Resource Information System (HRIS) data warehouse, and other WA Health datasets in the form of established/accredited positions for specialists and registrars, but inconsistencies in the allocation of specialists by specialty make it unsuitable for specialty medical workforce planning. At the medical practitioner level, the occupant’s qualifications and specialty of practice often do not match the
standardised medical position title, rendering the specialty of practice (specialist) or trainee status (registrar) inaccurate. Private sector FTE data is not available.

At present the SWCP provides reliable and validated WA specialty specific headcount data. It should be noted that interpretation of headcount data and FTE data can lead to conflicting outcomes, typically in medical specialties that offer dual-training (e.g. general medicine and another discipline such as endocrinology).

Specialty groupings
For the purposes of analysis, in some instances the 48 specialties included in SWCP have been collated into the following three specialty groupings:

- Surgical partition or surgical specialties: the ten surgical specialties.
- Core support services: anaesthesia, pain medicine, emergency medicine, medical imaging and pathology.
- Medical partition: all medical specialties. General practice has been included under the medical specialties in most tables located in the appendices, but GP data is excluded from aggregate totals unless specified.
- ‘Medico-surgical partition’ is sometimes utilised to identify those partition specialties that have a surgical aspect i.e. obstetrics and gynaecology and ophthalmology.

Specialist unknowns
Of the 35 unknown specialists that were aged under 45 years, 26 were no longer registered on AHPRA and are most likely early retirements or have relocated overseas; 9 are WA registered and are early retirements, interstate or overseas departures or not employed in clinical practice.
Stakeholder consultation

MWB has close strategic and operational links with a broad range of key stakeholders, including health services, individual hospital sites, private sector health service providers, specialist medical colleges and Australian Government agencies. Consultation amongst these stakeholders was undertaken in profiling the specialist workforce, the planning and implementation of programs, and the determination of key priorities for 2017/18.

In addition to undertaking its' core programs, MWB provided the secretariat for the following medical workforce committees in 2015/16:

- Clinical Workforce and Vocational Training Advisory Group (CVAG)
- International Medical Graduate Advisory Group (IMGAG)
- Medical and Dental Workforce Council (MDWC)
- WA Health Medical Education Training, Accreditation and Recruitment Committee (WA METARC)
- WA Health Medical and Dental Workforce Optimisation Executive Committee (OEC)

**Clinical Vocational Advisory Group:** considers issues relating to the training and management of the medical and dental clinical (specialist) workforce, and provides expert advice and recommendations on vocational training and clinical workforce management to the MDWC. In May 2016 a reconciliation of the Terms of References of the various medical workforce committees supported by MWB was undertaken and a duplication of scope issues was identified. As a result, the dissolution of CVAG was announced in June 2016.

**International Medical Graduate Advisory Group:** provides a forum for expert stakeholder consideration of IMG recruitment (including orientation), retention (including education), and supervision policies and processes in WA. The IMGAG membership agreed in June 2016 to rotate secretariat on an annual basis among members, and in July 2016 the secretariat functions were handed over to Rural Health West commencing September 2016 for 12 months.

**Medical and Dental Workforce Council:** provides expert advice to the Director General of the Department with respect to demand, supply, distribution, clinical placements and flexibility of the medical workforce, including the assessment of prevocational and vocational training, domestic medical graduates and IMGs. A list of presenters and topics is provided in the appendices.

**WA Health Medical Education, Training, Accreditation and Recruitment Committee:** reports to the Chief Medical Officer on issues and initiatives that relate to the management of prevocational and vocational education, accreditation and the recruitment of appropriate staff to relevant programs and positions.

**WA Health Medical and Dental Workforce Optimisation Executive Committee:** provides oversight and leadership with regard to WA Health’s medical and dental workforce by ensuring it supports WA Health’s strategic and business objectives through consideration of the optimal allocation and distribution of new specialist and vocational trainees from within current health service block funding, specifically in terms of newly available positions and conversion of positions due to retirement.
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABF/M</td>
<td>Activity Based Funding / Management</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AHPRA</td>
<td>Australian Health Practitioner Regulation Agency</td>
</tr>
<tr>
<td>AMC</td>
<td>Australian Medical Council</td>
</tr>
<tr>
<td>AN-SNAP</td>
<td>Australian National-Subacute and Non-Acute Patient (code)</td>
</tr>
<tr>
<td>AoN</td>
<td>Area of Need</td>
</tr>
<tr>
<td>AR-DRG</td>
<td>Australian Refined – Diagnosis Related Groups (inpatient code)</td>
</tr>
<tr>
<td>CMS</td>
<td>Curtin Medical School</td>
</tr>
<tr>
<td>COAG</td>
<td>Council of Australian Governments</td>
</tr>
<tr>
<td>CVAG</td>
<td>Clinical Workforce and Vocational Training Advisory Group</td>
</tr>
<tr>
<td>DRG</td>
<td>Diagnosis Related Groups</td>
</tr>
<tr>
<td>DWS</td>
<td>District of Workforce Shortage</td>
</tr>
<tr>
<td>ERP</td>
<td>Estimated Residential Population</td>
</tr>
<tr>
<td>FSH</td>
<td>Fiona Stanley Hospital</td>
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<tr>
<td>FTE</td>
<td>Full-Time Equivalent</td>
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<tr>
<td>GP</td>
<td>General Practitioner/s</td>
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<tr>
<td>HRIS</td>
<td>Human Resource Information System</td>
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<tr>
<td>HSP</td>
<td>Health service provider, formerly area health service</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>IHPA</td>
<td>Independent Hospital Pricing Authority</td>
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<tr>
<td>IMG</td>
<td>International Medical Graduate</td>
</tr>
<tr>
<td>IMGAG</td>
<td>International Medical Graduate Advisory Group</td>
</tr>
<tr>
<td>IRRP</td>
<td>Integrated Registrar Reform Program</td>
</tr>
<tr>
<td>IWSB</td>
<td>International Workforce Supply Bureau</td>
</tr>
<tr>
<td>MBA</td>
<td>Medical Board of Australia</td>
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<tr>
<td>MDWC</td>
<td>Medical and Dental Workforce Council</td>
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<tr>
<td>MPN</td>
<td>Medicare Provider Number</td>
</tr>
<tr>
<td>MSOAP</td>
<td>Medical Specialist Outreach Assistance Program</td>
</tr>
<tr>
<td>MTRP</td>
<td>Medical Training and Review Panel</td>
</tr>
<tr>
<td>MWB</td>
<td>Medical Workforce Branch</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>OCMO</td>
<td>Office of the Chief Medical Officer, Clinical Services and Research Division</td>
</tr>
<tr>
<td>OEC</td>
<td>WA Health Medical and Dental Optimisation Executive Committee</td>
</tr>
<tr>
<td>PGY1</td>
<td>Post Graduate Year 1 (intern)</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
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<tr>
<td>PGY2+</td>
<td>A Resident Medical Officer in their second or subsequent postgraduate year</td>
</tr>
<tr>
<td>PSP</td>
<td>Purchasing and System Performance Division</td>
</tr>
<tr>
<td>RMO</td>
<td>Resident Medical Officer</td>
</tr>
<tr>
<td>SPR</td>
<td>Specialist to Population Ratio</td>
</tr>
<tr>
<td>STP</td>
<td>Specialist Training Program</td>
</tr>
<tr>
<td>SWCP</td>
<td>Specialist Workforce Capacity Program</td>
</tr>
<tr>
<td>TTR</td>
<td>Teaching, training and research</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>URG</td>
<td>Urgency Related Groups (emergency triage code)</td>
</tr>
<tr>
<td>VMP</td>
<td>Visiting Medical Practitioner/s</td>
</tr>
<tr>
<td>WAB</td>
<td>Weighted Activity Based (demand model)</td>
</tr>
<tr>
<td>WACHS</td>
<td>WA Country Health Service</td>
</tr>
<tr>
<td>WA METARC</td>
<td>WA Health Medical Education Training, Accreditation and Recruitment Committee</td>
</tr>
<tr>
<td>WBA</td>
<td>Workplace Based Assessment</td>
</tr>
</tbody>
</table>
### Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area of Need (AoN)</strong></td>
<td>AoN is the mechanism by which public and private health service providers are enabled to meet gaps in service delivery by recruiting an IMG to an area of proven workforce shortage. The AoN determination process in WA has been delegated by the WA Minister for Health to the Chief Medical Officer, and is coordinated by MWB.</td>
</tr>
<tr>
<td><strong>Specialist/Consultant</strong></td>
<td>A medical practitioner with specialist registration with the MBA who is employed as a specialist. In this report the terms specialist and consultant are used interchangeably.</td>
</tr>
<tr>
<td><strong>Demand</strong></td>
<td>The estimated/projected number of specialists required to meet service delivery requirements at a point in time. SWCP demand is calculated using the WAB demand model to determine weighted volume of activity by specialty and average weighted volume of activity by specialist.</td>
</tr>
<tr>
<td><strong>The Department</strong></td>
<td>The Western Australian Department of Health.</td>
</tr>
<tr>
<td><strong>Excess</strong></td>
<td>Where the estimated/projected supply of specialists is more than sufficient to meet estimated/projected demand at a point in time.</td>
</tr>
<tr>
<td><strong>Generalist workforce</strong></td>
<td>Specialist medical practitioners whose primary vocation is general medicine, general surgery, paediatric medicine (general paediatrics) or general practice.</td>
</tr>
<tr>
<td><strong>Health service provider (HSP)</strong></td>
<td>Previously known as Area Health Services, at 1 July 2016 HSPs became separate, board-governed statutory authorities, legally responsible and accountable for the delivery of health services for their local areas and communities. There are five HSPs in WA; the Child and Adolescent Health Service, East Metropolitan Health Service, North Metropolitan Health Service, South Metropolitan Health Service and WA Country Health Service.</td>
</tr>
<tr>
<td><strong>Intern</strong></td>
<td>A medical practitioner with provisional registration with the MBA undertaking their first year of post-graduate medical training (PGY1).</td>
</tr>
<tr>
<td><strong>International Medical Graduate (IMG)</strong></td>
<td>A medical practitioner whose medical qualifications are from a medical school outside of Australia or New Zealand.</td>
</tr>
<tr>
<td><strong>International Workforce Supply Bureau (IWSB)</strong></td>
<td>The Department’s IWSB facilitates the overseas sourcing requirements and the inclusion of locally based workforce planning activities. IWSB operates in a globally competitive market and recruitment strategies for WA Health reflect the workforce shortfall projections received from employing health services.</td>
</tr>
<tr>
<td><strong>Junior doctors</strong></td>
<td>Interns, RMOs and registrars.</td>
</tr>
<tr>
<td><strong>Medical college</strong></td>
<td>A national specialist medical college that is accredited by the AMC to provide specialist medical training and continuing professional development programs.</td>
</tr>
<tr>
<td><strong>Medical graduate</strong></td>
<td>An individual who graduated from medical school.</td>
</tr>
<tr>
<td><strong>Medical practitioner</strong></td>
<td>An individual qualified in medicine who works as a doctor, including, but not limited to, interns, RMOs, registrars, fellows and specialists.</td>
</tr>
<tr>
<td><strong>Medical workforce</strong></td>
<td>Medical practitioners who are registered with the MBA and are employed and practicing in WA, including, but not limited to, interns, RMOs, registrars and specialists.</td>
</tr>
<tr>
<td><strong>Medico-surgical specialties</strong></td>
<td>Ophthalmology, and obstetrics and gynaecology.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>The area in and around central Perth, including the Western, inner Northern, inner Southern and inner Eastern suburbs. For the purposes of SWCP analysis, the term metropolitan also includes outer-metropolitan locations and Mandurah.</td>
</tr>
<tr>
<td>Outer-metropolitan</td>
<td>Perth’s outer suburbs (see Metropolitan).</td>
</tr>
<tr>
<td>Prevocational medical practitioner</td>
<td>An intern, RMO or registrar who is not part of a vocational training program.</td>
</tr>
<tr>
<td>Registrar</td>
<td>A medical practitioner registered with the MBA employed as a registrar. Can be vocational or non-vocational.</td>
</tr>
<tr>
<td>Resident Medical Officer (RMO)</td>
<td>A medical practitioner employed as a RMO in post graduate training (PGY2+) not performing the duties of a registrar.</td>
</tr>
<tr>
<td>Rural and remote</td>
<td>Regional, rural and remote locations of the WACHS.</td>
</tr>
<tr>
<td>Shortage</td>
<td>The estimated/projected supply of specialists is insufficient to meet estimated/projected demand at a point in time.</td>
</tr>
<tr>
<td>Shortfall</td>
<td>The difference between supply and demand estimates/projections.</td>
</tr>
<tr>
<td>Shortfall risk assessment</td>
<td>The risk assessment applied to a specialty based upon the level of shortfall identified. Shortfall risk assessments range from low (excess or supply ≥ 90% demand) to critical (supply &lt; 70% of demand). The potential adverse consequences of the risk shortfall increase with each risk level.</td>
</tr>
<tr>
<td>Specialist/specialist</td>
<td>A medical practitioner who has specialist registration with the MBA. In this report the terms specialist and specialist are used interchangeably.</td>
</tr>
<tr>
<td>Specialist medical college</td>
<td>A national specialist medical college that is accredited by the AMC to provide specialist medical training and continuing professional development programs.</td>
</tr>
<tr>
<td>Specialist to population ratio</td>
<td>Number of specialists per 100,000 of population</td>
</tr>
<tr>
<td>Specialist workforce</td>
<td>Vocational registrars and specialists who are employed in a specialty discipline in WA.</td>
</tr>
<tr>
<td>Specialty</td>
<td>A medical discipline formally recognised by the MBA. 48 specialties have been included in the SWCP 2015.</td>
</tr>
<tr>
<td>Sub-specialty</td>
<td>A narrow field of specialisation within a particular specialty.</td>
</tr>
<tr>
<td>Supply</td>
<td>The estimated/projected number of specialists available to meet demand at any point in time. SWCP projected supply is calculated using a ‘stock and flow model’, identifying the number of specialists in the current time period, adding the anticipated number of vocational trainees graduating in the next time period, and subtracting the number of specialists expected to retire in the next time period.</td>
</tr>
<tr>
<td>Specialist Workforce Capacity Program (SWCP)</td>
<td>A program undertaken by MWB to develop a cross-sectoral capacity map of specialist medical services across the WA health system at a point in time. Through the SWCP, the provision of supply and demand estimates and projections across specialties are used to inform the development of long-term sustainability in the WA health system.</td>
</tr>
<tr>
<td><strong>Vocational trainee</strong></td>
<td>A registrar in an accredited medical college training program determined by the specialist medical college. Completion of the training program will enable progression to specialist level.</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Vocational training pipeline</strong></td>
<td>The training pathway from prevocational medical practitioner (intern/RMO), to vocational trainee (registrar), to specialist (specialist).</td>
</tr>
<tr>
<td><strong>WA Health</strong></td>
<td>The public health sector in WA, including all HSPs and hospitals.</td>
</tr>
<tr>
<td><strong>Workplace-based assessment (WBA)</strong></td>
<td>An alternative pathway to sitting the AMC clinical examination for eligible international medical graduates on the standard pathway. The WBA program in WA is 12 months in duration and is coordinated by MWB.</td>
</tr>
</tbody>
</table>
Section 2b: Specialist Workforce Capacity Program 2015 specialty profiles
Specialty profiles overview

The Medical Workforce Branch, Office of the Chief Medical Officer, Western Australian Department of Health (the Department), undertakes the Specialist Workforce Capacity Program (SWCP) biennially to map Western Australia’s (WA) specialist medical workforce (specialist workforce) in the public and private sectors, to inform the development of supply, demand and shortfall risk assessment projections for the specialist workforce.

The SWCP 2015 specialty profiles present an analysis with recommendations and priorities for each of the 48 specialties.

SWCP 2015 data was captured as at 30 September 2015, and data sources included; Australian Health Practitioner Regulation Agency (AHPRA) regulatory database and Western Australian public health system (WA Health) public sector payroll and public and private hospital data collections. SWCP data incorporates active specialists only; meaning those that are registered to practise and engaged in clinical practice.

Information provided in the SWCP specialty profiles represents a snapshot in time and does not take into account variables such as the impacts of international medical graduate (IMG) recruitment, service delivery provided by registrars; increased training places; changes in service delivery needs (chronic health conditions); policy changes; burden of disease; measures of health risk; innovation, reform and/or changing models of care. Shortfalls presented are a guide only based on modelling conducted as part of the SWCP. Other approaches could yield different results.

Each specialty profile contains the following sections:

Workforce characteristics

This section describes the specialist workforce by specialty, age, sex, employment sector (private/public/both) and employment location (metropolitan/rural/both).

Age distribution sustainability

There is an assumption for SWCP projections that specialists retire at age 65 years. It is acknowledged that, in general, surgeons retire prior to 65 years of age. Any specialist at or over 65 years of age currently active is assumed to retire within the next 5 years, with equal probability for each year. SWCP age distributions are colour coded as follows:

<table>
<thead>
<tr>
<th>Sustainable in the short term</th>
<th>As risk of becoming unsustainable</th>
<th>Unsustainable</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the number of specialists in the younger age groups (&lt;40 years) exceeds the number of specialists aged in the older age groups (&gt;60 years); the workforce numbers will increase with potential to service future health demand from a growth in population or other health service demand factors.</td>
<td>If the number of specialists entering practice in the younger age groups (&lt;40 years) is similar to the number of specialists in the older age groups (&gt;60 years) then specialist numbers can only be sufficient to replace approaching retirements. There will be no growth in workforce volume to service future growth in demand.</td>
<td>If there is an insufficient number of young medical specialists (&lt;40 years) commencing practice, to replace retirements in the older age groups (&gt;60 years), the result can only be a reduction in the specialist workforce with danger of rapid depletion.</td>
</tr>
</tbody>
</table>

Gender breakdown

The SWCP identifies the specialist workforce by gender composition allowing comparison between specialties. This information is presented in the profiles in terms of percentage split between males and females, where applicable.
Gender and age distribution
Gender and age distribution are compared in the SWCP to identify trends. This information is represented graphically.

Employment sector
The SWCP identifies the specialist workforce by employment sector, including those that work only public or only private, and those working across both the public and private sectors to identify trends in changing workforce patterns. This information is presented in the profiles in terms of percentage split in all three sectors.

Employment location
The SWCP estimated the specialty specific composition of the resident WA workforce by principal place of practice. This information is presented in the profiles in terms of percentage split between the metropolitan and rural locations, and identifies the percentage of specialists that provide services across both locations.

It is acknowledged that principal place of practice understates visiting medical practitioners (VMPs) and GP proceduralists providing services in the rural health regions. Information on VMPs and general practitioner (GP) proceduralists is provided by specialty, where applicable, from Rural Health West publications including Western Australia’s General Practice Workforce Analysis Update23 and the Specialist Services in Rural Western Australia Gap and Equity Analysis Update 201624.

Demand and supply projections
This section identifies the factors that constitute supply and demand in the SWCP. Further information is provided in section 3: appendices.

Demand
Demand is determined by using a weighted activity based (WAB) demand model to determine weighted volume of activity by specialty and average weighted volume of activity by specialist.

The WAB model was used to estimate specialist demand by specialty for 2015 and projected specialist demand by specialty to the year 2025. The estimated growth in supply, measured by trainee throughput, was compared to growth in demand from service and retirements.

Demand for the general practice workforce is based on specialist to population ratios (SPR).

Supply
Supply is determined using a ‘stock and flow’ model, identifying the number of specialists in the current time period, adding the number of vocational trainees expected to graduate in the next time period, and subtracting the number of specialists expected to retire in the next time period. See figure 7.

It is important to note that the contribution to service delivery by IMGs was not factored into this report. Whilst it is acknowledged that IMGs may provide some specialist type services they are on limited registration and therefore not captured within the AHPRA specialist data set.

23 Rural Health West (2016), Western Australia’s General Practice Workforce Analysis Update: November 2015. Perth: Rural Health West
24 Rural Health West (2016), Specialist Services in Rural Western Australia Gap and Equity Analysis Update. March 2016. Perth: Rural Health West
Specialists

- The specialist workforce is measured by headcount and it is assumed that the validation results are accurate. Net migration from interstate and overseas is assumed to be zero for projections.

Vocational trainees

- Trainee throughput rate is the expected number of trainees successfully completing the training program per annum fixed at 2015 rates. It is assumed that all trainees studying in WA in 2015 will become part of the specialist workforce in WA.
- A retention rate is applied based on prior year average attrition rates for the specialty, ranging between 0.7 and 0.8.
- The assumption behind vocational trainee throughput may not apply to all specialties in WA. There are some variances in retention rates between specialties i.e. for general physician (general medicine) the training completion rate is around 37% nationally; the surgical completion rate will be higher than anticipated due to changes to the surgical education and training (SET) program. These variances will be incorporated into the SWCP 2016-2017 methodology.
- Length of time for a trainee to complete vocational training varies between trainees, however, the recommended time provided by the medical colleges is assumed to be the length of time taken to complete.
- Projections for 2025 are based on the most recent years' data with adjustment for course duration and historical pass rates by specialty.
- Vocational trainee numbers in WA in 2015 were sourced from the medical colleges. The vocational training numbers and attrition rate for general practice were sourced from the Medical Training Review Panel eighteenth report.

Risk assessment and shortfalls

The SWCP provides a shortfall estimate and shortfall risk assessment for each specialty. Shortfalls are the difference between the demand and supply estimates, and are generally understated. The following formula was used to determine the shortfall estimate for each specialty. See equation 1.

**Equation 1: shortfall estimate**

\[
\text{Shortfall estimate equals: } \frac{\text{supply of specialists}}{\text{demand for specialists}} \times 100\%
\]
Shortfall criterion
Risk assessment is based on the proportion of demand met by supply expressed as a percentage. See figure 8.

Figure 8: shortfall criterion

Note: selection of the cut-off values 70%, 80%, and 90% is based on the risk alignment of events and consequences experienced within the hospital setting.

National comparison
One measure of medical workforce availability by location is the SPR. SPR is calculated by dividing the estimated population by the number of specialists registered with AHPRA and expressing the result as a rate per 100,000 of population.

It should be noted that the SPR is not a SWCP output, and is used for comparative purposes only. A comparison of WA to the remainder of Australia using the AHPRA Annual Report 2014/2015, specialist registration by principal place of practice, released in June 2015, and the ABS – Estimated Residential Population, June 2015, is included.

Issues and priorities
This section provides a summary of the issues and workforce priorities identified through the SWCP consultation process as well as through local and national workforce planning, as indicated.

Expanded specialist reports
Expanded specialist reports will be developed as an extension of the specialty profiles, taking into consideration ongoing consultation with relevant stakeholders and providing the WA context to inform national strategic planning. This section provides recommended strategies to be further explored in the expanded specialist reports.

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Addiction medicine

Addiction medicine delivers service through various specialist alcohol and drug services and other providers that include hospitals, corrections services, private psychiatrists and general practitioners in a metrocentric environment where there is an increasing demand for specialty service, especially after hours.

Addiction medicine is a relatively new specialty, first recognised for inclusion in 2009 in the Australian-recognised medical specialties by the Australian Medical Council. Specialists in addiction medicine can undertake basic training with the Royal Australasian College of Physicians (RACP) or can complete advanced training in addiction medicine after attaining fellowship in anaesthetics, emergency medicine, general practice, internal medicine, paediatrics and child health, pain medicine, psychiatry, public health medicine and/or rehabilitation medicine. Dual fellowship is also an option within the RACP.

Workforce characteristics

At 30 September 2015 there were 13 addiction medicine specialists registered to practise and engaged in clinical practice in WA, of which 69% were male and 31% were female. The addiction medicine workforce had a median specialist age of 57 years, with 7.7% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 9 and 10.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and in the metropolitan area. See figures 11 and 12.
Demand and supply projections
In 2015, there were 3.5 vocational trainees in WA. To address projected growth in service demand and retirements, 2.0 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.93 specialists per annum will be sufficient to replace approaching retirements, but insufficient to address projected growth in service based demand. See figures 13 and 14.

Risk assessment and shortfalls
In 2015, there was a shortfall of 4 specialists, increasing to a projected shortfall of 6 and 11 specialists by 2021 and 2025, respectively. See figure 15.

National comparison
The number of addiction medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 16.
Issues and priorities

*Health Workforce 2025* did not include addiction medicine in the modelling due to addiction medicine being a relatively new specialty, however, workforce issues were identified and have been included in this profile:

**Recruitment and retention**
- A shortage of specialists in the metropolitan and outer-metropolitan region, with no specialists working in rural areas.
  - The lack of regional and metropolitan hospital specialist and clinical liaison services results in many patients not having their drug and alcohol problems identified and treated. Access to withdrawal treatment in the county is a particular problem.
  - Currently there are no addiction medicine positions in WA Country Health Service (WACHS) and no specialists in private practice outside the Perth metropolitan area.
- There are no established or funded public hospital specialist positions currently available in WA.
- New and more attractive Medicare item numbers will be available from 1 November.

**Training**
- Insufficient training numbers to cover forthcoming retirements.
- Insufficient funded accredited training positions.
- The perception of addiction medicine and the isolation from mainstream health are barriers to increasing numbers of vocational trainees.

**Workforce**
- A significant number of specialists expected to retire over the next five to 10 years which will halve the workforce.
- In comparison to most other jurisdictions WA has very few resources allocated to hospital based drug and alcohol services.

The current and projected shortages in the addiction medicine workforce have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.
Expanded Specialist Reports

Collaboration between the Department, the Mental Health Commission, the Departments Health Networks, the Australasian Chapter of Addiction Medicine, HSPs and specialty representatives is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Consider future service provision including support to develop a succession plan at HSP level to address expected retirements by increasing the number of addiction medicine specialists in line with the population base *National Drug and Alcohol Clinical Care & Prevention (DA-CCP)* planning model.
- Review of funding arrangements to identify opportunities to create at least one new specialist and one new registrar position at each of Perth’s metropolitan teaching hospitals, as well as increasing the number of public sector addiction medicine specialists employed at Next Step will ensure that much needed services are provided and will increase the exposure of medical students, interns and residents to addiction medicine and facilitate the recruitment of trainees.

**Training**

- Support to establish a minimum of 2 new funded, accredited training positions at Next Step.
- Support initiatives to attract junior medical officers by increasing exposure to the specialty through rotations and provision of Summary Sheets at the Medical Career Expo, and online on the Department’s website.

**Workforce**

- Provide support to strengthen service delivery by reviewing feasibility of reallocation of funding to hospital based drug and alcohol services; and increasing support to rural areas to benefit patients and as an attraction and retention strategy of specialists through:
  - Establishment of specialist-led drug and alcohol services at metropolitan tertiary hospitals
  - Establishment of specialist inpatient and outpatient services in rural locations such as Bunbury, Kalgoorlie, Albany, Geraldton, Port Hedland and Broome.
Anaesthesia

Anaesthetists provide a wide range of medical services and are part of multidisciplinary teams providing health care to patients. Anaesthetists may also undertake work in the fields of pain management and intensive care as well as resuscitation and the retrieval and transport of critically ill patients. Anaesthetists can specialise in practice based around patient groups such as paediatric anaesthesia and obstetric anaesthesia or surgery such as anaesthesia for cardiac or neurosurgery.

Workforce characteristics

At 30 September 2015 there were 462 anaesthesia specialists registered to practise and engaged in clinical practice in WA, of which 70% were male and 30% were female. The anaesthesia workforce had a median specialist age of 45 years, with 4.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 17 and 18.

The workforce is employed relatively evenly across the public and private sectors. There is a geographical imbalance between metropolitan and rural locations with 4% of specialists registering their principal place of practice as rural, and 3% of specialists registered as providing services to both metropolitan and rural locations. In rural areas of WA the anaesthesia workforce is supported by GP proceduralists. At 30 November 2015, there were 101 GP proceduralists regularly practising anaesthesia in Remoteness Area 2 to 5 locations, some of whom also practised general surgery and obstetrics. See figures 19 and 20.

Figure 17. Specialist age distribution sustainability

Figure 18. Specialist age and sex distribution

Figure 19. Specialist employment sector

Figure 20. Specialist employment location
Demand and supply projections
In 2015, there were 116 vocational trainees in WA. To address projected growth in service demand and retirements, 17.1 specialists will be required per annum to 2025. A vocational trainee throughput of 16.24 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 21 and 22.

Risk assessment and shortfalls
In 2015, there was a surplus of 42 specialists for anaesthesia projected to decrease to a surplus of 22 specialists by 2021 and projected to become a shortfall of 9 specialists by 2025. See figure 23.

National comparison
The number of anaesthesia specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 24.
Issues and priorities

Health Workforce 2025 identifies anaesthesia as one of the specialties that would be substantially affected by any moves to reduce immigration, noting that between 2001 and 2011 anaesthesia advanced training places increased by less than 50 percent. It was generally agreed that anaesthesia was sufficiently supplied to meet service demands, however, the distribution of the workforce was concerning.

Issues identified within the anaesthetic workforce include:

**Recruitment and retention**

- Retirement rates are lower than expected leading to decreased availability of positions and some specialists working part time in both the public and private sectors.
- This issue is not specific to WA; there are underemployed anaesthetists in other jurisdictions.
- Distribution in outer metropolitan and rural areas is inequitable.
- There is a decreased availability of work for GP anaesthetics in metropolitan areas.
- Anaesthesia is linked to surgical provision of services and is reliant on access to theatres.
- Coverage of on-call rosters is challenging.
- Declining numbers of anaesthetists providing anaesthetic services to children is impacting on service delivery in hospitals not dedicated to children (i.e. outer-metropolitan and rural centres).

**Training**

- Insufficient exposure to anaesthesia at junior doctor level impacts on interest in vocational training in the specialty.
- As the Australian and New Zealand College of Anaesthetists (ANZCA) accredits hospitals and not individual positions, all anaesthetic registrars can become an ANZCA trainee. HSPs determine the service needs. There is potential for conflict between the number of registrars currently employed in service provision, and the number of vocational trainees needed to meet long term workforce demand.
- Limited capacity of approximately 20 training positions per year in WA to meet training requirements, in particular in neurosurgery, thoracic, vascular, some paediatric and ophthalmology areas.
- The change in curriculum may extend the time to enter the training program.
- Increased teaching and training commitments may lead to greater requirements for clinical support time.
**Workforce**

- Infrastructure expansions are likely to cause an imbalance in the workforce.
- Concerns regarding the private sector include decreasing autonomy of clinical practice for experienced specialists and insufficient support for the increasing numbers of junior specialists unable to find positions in the public sector. There have been recent increases in theatre numbers in some private hospitals.
-IMGs occupying senior registrar and fellow positions tend not to be part of the long term anaesthesia workforce in WA.
- Anticipated shortage of anaesthetists in public hospitals in some subspecialty areas due to lead in time and post-fellowship training requirements.

Any change to the current surplus and future projected shortfall of specialists in the anaesthesia workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

**Expanded Specialist Reports**

The anaesthesia report\(^{27}\) was the second specialty report to be produced under the National Medical Training and Advisory Network's (NMTAN) subcommittee tasked with exploring the capacity for and distribution of medical training, including the geographic distribution of medical training and community needs. The key findings of the NMTAN report include:

- Approximately 10% of clinical anaesthetists also work in a specialty other than anaesthesia, most commonly intensive care, pain medicine and general practice.
- The workforce is in balance with potential to shift into oversupply if there is an increase in trainee numbers or if IMG recruitment is not appropriately managed.
- The workforce has potential to be redirected if required due to current underutilisation of FTE.
- More meticulous assessment of capability of IMGs to complete fellowship may reduce bottlenecks of partially comparable candidates.
- Training bottlenecks in particular rotations have eased due to changes to a competency based curriculum.
- Decentralisation of training to regional centres could impact on training completion due to case mix, volume and complexity of cases.

Key issues identified through stakeholder consultation by NMTAN include:

- Any further demands on clinical support time will impact on training.
- While trainee intake numbers could go up to accommodate graduate numbers in the system, the intake to the training program should not be driven by pressure or demand from medical graduates but with the aim of achieving balance.
- An increasing proportion of female trainees result in an increase in training duration due to family and maternity related reduced working hours. Any further reduction in working hours may affect trainees reaching the desired competence.
- Training programs must be flexible to support change in scope of practice with changing models of care.
- Trainee throughput may be reduced over time due to perceptions of low employment prospects.

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At a local level, collaboration between the Department, ANZCA, HSPs, the Department’s Health Networks and specialty representatives is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Training**
- Explore initiatives to provide additional support for trainees from rural backgrounds and to increase exposure to the specialty at junior doctor level to build a knowledge base and reduce training attrition rates. During the postgraduate years exposure at intern and senior resident medical officer level through critical care and perioperative medicine combinations and positions in regional hospitals would be beneficial.
- Support development of an integrated education plan including a review of the balance of vocational training positions and service positions to meet departmental rosters and clinical commitments under current models of care and the need for flexibility.
- Acknowledgment that there are no official dual training pathways recommended by ANZCA, however trainees may choose to undertake training in multiple specialities such as anaesthesia and intensive care medicine. ANZCA offers a post specialist qualification in pain medicine through the Faculty of Pain Medicine (FPM) that is open to medical students from all disciplines. The number of general practitioners trained in pain medicine has increased in recent years and FPM is encouraging more as they frequently manage patients experiencing chronic pain.

**Workforce**
- Provide support for education, training and research roles within anaesthetic departments.
- Consideration of ‘hub and spoke’ models of service delivery as a foundation for preserving professional skills, enabling integration of specialists and IMGs, and improving attrition and retention.
Cardiology

Cardiology is concerned with diseases involving the cardiovascular system and is a branch of internal medicine.

Workforce characteristics

At 30 September 2015 there were 82 cardiology specialists registered to practise and engaged in clinical practice in WA, of which 88% were male and 12% were female. The cardiology workforce had a median specialist age of 45 years, with 8.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 25 and 26.

The workforce was employed across both the public and private sectors. Although only 1% of specialists had a rural location as their principal place of practice, another 21% of specialists were registered as providing services to metropolitan and rural locations. Rural Health West facilitates cardiology specialists to visit and deliver services to rural communities in WA through the Medical Specialist Outreach Assistance Program (MSOAP). See figures 27 and 28.
Demand and supply projections
In 2015, there were 12 vocational trainees in WA. To address projected growth in service demand and retirements, 5.6 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 3.2 specialists per annum will not be sufficient to meet service and retirement based demand. See figures 29 and 30.

![Figure 29. Growth in service delivery based demand and retirement based demand versus trainee supply](image)

![Figure 30. Estimated supply and demand of specialists 2015-2025](image)

Risk assessment and shortfalls
In 2015, there was a shortfall of 8 specialists for cardiology, projected to increase to a shortfall of 18 and 24 specialists by 2021 and 2025, respectively. See figure 31.

![Figure 31. Shortfall estimates](image)

- Low in 2015
- Projected to be medium by 2021
- Projected to be high by 2025

National comparison
The number of cardiology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 32.
Issues and priorities
Health Workforce 2025 indicates that cardiology is one of the specialties perceived to be in adequate supply, with the main issue being workforce distribution.

Cardiology has undergone rapid changes over the last decade with new developments benefitting the non-invasive and invasive cardiology workforces. Specialisation of the workforce has led to some issues including:

**Recruitment and retention**
- De-skilling was identified as a growing concern, with some specialists undertaking supernumerary sessions at tertiary hospitals to maintain skills in specialised areas.
- There are work opportunities for specialists in generalised areas of cardiology; however, specialists with specialised skills may not have the skills required to provide suitable cover in non-tertiary settings.
- An ageing population is requiring increasing treatment of chronic conditions.

**Training**
- There is an imbalance within the cardiology workforce in WA. There are many specialised cardiology trainees in the tertiary-level specialties for interventional and electrophysiology which is unsustainable. However, the demand areas are in general cardiology and imaging cardiology, particularly in non-tertiary settings, but currently deemed of lesser interest by trainees.
- Trainees are able to complete any of the RACP divisional training programs in combination as dual training with some joint Fellowship programs with other medical colleges.

**Workforce**
- Activity based funding/management (ABF/M) funding models and affordable FTE funding models create tension between workforce needs and affordability.
- There is concern regarding the robustness of the governance structure and continued professional development (CPD) maintenance/monitoring for cardiologists with no public sector appointment.

Current and projected shortages in the cardiology workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce.
Expanded Specialist Reports

Collaboration between the Department, the RACP, HSPs, the Department’s Cardiovascular Health Network, and specialty representatives is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Explore opportunities to fund additional specialist FTE in the public sector.
- Explore opportunities to increase networking opportunities for specialists as a means of supporting retention to the specialty.

**Training**
- Support marketing to increase the attractiveness of less popular cardiology subspecialties as a career pathway and to communicate to junior doctors the workforce needs of the specialty, i.e. current and future specialists are needed in general cardiology and echo cardiology.
- Support for greater flexibility in training with a focus on working in teams and meaningful exposure to indigenous cardiovascular health.

**Workforce**
- Provide support for a balanced approach to workforce planning, taking into consideration funding models, models of care, and opportunities including:
  - Follow-up care by general practitioners.
  - Outreach clinics, lectures and telehealth facilities in regional and remote locations with support from tertiary centres.
  - The impact of technology and new interventions on workforce reform.
Cardiothoracic surgery
Cardiothoracic surgeons specialise in surgical procedures of the heart, lungs and/or the great vessels.

Workforce characteristics
At 30 September 2015 there were 12 cardiothoracic surgery specialists registered to practise and engaged in clinical practice in WA, of which all (100%) were male. The cardiothoracic surgery workforce had a median specialist age of 51 years, with 8.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 33 and 34.

The workforce was employed across the public and private sectors. There was a geographical imbalance between metropolitan and rural locations with no cardiothoracic surgery specialists identifying a rural location as their registered principal place of practice, and 8% of specialists registered as providing services to metropolitan and rural areas. See figures 35 and 36.

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**Figure 33. Specialist age distribution sustainability**

**Figure 34. Specialist age and sex distribution**

**Figure 35. Specialist employment sector**

**Figure 36. Specialist employment location**
**Demand and supply projections**

In 2015, there were no vocational trainees allocated to training positions in WA. To address projected growth in service demand and expected retirements, 1.3 new specialists will be required per annum to 2025. See figures 37 and 38.

**Risk assessment and shortfalls**

In 2015, there was a shortfall of 2 specialists, projected to increase to a shortfall of 8 and 13 specialists by 2021 and 2025, respectively. See figure 39.

**National comparison**

The number of cardiothoracic surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 40.
Figure 40. Crude specialist to population ratio

<table>
<thead>
<tr>
<th></th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>AUS-WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialists per 100,000 population</td>
<td>2.0</td>
<td>1.0</td>
<td>0.5</td>
<td>1.0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
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</tr>
</tbody>
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Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 modelled cardiothoracic surgery in the ‘other surgery’ group due to the small workforce numbers. Within this group cardiothoracic surgery was assessed as having no current perceived shortage, however, there was some concern regarding the average age, dependence on specialist IMGs and duration of the training program. Any changes to the workforce such as capped working hours or earlier retirement will further impact on the workforce.

Innovations in technology are rapidly changing the practice of cardiothoracic surgery and future cardiothoracic workloads may be influenced by changing models of care.

Identified issues include:

Recruitment and retention
- Insufficient public sector funded positions for new specialists which may limit interest from local graduates in pursuing a career in cardiothoracic surgery.
- The cardiothoracic surgery workforce is small and consideration should be given to succession planning in regards to the number of approaching retirements which will require replacement subject to changing models of care and service delivery.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons.

Training
- There were no trainees in cardiothoracic surgery, undertaking training in WA in 2015 when the SWCP 2015 supply and demand models were developed. The rationale for the lack of trainees was that there was only one accredited hospital during the period the South Metropolitan Health Service was undergoing a restructure. There are 2 cardiothoracic surgery trainees in WA in 2016, appointed after 30 September 2015 and not included in SWCP analysis. The Royal Australasian College of Surgeons (RACS) has indicated that one is a medical graduate from WA and may choose to stay in WA at the completion of training.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice

decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low.

- Selection to a vocational training position in cardiothoracic surgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

Current and projected shortages in the cardiothoracic surgery workforce have an impact on the specialty's ability to provide immediate service and future service, as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, the RACS, HSPs, the Department's Cardiovascular Health Network and specialty representatives is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention/workforce**

- Consider future service provision including increasing the number of funded specialist positions available for graduating trainees and implementation of succession planning at a HSP level, incorporating projected influences resulting from changing models of care.
- Review potential to fill short to medium term workforce gaps by recruitment of IMGs, if required, or upskilling IMGs currently working in WA.
Clinical genetics

Clinical geneticists provide diagnostic services and genetic counselling for individuals or families with, or at risk of, genetic conditions. The Clinical Genetics Service of WA (CGSWA)\(^{29}\) is the sole provider of clinical genetic services in WA offering a multi-disciplinary service with the full range of diagnostic, educational and training programs relevant to the modern practice of medical genetics. Services are provided by clinical geneticists and counsellors working closely with DNA and cytogenetic laboratories and associated disciplines, such as diagnostic imaging and obstetrics.

Workforce characteristics

At 30 September 2015 there were 7 clinical genetics specialists registered to practise and engaged in clinical practice in WA, of which 57% were female and 43% were male. The clinical genetics workforce had a median specialist age of 49.5 years, with one specialist in the 65-69 age range and undertaking succession planning towards retirement. See figures 41 and 42.

The workforce was employed solely in the metropolitan public sector; however CGSWA provides a Statewide clinical service through the availability of metropolitan outpatient and rural outreach clinics. See figures 43 and 44.

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\(^{29}\) [http://www.kemh.health.wa.gov.au/services/genetics/]
Demand and supply projections
In 2015 there was one vocational trainee in WA. To address projected growth in service demand and retirements, 0.6 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.27 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 45 and 46.

Risk assessment and shortfalls
In 2015, there was a shortfall of 2 specialists, projected to increase to a shortfall of 2 and 3 specialists by 2021 and 2025, respectively. See figure 47.

National comparison
The number of clinical genetics specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 48.
Figure 48. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 did not undertake workforce modelling on clinical genetics due to the small workforce size, however issues were identified and are included below:

Recruitment and retention
- Given the recent rapid growth of knowledge in the field of clinical genetics, perceived barriers to recruiting specialists include:
  - the lack of support for research
  - the lack of a dedicated budget for genetic testing.
- Clinical genetics is a low volume specialty, therefore factors such as leave liability and retirements have a significant impact on the workforce and its ability to build supply capacity.

Training
- Insufficient vocational training positions are identified as a key barrier to the specialty being able to build workforce capacity and meet future service demand.

Workforce
- The size of the workforce is the main factor limiting future supply, including the capacity to train the future workforce.
- The number of average hours worked is high.
- There is expected to be an increased demand for service as knowledge of the role increases and available technology improves.
- National and international reports on professional standards of clinical genetics practice assert that 3 FTE clinical geneticists are required per million population for optimal provision of clinical genetic practice. These reports also recommend ratios of 2:1 up to 4:1 genetic counsellors and 1.5 FTE administrative staff per geneticist. The CGSWA provides a Statewide service and to meet the established benchmark and adequately supervise genetic counsellors and trainees approximately 8 FTE clinical geneticists are required to meet population needs (approximately 2.59 million).
- Clinical genetics has historically been a paediatric and obstetric based specialty. Contemporary clinical genetics reflects increasing knowledge and awareness of adult medicine, in particular familial cancer and inherited cardiac disorders resulting in a rapidly increasing demand for these services.
The improvement in genetic technology has made genetic testing more available and for a wider range of conditions. This, plus the increasing complexity of interpreting test results, has added to the increased workload within the specialty.

There is very limited scope in WA for clinical genetics private practice to absorb the increase in demand.

The gap between service demand and supply is resulting in increased waiting times for appointments with only the highest risk new patients and most critical follow up patients being given priority for appointments.

Current and projected shortages in the clinical genetics workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, Clinical Genetics Service of WA, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention/workforce**

- Review opportunities to increase the number of specialist positions to provide appropriate supervision and support for vocational trainees, meet professional standards and adequately supervise genetic counsellors. Clinical geneticists are essential to provide exposure and training in medical schools to prepare new doctors of all specialties to engage effectively with clinical genetics.
- Review incentives for recruitment and retention such as support for specialists to access continuous professional development and an increase in the number of administrative support positions which has not changed substantially in the past 15 years.
- Review opportunities to provide for further engagement in research through research grants. This is exemplified by the specialty’s current involvement in research, funded by the Lowitja Institute, to identify barriers to Aboriginal people accessing a broad range of genetic health services.

**Training**

- Review opportunities to increase the number of funded vocational training positions. The current vocational trainee position is partially funded by the Specialist Training Program (STP) on an annual basis, and sustainability of funding is not assured. The Australian Government is undertaking a review of STP, and WA Health has provided feedback. WA Health is supportive of a submission for clinical genetics. College support will be required.
Clinical pharmacology

Clinical pharmacology is a multidisciplinary science involving the relationship between drugs and humans. Clinical pharmacologists operate in an environment of changing models of care, with more patients requiring specialised high cost drugs and, in the public sector, these patients have a high demand and limited ability to pay.

Workforce characteristics

At 30 September 2015 there was only 1 male clinical pharmacology specialist registered to practice and engaged in clinical practice in WA, solely in the metropolitan public sector. See figures 49 and 50. The clinical pharmacology workforce has a median specialist age of 62 years, with no specialists aged over 65 years. See figures 51 and 52.
Demand and supply projections
In 2015, there was 1 vocational trainee in WA. To address projected growth in service demand and retirements, 0.4 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.53 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 53 and 54.

Risk assessment and shortfalls
In 2015, there was a shortfall of 2 specialists, projected to be in balance by 2021 and by 2025 there is a projected surplus of 1 specialist. See figure 55.

National comparisons
The number of clinical pharmacology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 56.

30 The current trainee will complete in 2019 with a vocational trainee commencing in mid-2016 expected to complete in mid 2021
Issues and priorities

Health Workforce 2025 did not generate projections for clinical pharmacology due to the small workforce size; however, issues were identified through consultation and have been incorporated.

The specialty is faced with a number of current issues including:

**Recruitment and retention**

- There is one specialist who is approaching retirement age and will be unable to provide full-time supervision until 2021, when the second trainee is expected to graduate from a joint clinical pharmacology/immunology program.

**Training**

- Most current clinical pharmacology work is undertaken ad hoc by medical specialists not trained in clinical pharmacology.
- The RACP requires completion of a series of core terms in clinical pharmacology, with an elective term component that would normally be completed in a second area of subspecialty. The majority of trained clinical pharmacologists therefore are dual specialty trained.
- The lack of a sustainable training model for clinical pharmacology was identified as the most significant factor likely to affect future workforce supply.
- Training positions are not defined and resourced. The current trainees are in ad-hoc positions in PathWest and Linear Clinical Research, which are accredited for limited terms. A planned training position in South Metropolitan Health Service has not eventuated. Without a funded training position trainees will not be retained. One trainee has already moved interstate for training security and certainty.

**Workforce**

- Drug regulatory work in WA is largely deputised to practitioners from other medical specialties, of which some have clinical pharmacology training. Consultative inpatient and outpatient clinical pharmacology services are largely non-existent in WA contrasting sharply with the situation that generally prevails elsewhere in Australia, the United Kingdom and Europe, where clinical pharmacology is active in consultative practice, direct patient management, internal drug use regulation and doctor training.
- There is unmet demand for clinical pharmacology services.
- The workforce is often dual trained which affects workforce counts.
Clinical pharmacology roles are likely to be expanded as complexity of care and complexity of medicines increases.

Increasing complexity of medicines policy and governance requiring expert technical advice on matters of public safety.

Increasing focus on personalised medicine and new technologies and the impact on providers.

Shortages in the clinical pharmacology workforce have an impact on the specialty’s immediate service delivery as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, HSPs, the Departments Health Networks and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Implementation of recruitment initiatives aimed at physicians qualified in other specialties that have an interest in clinical pharmacology and consideration of qualified interstate specialists.

**Training**

- Promotion of clinical pharmacology as a value adding service.
- Identify opportunities to implement vocational training initiatives such as:
  - increasing the number of funded vocational training positions
  - implementing conjoint training programs, e.g. general medicine and clinical pharmacology, haematology and clinical pharmacology, rheumatology and clinical pharmacology
  - applying for STP funding for vocational training positions.
- Support to continue involving clinical pharmacologists in undergraduate and postgraduate medical education.

**Workforce**

- Review opportunities to implement alternative models such as the development of networks of medical practitioners interested in medications management, and professional development and training programs in the area of clinical pharmacology.

- Review the specialist projections to accurate reflect the ‘actual’ workforce situation:
  - The accrual to specialist ranks over the next 3 years is zero and the average accrual over the next 5 years is 0.4 specialists per year. The supply/demand graph on Figure 42 should have 1 specialist 2016 – 2019, 1 specialist 2020 – 2021 (assuming retirement of the current specialist in 2019) and 2 specialists from 2022 onwards.
  - Assuming continued accrual at 0.4 per year and no attrition, supply might reach demand in 9 – 10 years (2025 – 2026).
Dermatology

Dermatologists specialise in the diagnosis, treatment and prevention of skin diseases and cancers of people of all ages. Training is undertaken with the Australasian College of Dermatologists (ACD), and further specialisation can be undertaken.

Workforce characteristics

At 30 September 2015 there were 42 dermatology specialists registered to practice and engaged in clinical practice in WA, of which 76% were male and 24% were female. The dermatology workforce had a median specialist age of 49.5 years, with 7.0% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 57 and 58.

The workforce was employed across the public and private sectors, although predominantly in the private sector. There was a geographical imbalance between metropolitan and rural locations with only 2% of specialists registering their principal place of practice as rural. Rural Health West facilitates dermatology specialists to visit and deliver services rural communities in WA through the MSOP. See figures 59 and 60.

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31 The Federal Government’s Rural Health Outreach Fund supports outreach services to eight locations in the Pilbara, Midwest, Wheatbelt, Southwest and Great Southern regions, with the number of visits per year ranging from 2 to 12.
**Demand and supply projections**

In 2015, there were 6 vocational trainees in WA. To address projected growth in service demand and retirements, 2.1 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.13 specialists per annum will be insufficient to replace approaching retirements, and meet demand. See figures 61 and 62.

![Figure 61. Growth in service delivery based demand and retirement based demand versus trainee supply](image)

**Figure 61. Growth in service delivery based demand and retirement based demand versus trainee supply**

**Figure 62. Estimated supply and demand of specialists 2015-2025**

**Risk assessment and shortfalls**

In 2015, there was a surplus of 4 specialists for dermatology, projected to become a shortfall of 6 and 9 specialists by 2021 and 2025, respectively. See figure 63.

![Figure 63. Shortfall estimates](image)

- Low in 2015
- Projected to be medium by 2021
- Projected to be medium by 2025

**National comparison**

The number of dermatology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 64.

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32 Consultation has identified 7 vocational trainees in 2015; 5 were full-time and 2 were part-time. There were 6 accredited training positions. All trainees were female.
Issues and priorities

Health Workforce Australia 2025 identified dermatology as a predominantly community-based specialty that is likely to have shortages due to insufficient funded training positions in the public sector, with projections demonstrating a projected imbalance. Imbalances across medical specialties can have a direct cost to the health system with supplier induced demand often existing where workforce supply exceeds demand.

Issues identified by the workforce include:

**Recruitment and retention**

- The increasing diversity of the workforce, including the number of women entering the profession, will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments. In 2015 all trainees were female.

- There is a growing trend towards specialist part-time employment. In addition, sub-specialists such as Mohs microscopic surgeons and cosmetic dermatologists may not necessarily provide general dermatology services, impacting upon adequately capturing full-time equivalency with respect to general services delivered.

- There is currently only one dermatologist located in rural WA.

**Training**

- IMGs applying for fellowship are assessed for their comparability to an Australian trained specialist. Those needing 12 months or less upskilling join the training program and complete the requirements under supervision. Those needing 24 months upskilling join the program as a third year registrar equivalent and must sit and pass all the final exams in 4th year. Any IMG needing more upskilling is deemed not comparable.

- Six training positions are insufficient for WA.
  - When registrars take leave or have time off-clinic for study, hospital clinics experience days where coverage is not ideal, leading to increased stress and high workloads for existing specialists and trainees.
  - Shared registrar positions are not ideal as shared on-call is difficult and there is lost time to travel.

- The closure of Fremantle Hospital and the restructured training program has impacted on clinic time and training.
There is limited public hospital inpatient work and a public outpatient model that has moved to the private sector in many hospital systems leading to few funded training positions in public hospitals. The STP program is having a positive effect on expansion into non-traditional settings.

Having a larger number of trainees than training positions is unusual.

**Workforce**

There are increasing demands from general practitioners particularly those in outer metropolitan or rural centres who are unable to access dermatology services to contact registrars for advice. This places undue demands on them particularly with the current workload. The proposed establishment of Tele-dermatology services through hospital clinics for rural and outer metropolitan centres may compound this issue.

As cosmetic services are not represented in Medical Benefits Schedule utilisation data, it is difficult to determine the proportion of time spent performing these procedures, compared with medical and surgical services, across the profession.

Cancer therapies, transplants and other medical interventions are creating dermatological side-effects. More effective dermatological interventions in chronic immunological disorders exist, but require interactions with other specialties such as genetics and gastroenterology. As technology has progressed, the need for dermatological service has increased placing added pressure upon the workforce.

There are increasing numbers of infectious disease, cutaneous oncology, immunology or paediatric services that require the ongoing multidisciplinary interaction with dermatology to maintain patient outcomes.

Broader community factors related to an ageing population and an increasing demand for skin cancer management, together with advances in technology, have resulted in the specialty working within changing models of care. This will need to be reflected in future projects.

The projected shortfall of specialists in the dermatology workforce will have an impact upon the specialty's ability to provide service and train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, the ACD, the Departments WA Cancer and Palliative Care Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Review opportunities to create additional new funded specialist positions and new clinics in public hospitals to encourage long term retention in the public system at consultancy level.
- Support ongoing funding to maintain rural dermatology services and support expansion of services. In many cases, these funds are insufficient to cover all out-of-pocket costs associated with providing rural services.
- Provision of support to create treatment options in other larger centres with links to hospitals and explore alternative outpatient models.

**Training**

- Review opportunities to establish of up to three new funded training positions to improve work conditions and encourage longer-term retention in the public system at the consultancy level, in turn positively impacting training capacity.
- Support applications through the provision of data and information for submission for funded training positions through the new STP expression of interest process, when available.
Explore options and support initiatives such as establishment of a Skin and Cancer Foundation and a centre of excellence which would potentially create further vocational trainee positions.

Provide continued support for trainees to accompany dermatologists on outreach services to allow them to experience the services provided and to continue mentoring these trainee registrars and encourage them to provide such services in future.

**Workforce**

Collaboration with key private sector stakeholders to:

- provide the foundation for nurturing ongoing partnerships
- support employment and vocational training
- address barriers to training in the private sector, including adequate exposure to complex cases often seen in private practice.

Provide support to continue funding hospital dermatology services to ensure that cases requiring multidisciplinary action (i.e., infectious disease, cutaneous oncology, immunology and paediatric services) continue to be seen and managed within a short time frame within the public hospital system.

Consideration in future workforce planning of the following:

- Head count is an unreliable measure of FTE. Explore methodologies for utilising FTE for the private and public sectors to replace, or in addition to, headcount. Headcount may be required to identify the additional numbers that may be required per FTE to meet service delivery demands, with the increasing number of females entering the workforce, and lifestyle factors favouring part time work and flexible work hours.
- Feedback to SWCP 2015 indicates that the WA workforce is currently undersupplied. Further review and consultation is required in the development of the Expanded Specialist Reports.
Emergency medicine

Emergency medicine specialists prevent, diagnose and manage acute and urgent aspect of illness and injury across all age groups. The Joint Training Program in Paediatric Emergency Medicine is a partnership between the Australasian College of Emergency Medicine (ACEM) and the RACP with fellowship of the relevant college achieved on completion of advanced training. Fellowship of both colleges requires additional training.

The emergency medicine workforce in Australia is viewed internationally as leading the way in efficient service delivery, and is acknowledged as having a teaching and training environment that is very attractive for specialists, trainees and IMGs. The workforce has expanded into many areas including the Royal Flying Doctor Service, St John Ambulance, administration, medical administration units, high dependency units, rural fly-in-fly-out, telemedicine/emergency telemedicine services and disaster-trauma services.

Workforce characteristics

At 30 September 2015 there were 199 emergency medicine specialists registered to practise and engaged in clinical practice in WA, of which 67% were male and 33% were female. The emergency medicine workforce had a median specialist age of 43 years, with no specialists aged over 65 years. See figures 65 and 66.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There is a geographical imbalance between metropolitan and rural locations with only 9% of specialists registering their principal place of practice as rural, although another 3% of specialists are registered as providing services to metropolitan and rural locations. See figures 67 and 68.

Figure 65. Specialist age distribution sustainability

Figure 66. Specialist age and sex distribution

Figure 67. Specialist employment sector

Figure 68. Specialist employment location
Demand and supply projections
In 2015, there were 148 vocational trainees in WA. To address projected growth in demand and retirements, 11.3 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 25.9 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 69 and 70.

Risk assessment and shortfalls
In 2015, there was a shortfall of 5 specialists for emergency medicine, but this is projected to become a surplus of 103 and 146 by 2021 and 2025 respectively. See figure 71.

National comparison
The number of emergency medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was above that of the rest of Australia shown in the figure below as AUS-WA. See figure 72.
Figure 72. Crude specialist to population ratio

<table>
<thead>
<tr>
<th>Country</th>
<th>Specialists per 100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>10</td>
</tr>
<tr>
<td>NSW</td>
<td>5</td>
</tr>
<tr>
<td>NT</td>
<td>10</td>
</tr>
<tr>
<td>QLD</td>
<td>5</td>
</tr>
<tr>
<td>SA</td>
<td>10</td>
</tr>
<tr>
<td>TAS</td>
<td>5</td>
</tr>
<tr>
<td>VIC</td>
<td>10</td>
</tr>
<tr>
<td>WA</td>
<td>5</td>
</tr>
<tr>
<td>AUS-WA</td>
<td>15</td>
</tr>
</tbody>
</table>

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 identified that emergency medicine is one of the specialties reliant on registrars for service delivery; hence, any moves to reduce immigration will impact this workforce. Emergency medicine is projected to have an imbalance which can have a direct cost to the health system. Issues were identified and have been included.

The specialty is faced with a number of current issues including:

**Recruitment and retention**
- Increasing part-time workforce and/or specialists working across more than one site.
- The increasing diversity of the workforce, including the number of females entering the profession (approximately 40% of all new specialists), will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments.
- Distribution issues with most emergency physicians located in major metropolitan areas.
- Models of care are increasingly requiring emergency departments to have some cover by Fellows of ACEM, creating workforce issues in regional areas.
- The impact of new models of service (i.e. four hour rule and telehealth).

**Training**
- Accreditation training standards were seen as a barrier to reform.
- An influx of new ACEM fellows in the next few years with few available positions due to a major timing mismatch. Trainees may look elsewhere for positions or seek careers in other areas.
- Dual training in emergency medicine and intensive care is available to ACEM and College of Intensive Care Medicine trainees. ACEM trainees can undertake other specialist pathways concurrently as long as they feel able to meet the requirement of both training programs.
- There are limitations to expanding training capacity including:
  - supervision availability and number of presentations in non-metropolitan settings; and financial models restrict expansion to the private sector, although the Emergency Medicine Program has helped address these issues.
  - competition for training posts/ rotations in emergency departments as trainees from other specialties require emergency department training rotations and the movement of emergency trainees between training programs, particularly across intensive care and anaesthesia.
  - high levels of IMGs requiring supervision.
Workforce

- An increasing number of non-clinical roles (including research and teaching) impacting availability for clinical service provision.
- Increasing demand for emergency department services, with challenging workloads and 24 hour shift-work coverage.
- Any change to current models of care (i.e. specialist delivered rather than specialist led) may influence future supply.
- There are imbalances within the emergency medicine workforce with some positions unfilled for lengths of time.
  - Tertiary services are largely static with increasing demand for services and pressure to reduce FTE at most sites.
  - Challenges to maintaining recruitment for outer metropolitan sites to cover roster gaps.
  - Major difficulties maintaining rosters in rural sites. Service is largely provided on a fly-in-fly-out basis, with some rural areas experiencing shortages.
  - Continual policy changes to models of care are disruptive.

Any change to the future projected surplus of specialists in the emergency medicine workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

Expanded Specialist Reports

Nationally, NMTAN are engaging all jurisdictions to address the projected future oversupply of the emergency medicine workforce. Consideration of factors influencing the supply/demand mismatch is required including the training pipelines, examination caps, workforce arrangements in urban and rural locations, levels of supervision, clinical and clinical support functions, accreditation standards and after hours work.

Collaboration between the Department, the ACEM, HSPs, the Departments Injury and Trauma Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Implement Statewide medical workforce planning to:
  - identify opportunities for attracting specialists to some difficult to staff areas in metropolitan, outer-metropolitan and rural locations
  - align training and IMG recruitment with workforce demand and projections
  - consider alternative models of care to cover rosters.
  - review and consider outcomes of national workforce reports regarding the projected oversupply of fellows in the future.

Workforce

The following workforce planning for the emergency medicine workforce is currently underway on a national level, in consultation with the Department.

- The ACEM is reviewing the accreditation standards for their revised specialist training program and addressing sustainability of the workforce.
- The Australian Government Department of Health is developing the Australia’s Future Health Workforce – Emergency Medicine report through the NMTAN’s Capacity and Distribution Subcommittee.
The Australian Government Department of Health is reviewing the Emergency Medicine Program introduced in 2010 to help meet four hour national targets for emergency treatment aimed at increasing the health system’s capacity to train emergency department specialists, nurses and support staff, as well as training general practitioners in outer suburban and rural areas where emergency medicine specialists are not always available. WA receives partial funding for 29 training positions through this program (Remote Area (RA)1 x 16; RA2 x 8.5; RA3 x 3.5; RA4 x 0.5 and RA5 x 0.5)\textsuperscript{33}. 

\textsuperscript{33} Remote Areas make up the Australian Standard Geographical Classification – Remoteness Areas (2006) classification system. RA1 - Major Cities of Australia; RA2 - Inner Regional Australia; RA3 - Outer Regional Australia; RA4 - Remote Australia; RA5 - Very Remote Australia. Workforce incentives are available for categories ranging between RA2 to RA5.
Endocrinology

Clinical endocrinologists provide services in general hospitals, ambulatory care and regional and rural services. Endocrinology work load is approximately half diabetes driven and half non-diabetes driven. Diabetes incidence / prevalence continue to increase with endocrinologists seeing slightly less diabetes patients but with increased severity of complications. Non-diabetes driven endocrinology is seeing a rapid increase in workload with disease management increasingly being pushed towards the outpatient setting.

Trainees in endocrinology with the RACP can undertake joint training in chemical pathology.

Workforce characteristics

At 30 September 2015 there were 32 endocrinology specialists registered to practise and engaged in clinical practice in WA, of which 69% were male and 31% were female. The endocrinology workforce had a median specialist age of 47 years, with 15.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 73 and 74.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There is a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, but 3% of specialists are registered as providing services to metropolitan and rural areas. Rural Health West facilitates endocrinology (adult and child) specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 75 and 76.
Demand and supply projections

In 2015, there were 11 vocational trainees in WA. To address projected growth in demand and retirements, 3.0 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.87 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 77 and 78.

**Figure 77. Growth in service delivery based demand and retirement based demand versus trainee supply**

**Figure 78. Estimated supply and demand of specialists 2015-2025**

Risk assessment and shortfalls

In 2015, there was a shortfall of 7 specialists projected to increase to 10 and 11 in 2021 and 2025 respectively. See figure 79.

**Figure 79. Shortfall estimates**

- Medium in 2015
- Projected to be high by 2021
- Projected to be high by 2025

National comparison

The number of endocrinology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 80.
**Issues and priorities**

Health Workforce 2025 identified that demand in the endocrinology workforce is likely to be underestimated as a significant amount of endocrinology work is outside of acute care so is unlikely to be accurately captured through Diagnostic Related Groups; and outpatient data is unlikely to be captured accurately. Additionally, demand is expected to increase due to the increasing prevalence and complexity of endocrine-related conditions such as diabetes.

Issues identified include:

**Recruitment and retention**

- Workforce shortages are aggravated by:
  - the increasing diversity of the workforce, including the number of females entering the profession, will require more medical practitioners (headcount) per FTE to meet service demand as practitioners seek part-time options or to better balance their work and life commitments
  - loss of some trainees to clinical biochemistry and other disciplines
  - inadequate Medicare rebates.
- Measures are needed to increase the attractiveness of private practice in endocrinology and diabetes.

**Training**

- It is essential that hospital outpatient clinics are maintained for training purposes as well as for patient access, and that the number of trainees is not reduced in the reconfiguration of teaching hospitals.
- Many general medicine trainees rotate into endocrinology which may falsely inflate training numbers.
- The main concern is trainee throughput. Two graduates per annum are ideal but there are insufficient positions available.
- There are better training opportunities available interstate in larger metropolitan satellite cities.
- There are no advanced training positions currently in the private sector.

**Workforce**

- Challenges implementing endocrinology service provision to outer metropolitan areas and rural locations taking into consideration funding mechanisms (much outpatient activity is not funded...
under ABF/M), inefficiencies of running a program across the various systems Statewide, cross border unity challenges and reliance on goodwill.

- The waitlist is over 12 months which is unacceptable and this unmet demand is not being captured.
- There are some shortages in rural areas although most of this workload is managed by general physicians or a few dual-trained endocrinology/general medicine physicians.
- In a situation of shortfall, the specialty faces a significant volume of approaching retirements.

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, HSPs, the Departments Diabetes and Endocrine Health Network and specialty representatives is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Review opportunities to increase specialist positions and expand endocrinology services to secondary hospitals.
- Consideration of other workforce issues related to networking, resourcing at a health service level, and employment matters, and review opportunities to address these issues that would support retention to the specialty.

**Training**

- Review opportunities to increase exposure to the specialty at junior doctor level through education and teaching and SWCP Summary Sheets at the Medical Careers Expo and available online.
- Review opportunities to increase vocational training positions.

**Workforce**

- Provide support for the Diabetes Model of Care (2008) and the Western Australian Framework for Action on Diabetes and Diabetes Service Standards (2014).
- Support implementation of a sustainable integrated multidisciplinary diabetes service delivery model for rural WA whereby GPs provide supported primary care for diabetes patients. The model may include:
  - Endocrinologists providing a visiting service to various medical practices to train GPs
  - certification of GPs
  - opportunity to refer patients back to tertiary sites for endocrinologist review, as required
  - Telehealth support.
Gastroenterology

Gastroenterology is a branch of internal medicine, usually practised with hepatology, concerned with the prevention, investigation, treatment and research into illnesses of the gastrointestinal tract and liver\(^{34}\).

Workforce characteristics

At 30 September 2015 there were 60 gastroenterology specialists registered to practise and engaged in clinical practice in WA, of which 83% were male and 17% were female. The gastroenterology workforce had a median specialist age of 47.5 years, with 1.7% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 81 and 82.

The workforce was employed across the public and private sectors, although predominantly in the private sector. There was a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, although 8% of specialists were registered as providing services to both metropolitan and rural areas. Rural Health West facilitates gastroenterology specialists to visit and deliver services to rural communities in WA through the MSOAP. See figures 83 and 84.

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34 https://www.racp.edu.au/trainees/advanced-training/advanced-training-programs/gastroenterology
Demand and supply projections
In 2015, there were 12 vocational trainees in WA. To address projected growth in demand and retirements, 6.1 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 3.20 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 85 and 86.

Risk assessment and shortfalls
In 2015, there was a shortfall of 17 specialists and a projected shortfall of 19 and 29 specialists by 2021 and 2025 respectively. See figure 87.

National comparison
The number of gastroenterology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 88.
Issues and priorities

Health Workforce 2025 identified gastroenterology as a workforce perceived to be in adequate supply and projected to move towards oversupply by 2025 if there is no change in supply and demand trends.

Gastroenterology is experiencing changing models of care with a marked increase in referrals from patients requiring clinical care in specific areas. Issues identified include:

**Recruitment and retention**
- Insufficient public sector positions available to vocational trainees at the conclusion of training, resulting in movement to private practice.
- Long term strategic planning requires clarification and stability to ensure career security within the public sector.

**Training**
- Insufficient suitable training settings for vocational trainees with all gastroenterology training conducted at public, mainly tertiary, hospitals.
- Trainees are able to complete any of the RACP’s divisional training programs in combination as dual training with some joint Fellowship programs with other colleges.

**Workforce**
- Limited gastroenterology services in rural areas and insufficient resources and associated funding at non-tertiary sites.
- Perceptions of workforce shortages are due to excessive inappropriate demand for endoscopy and excessive waiting times for consultation compared to endoscopy. Medicare remuneration in private sector strongly favours endoscopy over consultation resulting in the consultation workload not being proportionally offset by the private sector.
- Encourage and support mentors and role models and foster a culture of excellence. Quality is difficult to measure and often unrecognised and thus frequently unacknowledged.
- Demand is expected to rise from increases in procedures such as colonoscopies (due to bowel cancer screening programs).

Current and projected shortages in the gastroenterology workforce have an impact on the specialty's ability to provide immediate and future service as well as its capacity to train its workforce.
Expanded Specialist Reports
Collaboration between the Department, RACP, HSPs, the Departments Health Networks and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Support the development of a clear strategic plan including identification of opportunities to expand the number of funded specialist positions in tertiary settings.

**Training**
- Development of a clear structured system-wide pathway for trainees with an appropriate future recruitment plan to encourage competitive retention into the public sector.

**Workforce**
- Introduction of a ‘hub and spoke’ model of service delivery using metropolitan-based tertiary specialists in a formalised arrangement with regional and remote areas of need.
- Integration of research, that is original, competitive and collaborative, with clinical service and teaching to achieve improved quality of care.
- Support to provide adequate infrastructure, such as information technology, procedural suites, and specialty support staff.
- Establishment of mentor and peer support schemes that will drive and support a culture of quality and excellence.
- Review of referral patterns/models of care for endoscopy.
General medicine

General medicine or internal medicine is the medical specialty dealing with the prevention, diagnosis, and treatment of adult diseases.

Workforce characteristics

At 30 September 2015 there were 101 general medicine specialists who were registered to practise and engaged in clinical practise, of which 74% were male and 26% were female. The general medicine workforce had a median specialist age of 49 years, with 8.9% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 89 and 90.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 16% of specialists registering their principal place of practice as rural. Rural Health West facilitates general medicine specialists to visit and deliver services to rural communities in WA through the MSOAP. See figures 91 and 92.
Demand and supply projections
In 2015, there were 51 vocational trainees in WA. To address growth in demand and retirements, 5.9 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 13.60 specialists per annum will be sufficient to meet projected growth in service and retirement based demand. However, the assumption behind vocational trainee throughput may not apply to general medicine in WA. Nationally the completion rate is around 37% which should be factored into future projections. See figures 93 and 94.

Figure 93. Growth in service based demand and retirement based demand versus supply

Figure 94. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a surplus of 10 specialists, projected to be a surplus of 47 and 77 specialists by 2021 and 2025 respectively. See figure 95.

Figure 95. Shortfall estimates
- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison
The number of general medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 96.
Issues and priorities

The SWCP 2011 identified that WA was in critical shortage of generalists. The findings were also supported nationally, with Health Workforce 2025 recognising the imbalances between generalists, specialists and subspecialists in the Australian workforce, and acknowledging this was an important issue to be addressed.

SWCP 2011 data analysis and consultation revealed that the most significant issue was not necessarily one of total supply but rather one of distribution, with little or no generalist service provision in some of the rural, remote and outer metropolitan areas.

An inadequate supply of generalists would have had serious implications for the quality, cost and outcomes of care for patients presenting with acute undefined illnesses and/or those with complex illnesses who continue to require specialist intervention.

The Generalist Medical Workforce Development Framework (Framework) was developed by the Department in 2011 to assist the WA Health in undertaking a ‘whole of health’ approach to improving and promoting a sustainable high quality generalist medical workforce model.

The Framework was endorsed by the State Health Executive Forum Operations Review Committee (SHEF ORC) on 5 March 2013.

To support the implementation of the Framework, a Generalist Medical Workforce Action Plan (Action Plan) was developed, and supported in principle by SHEF ORC on 19 May 2014 outlining initiatives, strategies and indicative costs for strengthening WA’s generalist medical workforce, including the identification of opportunities to expand the capacity for training in the health services.

A clinical lead was appointed to progress the key priorities of the Action Plan including strengthening the general medicine training program, developing a dual training pathway and increasing rural/outer metropolitan training and physicians.

The following outcomes were achieved during the clinical lead’s tenure:

- In collaboration with stakeholders, an assessment of the effects on the general medicine training program was undertaken to assess the impact of current environment of fiscal restraints, ABF, reconfiguration of WA Health, and implementation of change management strategies.
- Identification of potential new general medicine training rotations in some metropolitan hospitals.
- Completion of a general medicine trainee evaluation that provided valuable feedback to hospitals on how training could be strengthened.
- The development of a corporate governance framework for general medicine training and a suite of supporting documents, which may be applicable to serve as a model for other specialties with similar challenges.
- An extension and validation of SWCP general medicine workforce modelling, which indicated eleven general medicine trainees are required each year to meet the target shortfall by 2021.
- The progression of planning for a formal dual training pathway with endocrinology, infectious diseases and gastroenterology, and the development of a dual training pilot proposal for general medicine/gastroenterology and general medicine/endocrinology.
- The establishment of links with rural providers.
- The development of strategies to improve attraction and retention of general medicine physicians to rural areas, which are to be progressed further.
- Engagement with rural hospitals on their general medicine training programs and the provision of support and advice to build capacity and improve training.

**Expanded Specialist Reports**

SWCP 2015 identified that general medicine is sufficiently supplied in 2015 and is projected to remain sufficiently supplied to 2025; however feedback has indicated that that there may not be sufficient general physicians in WA. The rationale for this is that some sites are seeking locums from interstate to meet demand, and that many vocational trainees are pursuing careers in other specialties (i.e., they commence training but do not complete). The assumption behind vocational trainee throughput, therefore, may not apply to general medicine in WA. Nationally the completion rate is around 37% which needs to be factored into future projections.

It is recommended that collaboration between the Department, the Internal Medicine Society of Australia and New Zealand, the RACP, HSPs and specialty representatives occur to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Support the planned expansion of training posts for general physicians.
- Support the ongoing attraction and retention of appropriately trained through the provision of information and data regarding the generalist workforce, e.g. Summary Sheets, Specialist Profiles to inform career profiling and succession planning.
- Continue to collaborate with AHPRA and the Medical Board of Australia to incorporate dual registration data into AHPRA data and inform career profiling and succession planning.

**Training**

- Collaborate with the Integrated Registrar Reform Program and RACP to support the development and implementation of dual training pathways for endocrinology, gastroenterology, nephrology and infectious diseases.
- RACP trainees are able to undertake dual training in any of the RACP divisional training programs within the same division (i.e. either Adult medicine or Paediatric and Child Health). Incorporate information this into future demand and supply modelling processes.
- Fellowships are available with other Colleges including ACEM, Royal College of Pathologists of Australasia (RCPA) and Australian Faculty of Rehabilitation Medicine (AFRM) resulting in the award of both College Fellowships. Incorporate this information in future demand and supply modelling processes.

**Workforce**

- Incorporate the completion rate (around 37% nationally) for vocational training in any future workforce projections. Identify the number of vocational trainees who do not complete their training in general medicine, and which specialty is chosen instead as the preferred career pathway. Incorporate findings into the SWCP 2016-2017 methodology.
General practice

The general practice workforce, including funding of vocational training registrars, is historically under the remit of the Australian Government. At the state level there is an interface between primary and tertiary care which must be considered in the context of patient safety and quality of care and vocational training. The general practice workforce\textsuperscript{36, 37, 38, 39} is recognised as facing similar issues to other generalist workforces.

Workforce characteristics

At 30 September 2015 there were 2,230 general practice specialists who were registered to practise and engaged in clinical practice, of which 60% were male and 40% were female. The general practice workforce had a median specialist age of 52 years, with 11.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 97 and 98.

The workforce is employed across the public and private sectors, although predominantly in the private sector, and with 22% of specialists registering their principal place of practice as rural. See figures 99 and 100.


Demand and supply projections
To address growth in demand and retirements, 232.4 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 135.0 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 101 and 102.

Risk assessment and shortfalls
In 2015, there was a shortfall of 534 specialists, projected to increase to a shortfall of 774 and 974 specialists by 2021 and 2025 respectively. See figure 103.
National comparison
The number of general practice specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 104.

Figure 104. Crude specialist to population ratio

Issues and priorities
Some identified workforce issues include:

Recruitment and retention
- A reliance on IMGs due to a shortage of general practitioners, particularly in rural areas, and a decline in the proceduralist workforce.
- An inequitable distribution of general practitioners and imbalances within the general practice workforce due to an increasing trend away from generalisation.

Training
- Insufficient training positions in non-primary care settings to support first year trainees.

Workforce
- Increasing demand for general practice services due to an ageing population with chronic conditions and co/multi-morbidities.
- A fall in average hours worked from increasing female workforce participation and both male and female new fellows working fewer hours than previous generations.
- Challenges to continuity of care between primary and tertiary care.

Current and projected shortages in the general practice workforce have an impact on the specialty’s ability to provide immediate service and future service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, the Western Australian General Practice Education and Training Ltd, medical colleges, specialty representatives, HSPs and other agencies as required is recommended to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:
Recruitment and retention

- Support to develop a clear structured pathway to enable general practitioners to work within hospitals and community settings and including opportunities for research and continuing professional development.

Training

- Consideration of models that support general practice vocational trainees to obtain placements within WA Health hospitals, including allocation of more first year rural training program positions.
- Review of opportunities to establish and fund Fellowship and post-Fellowship positions in metropolitan and rural locations with ‘generalist’ skill sets.

Workforce

- Support the implementation of schemes and programs to attract GPs to practise in outer metropolitan, rural and remote locations, including shared care models with GP proceduralists⁴⁰.
- Support for continuation and expansion of mentoring and peer support schemes for IMGs.

General surgery

General surgery involves the knowledge of and familiarity with a broad spectrum of disease that may require surgical treatment.

Workforce characteristics

At 30 September 2015 there were 112 general surgery specialists\(^\text{41}\), who were registered to practise and engaged in clinical practice, of which 87% were male and 13% were female. The general surgery workforce had a median specialist age of 50 years, with 12.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 105 and 106.

The workforce was employed relatively evenly across the public and private sectors, and there was a geographical imbalance between metropolitan and rural locations with only 15% of specialists registering their principal place of practice as rural. However, another 8% of specialists were registered as providing services to metropolitan and rural areas. In rural areas of WA the general surgery workforce was supported by GP proceduralists. At 30 November 2015, there were 24 GP proceduralists regularly practising general surgery in RA 2 to 5 locations, some of whom also practised anaesthesia and obstetrics. In addition, Rural Health West facilitates medical specialists to visit and deliver services to rural communities through the MSOP. See figures 107 and 108.

\(^{41}\) Consultation has identified that issues that may affect the general surgery headcount on any given date include retirees being counted after retirement and those who have obtained Fellowship in the previous year being registered as a specialist but not currently working as such in WA.
Demand and supply projections
In 2015, there were 31 vocational trainees in WA. To address projected growth in demand and retirements, 10.6 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 4.34 specialists per annum will be insufficient to replace approaching retirements, and meet growth in demand and retirement based demand. See figures 109 and 110.

Figure 109. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 110. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 19 specialists, projected to increase to a shortfall of 40 and 63 specialists by 2021 and 2025 respectively. See figure 111.

Figure 111. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

National comparison
The number of general surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 112.

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42 Consultation has indicated that in September 2015 there was unlikely to be a shortfall of general surgeons in metropolitan WA and a limited shortage in rural areas, supported by no recruitment activity and no excessive outpatient or admission waiting times. There may be a small demand of around 10 in 2016 rather than 19.
Issues and priorities

Health Workforce 2025 identified general surgery as one of the specialties most affected by imbalances between generalists, specialists and sub-specialists.

The Department and WA representatives of RACS have consulted since the commencement of the SWCP in 2011 to accurately identify; the general surgical workforce in WA, and issues that impact on strategic workforce planning.

Issues identified include:

**Recruitment and retention**
- Insufficient availability of public sector positions to meet workforce demand, with some surgeons currently employed part-time and practising in specific subspecialties.
- Metropolitan hospitals working near maximum theatre and bed capacity, therefore, in the current model of service delivery there is limited capacity to expand the current general surgery workforce.
- Insufficient integration of rural and metropolitan services.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons\(^28\).

**Training**
- There are concerns regarding the quality of training positions and preparedness of vocational trainees for specialist practice upon graduation.
- Consider challenges to expanding training into the private sector.
- Loss of local graduates to interstate despite oversupply of general surgeons in metropolitan interstate areas.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low\(^28\).
- Selection to a vocational training position in general surgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Consultation has suggested that WA is sufficiently supplied with general surgeons by international comparison.
Workforce

- General surgeons tend to retire earlier than the projected 65 years (usually 60-62 years). The anticipated number of approaching retirements in the current workforce will require succession planning to minimise any impact on service delivery.

It is anticipated that the current projected shortages in the general surgery workforce will have an impact on the specialty’s immediate service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, RACS, General Surgeons Australia, the Department’s Health Networks, specialty representatives, HSPs and other agencies, as required, is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Collaborate with WACHS, Rural Health West and RACS and support the development of incentives to encourage recruitment in rural and remote locations, where there are some shortages. Support the development of recommendations to:
  - Review whether strategies such as increasing rural remuneration are feasible and would increase retention rates in rural locations.
  - Research and consult with relevant stakeholders regarding the impact that limitation of provider numbers in metropolitan locations would have on metropolitan service delivery.
  - Support the promotion of service provision, resourcing, and workforce development in rural settings between tertiary and secondary hospitals and the WACHS, through career profiling and development of specialty specific publications such as Summary Sheets to encourage career planning in this specialty by junior doctors.
- Disseminate information and data to inform the need to increase the number of funded specialist positions available for graduating trainees and implementation of succession planning at a HSP level.

Training

- Review of future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training. The attrition rate is falling and over the last two years approximately seven SET per year have graduated with an expected six or seven SET to graduate each year.
- Review recommendation to establish joint public and private sector training posts to expand capacity for vocational training and provide support mechanisms for new graduates seeking opportunities in the private sector.

Workforce

- Review of discrepancies in the numbers of ‘active’ general surgery specialists registered with AHPRA at any time, as a number are registered but are not longer practising. As supply and demand modelling incorporates both the public and private sectors, this information cannot be obtained through HRIS warehouse data.
- Exploration of models to support sharing of patient caseload between the public and private sectors.
Geriatric medicine
Geriatricians diagnose and manage complex and/or multifactorial internal medicine disorders that affect the cognitive and functional status of older people, encompassing acute, rehabilitative and community care.

Geriatric medicine has linkages with other departments and specialties as the elderly are more likely to have chronic conditions and co-morbidities, supporting a multidisciplinary approach to patient care through collaborative multidisciplinary research by the Western Australian Centre for Healthy Ageing (WACHA). The WACHA is partnered with the Harry Perkins Institute of Medical Research and The University of Western Australia and is a hospital based research Centre of Excellence, supporting vocational training in geriatric medicine.

Workforce characteristics
At 30 September 2015 there were 59 geriatric medicine specialists who were registered to practise and engaged in clinical practice, of which 58% were male and 42% were female. The geriatric medicine workforce had a median specialist age of 44 years, with 3.4% of the workforce aged over 65 years and anticipated to retire in the short term. See figures 113 and 114.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 2% of specialists registering their principal place of practice as rural. See figures 115 and 116.
Demand and supply projections
In 2015, there were 23 vocational trainees in WA. To address projected growth in demand and retirements, 4.7 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 6.1 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 117 and 118.

Figure 117. Growth in service delivery based demand and retirement based demand versus trainee supply

Risk assessment and shortfalls
In 2015, there was a shortfall of 8 specialists, with a projected surplus of 9 and 14 specialists by 2021 and 2025 respectively. See figure 119.

Figure 119. Shortfall estimates
- Medium in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison
The number of geriatric medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was above that of the rest of Australia shown in the figure below as AUS-WA. See figure 120.
Issues and priorities

Health Workforce 2025 identified geriatric medicine as a specialty that was highly reliant on IMGs with most trainees entering the workforce at an older age impacting on length of service provision. The increasing diversity of the workforce, including the number of women entering the profession, would potentially impact on future workforce supply as more practitioners will seek part-time options or to better balance their work and life commitments.

The following issues have been identified as impacting on the geriatric medicine workforce:

**Recruitment and retention**
- Fragmentation of sessional positions due to a set load of patients that makes it difficult to ‘fit-in’ other roles in the remainder of the time.
- Challenges to recruitment and retention of Australian trained specialists and trainees in the public sector. There are not many full-time specialist positions, although the trend seems to be towards part-time employment across several sites.

**Training**
- Geriatric Medicine is expanding into other areas which were traditionally the domain of other sub-specialties (e.g. geriatric orthopaedics) and there is potential for dual-training to expand with the ageing demographics of the population.
- Increasing numbers of trainees coming through the system may impact on the ability for trainees to ‘choose’ a non-acute setting as a lifestyle choice.

**Workforce**
- Acknowledgement that workforce planning for geriatric medicine is challenging and has never been accurate (i.e. workload of the subacute areas are not currently adequately captured in coding for data analysis and is still being reported within inpatient Diagnosis Related Group (DRG) classification and outpatient Tier 2 specialist clinic classification Australia wide).
- The jurisdictional management of subacute specialties including palliative care, rehabilitation medicine and geriatric medicine are very different to WA models which may result in national planning documents not reflecting the WA context.
- When projecting demand and supply, take into consideration that the working life of a geriatric medicine specialist is around 20 years.
- The increasing diversity of the workforce, including the number of females entering the profession need to be factored into future supply and demand modelling scenarios.
Changing models of care, specifically the increase in services to support the increase in chronic care, will impact on future projections and need to be factored into supply and demand modelling scenarios.

Concerns regarding teaching and how this will be integrated into the specialist role and spread across the three medical schools (with the inclusion of Curtin University) required consideration and incorporation into recommendations for the expansion of training capacity across specialties.

Dementia assessment is time intensive and is being reviewed at a national level and needs further consideration and incorporate into future modelling, e.g. will this require an increase in FTE to incorporate the time factor requirements.

Any change to the future projected surplus of specialists in the geriatric medicine workforce will have an impact upon the specialty’s ability to meet service needs and in the training of the future workforce.

**Expanded Specialist Reports**

Geriatric medicine has linkages with other departments and specialties as the elderly are more likely to have chronic conditions and co-morbidities. The Department’s Health Networks Aged Care Network is a collaboration of groups with a diverse experience in aged care, supported by the Aged and Continuing Care Directorate. The Aged Care Network provides a system-wide, whole of sector approach to the planning and provision of aged care state programs and services through its membership.

Collaboration between the Department, the Aged Care Network, the RACP, the Australian and New Zealand Society for Geriatric Medicine, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Review opportunities to establish full-time positions to support the seven day acute geriatrics service.
- Support expansion of services in rural locations and improvement of rural incentives.
- Support expansion of the geriatric model to incorporate transitional care, specialist rounds in nursing homes (increased involvement in residential care) and more preventative work to reduce emergency department admissions.
- Support implementation of education for general practitioners, where required, as there is evidence that often there are underlying conditions that are being missed/misdiagnosed.

**Training**

- Support continuation and expansion of rotating positions between rural, community and ward based positions for trainees to increase exposure.
- RACP trainees may undertake dual training in any of the RACP divisional training programs within the same division (i.e.: either Adult medicine or Paediatric and Child Health). Fellowships are also available with other colleges/faculties including ACEM, RCPA and AFRM resulting in the award of two Fellowships.

**Workforce**

- Where required, recruit from outside WA to increase the number of specialists in the public sector, e.g. from interstate or overseas.
- Development of an agreement on or definition of a patient-load for session times.
- Support the strengthening of services to minimise wait-times.
- Consider in future workforce projections length of working life, models of care and increasing diversity.
Haematology

Haematology is the study of blood cells in order to identify any abnormalities. Haematologists diagnose and treat a variety of blood disorders including anaemia, haemophilia and blood cancers, including leukaemia.

The haematology workload includes clinical and laboratory components which is reflected in the joint training pathway between the RACP and the RCPA. Successful trainees obtain fellowship of both colleges and are accredited to practice as specialist haematologists and specialist pathologists.

Workforce characteristics

At 30 September 2015 there were 39 haematology specialists who were registered to practise and engaged in clinical practice, of which 72% were male and 28% were female. The haematology workforce had a median specialist age of 48 years, with 15.4% of the workforce aged over 65 years and therefore anticipated to retire in the short term\(^4\). See figures 121 and 122.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 3% of specialists registering their principal place of practice as rural. See figures 123 and 124.

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\(^4\) Consultation has indicated that haematologists have a longer life-span, and assuming retirement age to be 65 is misleading, where 70 or more is a more accurate figure leading to a potential longer lag of 5 years until the shortfall increases (e.g. 2025 instead of 2021).
Demand and supply projections
In 2015, there were 10 vocational trainees in WA. To address projected growth in demand and retirements, 2.4 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.4 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 125 and 126.

Risk assessment and shortfalls
In 2015, there was a balanced workforce for haematology with no shortfall or surplus, however, consultation has indicated that for the past 2 years there have been no public sector positions for newly graduated specialists resulting in many haematologists working much less than fulltime hours as other opportunities (e.g. private sector work) are not appropriate positions for newly qualified specialists. Projections indicate a shortfall of 4 and 10 specialists by 2021 and 2025 respectively; however, consultation has indicated that the retirement age in haematology is closer to 70 than 65, leading to a potential longer lag of 5 years until the shortfall increases (e.g. 2025 instead of 2021). See figure 127.

National comparisons
The number of haematology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 128.
Issues and priorities
Health Workforce 2025 modelled haematology as a subspecialty of the pathology workforce and as a subspecialty of adult medicine. Consultation indicated that the overall supply of haematologists was adequate, except for some sub specialist areas.

One of the main challenges for the pathology workforce in WA is its vulnerability and loss of expertise resulting from budgetary pressures. Issues identified within the haematology and pathology workforces include:

**Recruitment and retention**
- Acute shortage of pathologists in regional and rural areas and the difficulty of attracting suitably qualified people to work in these areas.
- An ageing workforce and the number of planned retirements coupled with increasing part-time work arrangements.
- Insufficient Medicare rebates.
- Challenges in staffing out-of-hours shifts with senior staff preferring to work fewer hours.
- Insufficient number of funded, accredited specialist positions in the public sector. There will be an increasing need for haematologists in the future; however the focus should be on creating public sector positions for specialists rather than increasing the number of trainees increasing the need to seek employment interstate/overseas.

**Training**
- Most trainees undertake dual training, with training positions varying as they are unique in each state. Some states have inadequate laboratory training positions. Training positions should be available in public hospitals to allow trainees to obtain the full breadth of training.
- Insufficient incentive to attract registrars from metropolitan areas to move into and work in smaller regional communities.
- Insufficient funded academic positions to facilitate training.
- Training should be the measured in terms of the net cost of service rather than in efficiency.

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Workforce

- The increasing diversity of the workforce, including the number of females entering the profession, will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments.

- Challenges for specialists working across the public and private sectors that relate to access to clinical trials, and lack of access to some procedures and medications. There is sufficient investment in research, but there is no critical mass of research institutes and limited established linkages within the health services in WA to support a state-wide research culture.

- Demand will continue to increase for clinical and laboratory services with increasing incidence of benign and malignant tumours and an ageing population.

- There is increasing demand for results to be provided quickly and the complexity and volume of laboratory work is increasing.

- Two paediatricians with an interest in allergy (both working full time) have retired since the last report. There is no process or funding to develop paediatricians with an interest in Allergy in WA and patients have to be managed by the small number of paediatric clinical immunologists.

Projected shortages in the haematology workforce will have an impact on the specialty’s service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, the RACP, the RCPA, HSPs, the WA Cancer and Palliative Care Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention/workforce

- Support to develop more efficient work practices including collaboration with the private sector to improve workforce procedures, and further development of the ‘hub and spoke’ model.

- Support for development of a critical mass of research institutes and established linkages within the health services in WA to support a state-wide research culture.

- Implement retention initiatives including providing opportunities for continuing professional development and research and increasing the number of funded specialist positions.

Training

- Support to implement succession planning for the expected number of retirements; including a process (with funding) to develop paediatricians with an interest in allergy in WA.
Immunology and allergy medicine

The immunology and allergy workforce is operating within changing models of care with an increasing demand for immunology and allergy services. Immunology and allergy care in WA is practised differently to the remainder of Australia as there is a much broader spectrum of care including transplant and tissue (usually serviced through the Red Cross), systemic autoimmune (usually service through rheumatology), allergy and HIV (usually serviced through infectious diseases and immunology). In addition, HIV incidence is increasing due to migration from parts of Africa.

Immunology and allergy physicians provide laboratory and clinical services for paediatric and adult patients with allergy, immunodeficiency and autoimmune diseases, with some also working in transplantation immunology. Trainees may combine one or more of: clinical-only training, immunopathology-only training or joint training with the RCPA. Many trainees undertake joint training.

Workforce characteristics

At 30 September 2015 there were 20 immunology and allergy medicine specialists who were registered to practise and engaged in clinical practice, of which 65% were male and 35% were female. The immunology and allergy workforce had a median specialist age of 49.5 years, with 15% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 129 and 130.

The workforce was employed predominantly in the public sector, in the metropolitan area. See figures 131 and 132.

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46 Consultation has indicated that there are very few clinical immunologists practicing in the private sector.
Demand and supply projections
In 2015, there were 8 vocational trainees in WA in the adult immunology and allergy medicine stream with the RACP, including those in dual or joint training with the RCPA. There were 4 trainees identified in the paediatric immunology and allergy medicine stream with the RACP, including those in dual or joint training with the RCPA. To address projected growth in demand and retirements, 2.3 specialists will be required per annum to 2025. See figures 133 and 134.

Risk assessment and shortfalls
In 2015, there was a shortfall of 7 specialists for immunology and allergy medicine, with a projected shortfall of 13 and 20 specialists by 2021 and 2025 respectively. See figure 135.

Consultation has indicated that there were 5 trainees per year meaning a rough output of 1.25 specialists per year. From 2017 there will be 5 adult trainees (generally 4 years training) and 2 paediatric trainees (generally 3 years training) so output will be roughly 1.7 specialists per year.
National comparison
The number of immunology and allergy medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was above that of the rest of Australia shown in the figure below as AUS-WA. See figure 136.

Figure 136. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 modelled immunology as a component of clinical pathology. The ‘other’ clinical pathology workforce was perceived to experience some difficulty in filling positions, either through maldistribution or insufficient workforce. Immunology and allergy as a sub-specialty of physicians was not modelled due to the small workforce size.

Issues identified by the immunology and allergy workforce locally and nationally include:

Recruitment and retention
- Many immunologists will be retiring early with trainee throughput only sufficient to support the public hospital services and not the community services.
- Waitlists are not being sufficiently addressed with 2-3 years wait for non-urgent cases and 1-2 months if urgent.
- Previously positions have been filled by IMGs with inability to fill positions with Australian-trained graduates.

Training
- Insufficient planning for a training pathway including insufficient exposure to allergy treatment in the private sector resulting in a lack of interest in this area.
- Trainee throughput will not address projected early retirements. There are 4 accredited training positions in adult immunology and 2 positions in paediatric immunology (2017).
- The paediatric training position is difficult to fill as it has clinical and laboratory components.
- Registrars in WA are paid at a higher rate than the remainder of Australia. This is a disincentive for private practice to apply for STP (the current funding amount of $100 per position does not cover all the salary and on-costs). The Australian Government rationale for the provision of this amount is that this encapsulates the training component of the position only, the remaining time is considered to be service delivery (rather than training). Continue to liaise with the Australian Government to review this funding model.
- Training time is extended as most trainees undertake dual training, further specialisation or work part-time.
Training positions are not guaranteed annually as many are funded through non-traditional non-recurrent sources (i.e. research grants etc).

Many new Fellows pursue research or overseas placements delaying entry to the workforce.

Workforce

- The workforce is vulnerable due to its relatively small size and the average age distribution.
- The following issues are related to HIV:
  - Screening is not required on immigration visas for HIV and migrants are not covered by Medicare.
  - There is a large patient load in rural and remote with only a few non-hospital based immunologists who can prescribe HIV treatment.
  - There is a greater burden of undiagnosed HIV as well as associated cultural and social issues in the migrant population.
- Immunology is an outpatient and private service based discipline and discharge based benchmarking is limited (i.e., no specific DRGs or Medicare item numbers).
- Allergic syndromes, especially food allergies, are increasing with 10% of infants younger than 1 year of age in WA having a documented food allergy.
- Laboratory medical services include transplant, diagnosing, HIV and autoimmune and are a huge component of immunology that is underappreciated.
- National workforce modelling includes immunology under other pathology and may not accurately capture the issues within the immunology and allergy workforce in WA.
- There is a recognised nursing shortage in the allergy medicine workforce.
- There is a trend for specialists to practise in academic, administrative and laboratory appointments, affecting supply for direct patient care.

In a very metro-centric workforce environment, shortages in the immunology and allergy workforce have an impact on the specialty’s immediate capacity for service delivery as well as its capacity to train the future workforce.

Expanded Specialist Reports

Collaboration between the Department, RACP, and the RCPA, the Department’s Infections and Immunology Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Support funding of positions in private practice with sessions in public hospitals to ensure adequate exposure to case mix.

Training

- Support the development and establishment of a training program that includes:
  - increasing the number of vocational training positions to address allergy services and paediatric allergy training
  - networked training
  - development/continuation of mentoring programs
  - early career exposure to encourage interest in private practise.
  - encourage involvement of specialty representatives at the Medical Careers Expo to provide specific information.
- Provision of data, information and support for the private practices to apply for STP funding noting that a review of STP processes is underway.

**Workforce**

- Support expansion of immunology into peripheral hospitals and community-based allergy services to provide support for tertiary settings.
- Support inclusion of outpatient based clinic services into funding models.
- Support implementation of the recommendations from the Anaphylaxis Model of Care for WA.\(^{48}\)

Infectious diseases

Infectious diseases physicians provide a predominantly hospital-based service, specialising in the various clinical, laboratory and public health aspects of infectious disease medicine and microbiology.

Workforce characteristics

At 30 September 2015 there were 28,491 infectious diseases medicine specialists who were registered to practise and engaged in clinical practice, of which 61% were male and 39% were female. The infectious diseases medicine workforce had a median specialist age of 43.5 years, with no specialists aged over 65 years. See figures 137 and 138.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 4% of specialists registering their principal place of practice as rural. See figures 139 and 140.

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The hidden workforce gap between head count and FTE is considerable as many specialists also work in various other non-clinical ID disciplines (e.g. Microbiology, General Medicine, etc). In many other states the functional headcount and FTE is likely to be closer due to less dual trainees.
Demand and supply projections
In 2015, there were 6 vocational trainees in WA\(^{50}\). To address projected growth in demand and retirements, 1.0 specialist will be required per annum. The current estimated vocational trainee throughput of 1.6 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 141 and 142.

Figure 141. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 142. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a surplus of 2 specialists, with a projected surplus of 7 and 6 specialists by 2021 and 2025, respectively. See figure 143.

Figure 143. Shortfall estimates

- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison
The number of infectious diseases specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 144.

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\(^{50}\) Consultation has advised that this should be reported as 4 vocational trainees. There were 11 vocational trainees reported by the RACP in September 2015, however 7 of these were joint/dual trainees in microbiology with the RCPA.
Issues and priorities
Health Workforce 2025 modelled infectious diseases as a component of other (clinical) pathology, noting that some positions are joint RACP/RCPA training programs (i.e. immunopathology). The physician subspecialty of infectious disease was not modelled due to the small workforce size. Other (clinical) pathology was found to have some perceived difficulty in filling positions, either through maldistribution or insufficient workforce.

Issues identified by the infectious diseases workforce include:

**Recruitment and retention**
- There are limited opportunities for private practice.
- The workforce is largely metropolitan based and is young with few expected retirements in the near future.
- The workforce shortfall is small but noticeable in the hospital setting.
- Outbreaks of infectious disease or new disease are unpredictable and can impact on demand. Sexually transmitted diseases are still a concern in general and particularly in the Pilbara, Kimberly and far north coast regions.
- While there is infectious diseases prevalence in rural regions, the numbers and infrastructure are not sufficient to support viability of resident specialists.

**Training**
- There is interest in training and the specialty receives more applications each year than the number of vocational trainee positions that are available.
- All 4 trainees currently in the infectious diseases program in WA are joint trainees (RCPA and RACP) which has a minimum length of 5 years compared to the RACP length of three years only.

**Workforce**
- Many infectious diseases specialists are dual trained with approximately a third of the workforce in WA working in microbiology with a laboratory focus, this may skew the projections.
- Most referrals are from specialist groups than from primary care which may be related to:
  - Decreased undergraduate exposure to managing infectious complications.
  - Increasing fragmentation of care.
  - Increasing drug resistance requiring specialist input.

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.
- The increasing diversity of the workforce, including the number of females entering the profession, will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments. The majority of vocational trainees in the past decade have been female.
- Specialists are working reduced hours.

Any change to the current and future projected surplus of specialists in the infectious diseases workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, RACP, RCPA, HSPs, the Infections and Immunology Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Review opportunities to increase the number of specialist positions, where required.
- Incentivise specialists with respect to prevention strategies and collaboration between clinical infectious disease and academia.
- Consider addressing the ‘hidden workforce gap’ challenge (FTE versus headcount).

**Training**
- Review opportunities to increase the number of accredited vocational training positions.
- There are discrepancies between the number of vocational trainees reported by the RACP and those reported by specialty representatives. Specialty representatives have indicated that the labelling of some registrar posts at some hospital sites could be the issue (i.e., sites have medical registrars that are working in a Department of Infectious Diseases, who are service registrars and will not become vocational trainees).

**Workforce**
Consideration of the following factors in future workforce modelling:
- Most infectious diseases advanced trainees are undertaking the joint college training with RACP and RCPA which has a longer lead-time to qualification as a specialist.
- FTE is an important factor in workforce planning in WA due to service delivery models\(^{51}\). Many infectious diseases specialists are employed in various other non-clinical infectious diseases specialties such as microbiology and general medicine, compared to other jurisdictions where direct patient care headcount is much closer to the FTE.
- The recommendations of the Non Major Trauma Framework\(^{52}\)
- Consider analysing the infectious diseases specialist FTE date by number of hospital beds (vs population) as there has been some attempt at benchmarking this already\(^{53}\).

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\(^{51}\) In November 2014 there was an FTE of 11.95 for a workforce of around 28 specialists which is less than 43% of the presumed workforce.


\(^{53}\) Dickstein, Y et al. Staffing for infectious diseases, clinical microbiology and infection control in hospitals in 2015: results of an ESCMID member survey. 1198-743X© 2016 European Society of Clinical Microbiology and Infectious Diseases. Published by Elsevier Ltd. All rights reserved: http://dx.doi.org/10.1016/j.cmi.2016.06.014
**Intensive care medicine**

Intensive care involves the comprehensive clinical management of critically ill patients as part of a multidisciplinary team. Training in intensive care includes rotations into anaesthesia, internal medicine and paediatrics, and may include emergency medicine\(^{54}\). Many trainees undertake dual training or have completed training in a primary specialty, such as anaesthesia, medicine or emergency medicine. Endorsement in paediatric intensive care medicine requires specific training.

**Workforce characteristics**

At 30 September 2015 there were 58\(^{55}\) intensive care medicine specialists who were registered to practise and engaged in clinical practice, of which 84% were male and 16% were female. The intensive care medicine workforce had a median specialist age of 47 years, with 8.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 145 and 146.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 3% of specialists registering their principal place of practice as rural. See figures 147 and 148.

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54. [https://www.cicm.org.au/Trainees/Program/General](https://www.cicm.org.au/Trainees/Program/General)

55. Consultation has indicated that since 30 September 2015 2 specialists had retired, 2 were working exclusively in anaesthetics and 6 were performing locum work or working in senior registrar rosters.
Demand and supply projections
In 2015, there were 59.5 vocational trainees in WA. To address projected growth in demand and retirements, 4.5 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 6.94 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 149 and 150.

Figure 149. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 150. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 7 specialists, which is projected to become a surplus of 15 and 24 specialists by 2021 and 2025, respectively. See figure 151.

Figure 151. Shortfall estimates

- Medium in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison
The number of intensive care specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 152.
Issues and priorities

Health Workforce 2025 identified intensive care to have sufficient current workforce to meet demand. Intensive care is highly reliant on IMGs due to mismatches between service requirements for trainees and specialists.

Issues identified by the intensive care medicine workforce include:

Recruitment and retention

- On-call requirements are onerous with rostering challenges, especially with the change in lifestyle choice for shorter work hours. Safe working hour principles may also impact on future supply.
- There is a continued reliance on doctors in service positions (in excess of intensive care trainees) to deliver intensive care services in public hospitals.

Training

- There is some discrepancy with training numbers. The College of Intensive Care Medicine (CICM) has provided 2016 training numbers as 53, whereas the numbers provided by WA representatives are 77. Consultation has advised that discrepancies may be as a result of trainee rotations between anaesthesia, internal medicine and paediatrics, and may include emergency medicine. Many trainees undertake dual training or have completed training in a primary specialty, such as anaesthesia, medicine or emergency medicine. Clarity regarding these discrepancies will be sought in the development of the Expanded Specialist Reports.
- There is increasing competition for training rotations in intensive care training facilities (also raised as an issue by the anaesthetic workforce due to some part from other training program rotations).
- Increased female trainee throughput and lifestyle choices may impact on average hours worked.

Workforce

- There is a small oversupply of intensivists with 51 fellows identified in April 2016 by the CICM with 10 of these either having retired, were no longer working in intensive care or were working locum or senior registrar rosters.
- Consultation has indicated that some of the discrepancies in specialist and training data are likely to be from:
  - Data being collated during different time periods;
Dual trainees or dual qualified specialists. These specialists would have been counted in their primary specialty as recorded by AHPRA. The Medical Workforce Branch is working with AHPRA to identify dual training issues and how they are recorded with the registration data.

Specialists in SWCP being counted as ‘active’ as they are registered with AHPRA, however, they have retired, while retaining their registration.

- An oversupply of intensivists and the trainee throughput requires a review of current and projected IMG recruitment activity, including to AoN positions, to ensure preference is given to Australian qualified medical practitioners with the appropriate skills and experience.

Any change to the future projected surplus of specialists in the intensive care medicine workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

**Expanded Specialist Reports**
Collaboration between the Department, the CICM, HSPs, the Injury and Trauma Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Develop dynamic workforce models that incorporate variables and different scenarios, such as retirements and leave requests, including rostering models that support changing lifestyle factors.

**Training**
- Review training number discrepancies and investigate the reason for the differences. It is important to note that other specialties rotate into intensive care include internal medicine, general medicine and anaesthesia which may account for these differences.

**Workforce**
- Review specialist number discrepancies, acknowledging time period differences, terminology, dual registration and retirees still registered in data collection.
Medical administration

Medical administration is administration or management utilising the medical and clinical knowledge, skill, and judgement of a registered medical practitioner, and capable of affecting the health and safety of the public or any person. This may include administering or managing a hospital or other health service, or developing health operational policy, or planning or purchasing health services.

Workforce characteristics

At 30 September 2015 there were 17 medical administration specialists\(^{56}\) who were registered to practise and engaged in clinical practice, of which 88% were male and 12% were female. The medical administration workforce had a median specialist age of 59 years, with 11.8% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 153 and 154.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 6% of specialists registering their principal place of practice as rural. See figures 155 and 156.

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\(^{56}\) Consultation has identified that there are around 30 Fellows of Royal Australasian College of Medical Administrators (RACMA) with some utilising their skillsets in non-medical administration roles (e.g. clinical director, head of department etc).
**Demand and supply projections**

In 2015, there were 12 vocational trainees in WA. To address projected growth in demand and retirements, 1.4 specialists will be required per annum. The current estimated vocational trainee throughput of 3.2 specialists per annum will be more than sufficient to meet growth in service and retirement based demand. See figures 157 and 158.

**Figure 157. Growth in service delivery based demand and retirement based demand versus trainee supply**

**Figure 158. Estimated supply and demand of specialists 2015-2025**

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**Risk assessment and shortfalls**

In 2015, there was a surplus of 2 specialists, with a projected surplus of 11 and 18 specialists by 2021 and 2025, respectively. See figure 159.

**Figure 159. Shortfall estimates**

- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

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**National comparison**

The number of medical administration specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 160.
**Issues and priorities**

Health Workforce 2025 did not model medical administration due to data limitations; however, considerations for future workforce supply or demand are included. Medical administrators have become increasingly involved in strategic health service planning and organisational funding and performance.

Issues identified within the medical administration workforce include:

**Recruitment and retention**
- The workforce is older than most workforces, although not unusually for this specialty, hence a significant approaching volume of retirements.
- Insufficient suitably qualified specialists and difficulty attracting trainees to rural locations.

**Training**
- Insufficient provision of supervisors for trainees undertaking fellowship training is an issue at various public and private sector sites, resulting in limited access to training positions.

**Workforce**
- It is not mandatory for all occupants of medical management positions to hold qualifications in medical administration in WA which may impact on workforce projections.

Any change to the current and future projected surplus of specialists in the medical administration workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

**Expanded Specialist Reports**

Collaboration between various stakeholders including the Institute for Health Leadership, RACMA, universities, the private health sector, the Department, the Australian Government, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Consider future service provision including increasing the number of funded public sector specialist positions available for graduating trainees and implementation of succession planning at a HSP level.
- Review opportunities to implement incentives to attract suitably qualified specialists to rural locations.
Training

- Align trainee throughput with demand.

Workforce

- Considerations for future workforce modelling include:
  - Undertaking a manual count of the positions for the Director of Medical Services and Director of Clinical Services, Deputy Director of Medical Services/Director of Clinical Services positions in the public and private sector not occupied by fellows of RACMA to obtain an accurate demand versus supply projection and to identify additional capacity within the system to place future trainees upon graduation.
  - There are an additional two vocational trainees in 2016 that commenced training and/or relocated to WA since September 2015.
Medical imaging

Medical imaging, for the purposes of the SWCP, refers to the specialty of radiology. Radiologists provide services across a wide range of specialties, using radiology as a minimally invasive and anatomically precise method to diagnose, monitor treatment and detect progression or relapse of many diseases.

Workforce characteristics

At 30 September 2015 there were 207 medical imaging specialists who were registered to practise and engaged in clinical practise, of which 74% were male and 26% were female. The medical imaging workforce had a median specialist age of 45 years, with 6.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 161 and 162.

The workforce was employed across the public and private sectors, although predominantly in the private sector, and there was a geographical imbalance between metropolitan and rural locations with only 7% of specialists registering their principal place of practice as rural. See figures 163 and 164.
Demand and supply projections

In 2015, there were 39 vocational trainees in WA. To address projected growth in demand and retirements, 13.4 specialists will be required per annum to 2025. The current vocational trainee throughput of 5.46 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 165 and 166.

Figure 165. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 166. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls

In 2015, there was a shortfall of 15 specialists, with a projected shortfall of 47 and 79 specialists by 2021 and 2025, respectively. See figure 167.

Figure 167. Shortfall estimates

- Low in 2015
- Projected to be medium by 2021
- Projected to be high by 2025

National comparison

The number of medical imaging specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 168.
Issues and priorities

Health Workforce 2025 identified diagnostic radiology as one of the specialties most likely to be in undersupply and radiology to be one of the specialties most reliant on IMGs. Radiology was perceived to have some difficulty in filling positions, either through maldistribution or insufficient workforce.

Issues identified by the medical imaging workforce include:

**Recruitment and retention**
- The number of IMGs being recruited to private practices in WA may be leading to an imbalance in specialist numbers.
- Only 7% of specialists state their principal place of practice as rural. Only 3% work in both rural and metropolitan locations.
- Large amounts of rural and remote work is undertaken through tele-radiology.

**Training**
- Accreditation for the WA Radiology Training Scheme has been affected by registrar and specialist shortages.
- Post graduate fellowship positions contribute to specialist workforce and service provision but are not included as accredited training positions by RANZCR.
- There are no formal radiology academic positions, despite efforts over a period of time to secure a Chair of Radiology, to provide academic input into undergraduate training.
- Challenges accessing some of the required experiential training in areas that may be found outside a radiology department (i.e., nuclear medicine/Positron Emission Tomography, obstetrics and gynaecology imaging, cardiac imaging) despite networked training.
- WA Health trainees are required to complete employment paperwork at each site of rotation despite networked training and possible employment at a site previously.

**Workforce**
- Radiology activity has increased by approximately 8-10% per annum for cross sectional imaging ultrasound and Computed Tomography.
- On average, the number of radiological services undertaken in a teaching hospital is 1:12,500 while the proposed RANZCR recommendations are 1:7,500.
- Radiology is largely a private sector specialty with 75% of radiologists working exclusively in private, which emphasises the need for system-wide (public and private) demand and supply projections.
- There are concerns of imaging over utilisation leading to over diagnosis.

Current and projected shortages in the medical imaging workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce.
Expanded Specialist Reports
Collaboration between the Department, RANZCR, HSPs and specialty representatives is suggested to develop an expanded specialist report including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention/workforce**
- Continued review and consultation of applications for AoN to determine actual workforce shortages and to prevent imbalances in specialist numbers.
- Support implementation of a coordinated Statewide recruitment and appointment process including:
  - appointment of 2 radiologists to Princess Margaret Hospital to provide appropriate training and clinical care
  - appointment of 2 additional registrars to Sir Charles Gardiner Hospital to support continued accreditation for radiology training.

**Training**
- Support as a short-term intervention to maintain accreditation, the rostering of the Neurological Intervention and Imaging Service of WA fellows to assist coverage of the out of hour’s component of service delivery.
- Support inclusion of postgraduate fellowship positions in trainee throughput numbers.
- Review opportunities to increase training in areas that may be found outside a radiology department (i.e. nuclear medicine/Positron Emission Tomography, obstetrics and gynaecology imaging, cardiac imaging) as well as an increase in the number of radiology trainees.
- Support for HR reciprocity across WA Health to minimise administrative workload in terms of rotations.

**Workforce**
- Review the RANZCR recommendations for the number of radiological services undertaken in a teaching hospital and consider how to apply this to WA service
Medical oncology

Medical oncologists specialise in the investigation, study, diagnosis, management and treatment of cancer with particular emphasis in systemic treatment which includes chemotherapy, immunotherapy oral tyrosine kinase inhibitors and hormones.

Workforce characteristics

At 30 September 2015 there were 34 medical oncology specialists who were registered to practise and engaged in clinical practice, of which 62% were male and 38% were female. The medical oncology workforce had a median specialist age of 44.5 years, with 2.9% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 169 and 170.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There was a geographical imbalance between metropolitan and rural locations with only 3% of specialists registering their principal place of practice as rural, although another 15% of specialists were registered as providing services to metropolitan and rural areas. See figures 171 and 172.

Figure 169. Specialist age distribution sustainability

Figure 170. Specialist age and sex distribution

Figure 171. Specialist employment sector

Figure 172. Specialist employment location
Demand and supply projections
In 2015, there were 12 vocational trainees in WA. To address projected growth in demand and retirements, 2.3 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 2.93 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 173 and 174.

Risk assessment and shortfalls
In 2015, there was a shortfall of 1 specialist, moving to a projected surplus of 6 specialists by both 2021 and 2025. See figure 175.

National comparison
The number of medical oncology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 176.
Issues and priorities
Health Workforce 2025 identified medical oncology, in 2009, as a workforce in shortage nationally, however, the replacement rate of new fellows, including permanent migrants, entering the workforce was projected to exceed workforce exists.

Recruitment and retention

- There is an insufficient supply of specialist positions in the public sector to meet demand.
- Changes in care, particularly effective immunotherapy, will markedly increase the demand for medical oncologists.
- The ad hoc nature of advertising specialist positions is a major barrier to recruiting trainees in the public sector.

Training

- Access to training in the private sector.

Workforce

- An insufficient level of funding for protected research at vocational trainee and specialist level, noting that the WA Cancer and Palliative Care Network funds 6 full time cancer fellowships for 12 months usually at a senior registrar rate. Traditionally at least one medical oncology trainee is a successful applicant.
- The increasing diversity of the workforce, including the number of females entering the profession, will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments.

Any change to the current and future projected surplus of specialists in the medical oncology workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, the RACP, HSPs, the WA Cancer and Palliative Care Network and specialty representatives is suggested to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:
Recruitment and retention/workforce

- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support.
- Support the provision of rural incentives.
- Support the recommendations of the *WA Cancer Plan 2012-2017*.

Training

- Support implementation of a clear pathway to specialist positions to minimise movement to other jurisdictions.
- Support innovation in training programs to include the private sector.
- Support for STP applications.
Neonatal medicine

Neonatal medicine specialists treat newborn infants at all levels of care from healthy newborns to those who require special and intensive care.

Workforce characteristics

At 30 September 2015 there were 1957 neonatal medicine specialists who were registered to practise and engaged in clinical practice, of which 58% were male and 42% were female. The neonatal workforce had a median specialist age of 43 years, with no specialists aged over 65 years. See figures 177 and 178.

The workforce was employed across the public and private sectors, although predominantly in the public sector, in the metropolitan area. See figures 179 and 180.

Consultation has indicated that there are 2 specialists employed to provide leave and long service relief for 2 years and should not be included as part of the permanent specialist workforce headcount.

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57 Consultation has indicated that there are 2 specialists employed to provide leave and long service relief for 2 years and should not be included as part of the permanent specialist workforce headcount.
Demand and supply characteristics

In 2015, there were 11.5 vocational trainees in WA. To address projected growth in demand and retirements, 1.0 specialist will be required per annum. The projected vocational trainee throughput of 3.07 specialists per annum will be sufficient to meet growth in demand and retirement based demand. See figures 181 and 182.

Risk assessment and shortfalls

In 2015, there was a shortfall of 1 specialist for neonatal medicine, moving to a projected surplus\(^5^8\) of 12 specialists by 2021 and 25 specialists by 2025. See figure 183.

National comparison

The number of neonatal specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was above that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 184.

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\(^5^8\) Consultation has indicated that the assumption that all trainees will remain in WA and join the specialist workforce is unlikely to be correct as many IMGs are attracted to centres of excellence for further short term training with many returning to their place of origin to seek employment.
Issues and priorities

The Women’s and Newborns Health Network has developed a Statewide service framework and best practice pathway for babies. In February 2008 the Maternity and Newborn service map (MANsmap) identified that WA had a widespread shortage of midwifery, nursing and medical workforce in maternity and neonatal services, and identified some problems with levels of neonatal care particularly the mismatch between levels of obstetric risk and the level of nursery facility.

At this time demand for neonatologists was greater than supply resulting in recruitment of IMG neonatologists to fill a gap previously created by a lack of training in/exposure to neonatology as part of the RACP paediatrics training program. The result was a general tendency among junior doctors to avoid training in neonatology and specialist paediatricians to avoid working in neonatology.

The development of the Framework for the Care of Neonates has supported a hub and spoke model to maintain a central, unified and coordinated care approach for newborns, with strong support provided from the centralised tertiary service to all secondary and primary facilities.

Issues that have impacted on the neonatal medicine workforce include:

- Supply of neonatologists is now greater than demand and IMGs who previously remained in Australia are now more likely to undertake short-term training to formalise academic neonatal training.
- There was reluctance by Australian-trained paediatricians to attend deliveries, however, this has been addressed by increasing the neonatal training of paediatricians and introducing regular neonatal resuscitation programs at all sites.
- The Neonatal Intensive Care Units in Perth are NHMRC Centres of Research Excellence for preterm infants and therefore attractive to IMGs, and the Neonatal Clinical Care Unit (NCCU) would be unable to provide clinical service safely without the IMG cohort. Advanced skills IMGs are necessary to balance out the locally-trained registrars with less experience and to support training. Some international trainees return to their home country to be specialists (especially to India and UK). The availability of IMGs has been relied upon to top up Australian trainees. However, this workforce source is likely to be impacted by a significant health workforce recruitment campaign in Qatar.
- Securing a neonatal position at the specialised neonatal hospitals is very competitive and applicants are more competitive if they hold a PhD.

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Training

- There is an imbalance of neonatal registrars with an annual gap in November/December/January on the roster due to late withdrawals.

- The complexity of the Neonatal Clinical Care Unit (NCCU) management is compounded by the service split of King Edward Memorial Hospital (KEMH) and Princess Margaret Hospital (PMH), previously the Women and Children’s Health Service (WCHS). Prior to 2014, basic trainees working solely at KEMH were able to have their time accredited for basic training. However, since the split KEMH is no longer accredited for basic training as primary employer, as it is no longer accorded a departmental status within the WCHS. The NCCU has a cohort of basic and advanced paediatric trainees rotating out from PMH to KEMH.

Workforce

- A relatively large workforce is needed to support service delivery at the specialised centres including the Neonatal Emergency Transport Service of WA (NETSWA).

- The correct skill mix is crucial in neonatology and changes annually.

- Neonatal medicine operates in stressful work environments, with on-call and after hours’ commitments.

Expanded Specialist Reports

Collaboration between the Department, the RACP, HSPs, the Women’s and Newborns’ Health Service and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Consider options to implement a succession planning model to address the availability of positions upon graduation in the public sector.

Training

- Support exploration of expanded accreditation for training to peripheral sites that have capacity in neonatal service to support training.

- Support to continue increasing the neonatal training of paediatricians, including regular neonatal resuscitation programs at all sites.

- Support to offer longer terms to vocational trainees to increase experience gained through exposure to specific aspects of service delivery, and support retention in the training program.

- Support consideration by the RACP and specialty representatives to limit the number of paediatric trainees to a number that can be supported and sustained in basic neonatal training before they graduate as specialist paediatricians.

Workforce

- In future workforce analysis and projections consider:
  - Acknowledgement that headcount, as opposed to FTE, shows a different picture of resources required to manage neonatal activity in WA.
  - It might be beneficial to have two different colour groups for sector and location in future workforce analysis to make it quicker to interpret and distinguish the different charts.
Nephrology

Nephrology is the care of patients with diseases of the kidneys and urinary tract. Nephrology training can be undertaken as an adult medicine or paediatric medicine stream with the RACP, and there are opportunities to complete dual training, joint training, conjoint training or post-fellowship training to obtain fellowship in more than one specialty.

Workforce characteristics

At 30 September 2015 there were 32 nephrology specialists who were registered to practise and engaged in clinical practice, of which 88% were male and 12% were female. The nephrology workforce had a median specialist age of 48 years, with 9.4% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 185 and 186.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There was a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, although 9% of specialists were registered as providing services to metropolitan and rural areas. Rural Health West facilitates nephrology specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 187 and 188.
Demand and supply projections
In 2015, there were 7 vocational trainees in WA. To address projected growth in demand and retirements, an estimated 3.4 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.87 specialists per annum is insufficient to meet growth in service and retirement based demand. See figures 189 and 190.

Figure 189. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 190. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 7 specialists, with a projected shortfall of 11 and 15 specialists by 2021 and 2025, respectively. See figure 191.

Figure 191. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be high by 2025

National comparison
The number of nephrology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 192.
Figure 192. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

Health Workforce 2025 identified that in 2009 nephrology was a medical specialty that had some perceived difficulty in filling positions, either through maldistribution or insufficient workforce, however, if there were no changes in supply or demand the replacement rate for new fellows exceeded workforce exits and nephrology would be sufficiently supplied in 2025. It was acknowledged that the ageing population and increasing incidence of disease such as diabetes, hypertension and obesity, would be likely to increase future demand.

Issues that have been identified by the nephrology workforce include:

Recruitment and retention/workforce

- Nephrology tends to be public sector dominant with an insufficient number of funded public sector appointments including a limited number of opportunities for new graduates seeking employment.
- Specialists currently have insufficient time and limited access to resources to support teaching and research.

Training

- Dual training numbers and length of training programs must be factored into any workforce planning.
- There is concern about a potential oversupply of specialists should the current training rate continue.
- There are challenges to providing adequate clinical exposure for trainees due to significant growth in training numbers.

Shortages in the nephrology workforce have an impact on the specialty’s immediate service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, the RACP, HSPs, the Renal Health Network and specialty representatives is recommended to develop an expanded specialist report including a Statewide workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support.

Training

- Support for succession planning including availability of public sector specialist positions.

Workforce

- Consider length of dual training in workforce planning.
Neurology

Neurologists diagnose and manage diseases affecting the central, peripheral and autonomic nervous systems and muscles.

Neurology training can be undertaken as an adult medicine or paediatric medicine stream with the RACP, and there are opportunities to complete dual training, joint training, conjoint training or post-fellowship training to obtain fellowship in more than one specialty.

Workforce characteristics

At 30 September 2015 there were 45 neurology specialists who were registered to practise and engaged in clinical practice, of which 69% were male and 31% were female. The neurology workforce had a median specialist age of 54 years, with 9% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 193 and 194.

The workforce was employed predominantly across both the public and private sectors⁶⁰, in the metropolitan area. Rural Health West facilitates neurology specialists to visit and deliver services in rural communities in WA through the MSOAP. See figures 195 and 196.

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⁶⁰Consultation has indicated that the ratio should be around 2:1 (both sectors: one sector only). Only a few specialists work in private sector only, and only a few specialists work in public sector only.
Demand and supply projections
In 2015, there were 5.5 vocational trainees in WA. To address projected growth in demand and retirements, 3.5 specialists will be required per annum. The current estimated vocational trainee throughput of 1.47 specialists per annum will be insufficient to replace approaching retirements, and meet growth in demand and retirement based demand. See figures 197 and 198.

Risk assessment and shortfalls
In 2015, there was a shortfall of 1 specialist, with a projected shortfall of 10 and 20 specialists by 2021 and 2025, respectively. See figure 199.

National comparison
The number of neurology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 200.

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61 There are 6 accredited training positions in WA, so the projected number of specialists will slowly increase over the next few years. However, there are currently no public positions for these graduates.
Issues and priorities
Health Workforce Australia 2025 identified neurology as a specialty that was sufficiently supplied to meet demand in 2009; however, demand was not adequately captured from the outpatient workload and the exclusion of certain Medicare item numbers that cover investigational work performed by neurologists. Demand for services is expected to rise from the increasing incidence and prevalence of certain diseases such as Parkinson’s disease, stroke and Alzheimer’s disease coupled with an ageing population.

Issues affecting the neurology workforce include:

**Recruitment and retention**
- The current funding model does not accurately capture the unmet demand from the outpatient workload. The majority of nephrology is outpatient based. There is a 3 year waiting time for category 3 public neurology outpatients.
- An anticipated reduction in working hours, from increasing female participation in the workforce and increased up-take of part time work.

**Training**
- Challenges to recruiting sufficient trainees to fill advanced training positions due to the onerous 24/7 on-call workload.
- All neurology training is undertaken in the public sector with trainees rotating between sites.
- The assumption regarding trainee retention in WA is largely correct for neurology.

**Workforce**
- Insufficient number of specialists to address the unmet demand.
- Most neurologists work across both public and private sectors (ratio of around 2:1), with few in private practice only.
- The restructure of the South Metropolitan Health Service has not accounted for waitlist demand.
- Newly graduated specialists should not be expected to provide services in outer-metropolitan and rural locations without appropriate support.
- There is capacity to increase neurology clinic numbers in the public system but there is a limit on the activity that is being ‘bought’.
- Subspecialisation is impacting on rural practices, with neurologists primarily located in metropolitan centres resulting in inequitable distribution.
The PMH paediatric neurology workforce (4.4 FTE) provides a Statewide service including neonatal consults at KEMH and on call services across WA (i.e. phone calls/phone consults/emails for advice from GPs, EDs, paediatricians, other hospitals in Perth and across WA).

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, HSPs, the Neurosciences and Senses Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

**Recruitment and retention/workforce**

- Support to implement service delivery models that include rural locations (i.e., funding of specialist and training positions) as current arrangements are visiting models and do not support supervision of trainees.
- Support the establishment/expansion of networks with tertiary hospitals.
- Continue to support the use of Telehealth to follow-up neurology cases, recognising it is not suitable for review of new patients.
- Review the balance of public and private specialists. The ratio should be around 2:1. Only a few work in private only, and only a few work in public only.

**Training**

- Implement training models to improve the attraction of neurology including supporting employment of additional registrars for 24/7 rosters to cover shifts, reduce burn-out and improve the training experience.
- The expected trainee throughput of 5 per year, recognising that not all posts may be filled, should ensure that the workforce is maintained over the next 10 years, but is unlikely to address unmet demand. There are 6 accredited training positions, so the projected number of specialists will slowly increase over the next few years.
Neurosurgery

Neurosurgery is concerned with the prevention, diagnosis, treatment and rehabilitation of disorders which affect any portion of the nervous system including the brain, spinal cord, peripheral nerves and the extra-cranial cerebrovascular system. The State Neurosurgery Service operates at Sir Charles Gairdner Hospital (SCGH), Royal Perth Hospital (RPH) and Princess Margaret Hospital. SCGH undertakes elective neurosurgery and most of the outpatient clinics; RPH undertakes neuro-trauma surgery and PMH specialises in neurosurgery in children.

Workforce characteristics

At 30 September 2015 there were 18 neurosurgery specialists who were registered to practise and engaged in clinical practice, of which 94% were male and 6% were female. The neurosurgery workforce had a median specialist age of 50 years, with 5.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 201 and 202.

The workforce was employed across the public and private sectors, although predominantly in the private sector, and in the metropolitan area. There was limited need for neurosurgery in rural areas and therefore an insufficient level of infrastructure, equipment and support services. See figures 203 and 204.
Demand and supply projections

In 2015, there were 2 vocational trainees in WA. To address projected growth in demand and retirements, 1.8 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.23 specialists per annum will be insufficient to replace approaching retirements, and to meet growth in service and retirement based demand. See figures 205 and 206.

Figure 205. Growth in service delivery based demand and retirement based demand versus trainee supply  
Figure 206. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls

In 2015, there was a shortfall of 5 specialists, with a projected shortfall of 11 and 16 specialists by 2021 and 2025, respectively. See figure 207.

Figure 207. Shortfall estimates
- High in 2015
- Projected to be critical by 2021
- Projected to be critical by 2025

National comparison

The number of neurosurgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 208.
Health Workforce 2025 identified neurosurgery as a small workforce which was included under ‘other surgery’ and was perceived to have difficulties in filling positions, particularly in non-metropolitan regions. Issues identified by the neurosurgery workforce include:

**Recruitment and retention**

- Theatre capacity is not aligned to demand, limiting the growth of the specialty.
- There is limited ability and need to expand neurosurgery into rural locations.

**Training**

- There are 3 accredited registrar positions in WA which should continue.
- Selection to a vocational training position in neurosurgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

**Workforce**

- An increasing administrative workload for specialists impacting upon clinical service delivery.
- An increasing level of sub-specialisation within clinical practice.

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, HSPs, the State Neurosurgery Service, the Cancer and Palliative Care Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Support to ensure there is sufficient infrastructure for neurosurgical service delivery, including expansion in the South Metropolitan Health Service.
- Adequate staffing of health services to ensure cover for surgeons for leave and on-call requirements, including an increased number of specialists.
- Consideration of health reform initiatives to support the neurosurgery workforce to meet demand.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons.28
**Training**

- Support to ensure there is sufficient infrastructure for trainee recruitment and supervision.
- Review of future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training.
- Review current training sites to identify opportunities to expand into the private sector taking into account a series of challenges pertaining to workload, remuneration, the division of labour between supervisor and trainee, government funding, and patient consent.\(^{28}\)

**Workforce**

- Consideration of the relevant models of care including neuro-oncology.
Nuclear medicine

Nuclear medicine uses radiopharmaceuticals (radioisotopes) in the diagnosis and treatment of a wide range of medical conditions. Current nuclear medicine techniques include: positron emission tomography (PET), single photon emission computed tomography (SPECT), cardiovascular imaging and bone scanning. Nuclear medicine specialists must comply with the requirements of the Radiation Safety Act and the Radiation Safety (General) Regulations.52

Nuclear medicine trainees can become fellows of the RACP with accreditation to practice as a nuclear medicine physician or can complete the RANZCR Nuclear Medicine Program with accreditation to practise as a specialist in nuclear medicine. The Australian Association of Nuclear Medicine Specialists undertakes site accreditation for nuclear medicine posts.

Workforce characteristics

At 30 September 2015 there were 26 nuclear medicine specialists who were registered to practise and engaged in clinical practice, of which 73% were male and 27% were female. The nuclear medicine workforce had a median specialist age of 50.5 years, with 3.8% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 209 and 210.

The workforce was employed relatively evenly across the metropolitan public and private sectors. See figures 211 and 212.

Figure 209. Specialist age distribution sustainability

![Specialist age distribution sustainability](image)

Figure 210. Specialist age and sex distribution

![Specialist age and sex distribution](image)

Figure 211. Specialist employment sector

![Specialist employment sector](image)

Figure 212. Specialist employment location

![Specialist employment location](image)

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Demand and supply projections
In 2015, there were 3 vocational trainees in WA. To address projected growth in demand and retirements, 2.1 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.8 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 213 and 214.

Risk assessment and shortfalls
In 2015, there was a shortfall of 5 specialists, with a projected shortfall of 7 and 13 specialists by 2021 and 2025, respectively. See figure 215.

National comparison
The number of nuclear medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 216.
Figure 216. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Nuclear medicine was one of the physician sub-specialties not modelled in Health Workforce 2025 due to its small size.

Issues identified by the medical imaging workforce that may impact on nuclear medicine include:

- Challenges accessing some of the required experiential training in areas that may be found outside a radiology department (i.e., nuclear medicine/PET, obstetrics and gynaecology imaging, cardiac imaging) despite networked training.
- WA Health trainees are required to complete employment paperwork at each site of rotation despite networked training and possible employment at a site previously.
- There are 3 accredited positions in WA at FSH, RPH and SCGH. Trainees are also required to complete a paediatric rotation at PMH.

Current and projected shortages in the nuclear medicine workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, the RACP, RANZCR, HSPs, the Cancer and Palliative Care Network and specialty representatives is suggested to develop an expanded specialist report including a Statewide workforce plan addressing the identified issues.
Obstetrics and gynaecology
Obstetricians and gynaecologists diagnose, treat and prevent disorders of female genitalia, urinary, rectal and reproductive organs, and care for women during pregnancy and childbirth\textsuperscript{63}.

Workforce characteristics
At 30 September 2015 there were 148 obstetrics and gynaecology specialists who were registered to practise and engaged in clinical practice, of which 58% were male and 42% were female. The obstetrics and gynaecology workforce had a median specialist age of 50 years, with 10.8% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 217 and 218.

The workforce was employed across the public and private sectors, although predominantly in the private sector, and there was a geographical imbalance between metropolitan and rural locations with 11% of specialists registering their principal place of practice as rural. In rural areas of WA the obstetrics workforce was supported by GP proceduralists. At 30 November 2015, there were 105 GP proceduralists regularly practising obstetrics in RA 2 to 5 locations, some of whom also practised general surgery and anaesthesia. In addition, Rural Health West facilitates medical specialists to visit and deliver services to rural communities through the MSOAP. See figures 219 and 220.

\begin{figure}[h]
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\includegraphics[width=\textwidth]{figure217.png}
\caption{Specialist age distribution sustainability}
\end{figure}

\begin{figure}[h]
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\includegraphics[width=\textwidth]{figure218.png}
\caption{Specialist age and sex distribution}
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\begin{figure}[h]
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\caption{Specialist employment sector}
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\includegraphics[width=\textwidth]{figure220.png}
\caption{Specialist employment location}
\end{figure}

\textsuperscript{63} \url{http://www.studyat.uwa.edu.au/careers/obstetrician-and-gynaecologist}
**Demand and supply projections**

In 2015, there were 39 vocational trainees in WA. To address projected growth in demand and retirements, 12.5 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 4.55 specialists per annum will be insufficient to replace approaching retirements, or meet growth in service and retirement based demand. See figures 221 and 222.

**Risk assessment and shortfalls**

In 2015, there was a shortfall of 20 specialists, with a projected shortfall of 51 and 80 by 2021 and 2025, respectively. See figure 223.

**National comparison**

The number of obstetrics and gynaecology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 224.
Figure 224. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

A 2015 clinical service review (the review) undertaken on behalf of the Department of Health WA\textsuperscript{64} considered a range of issues impacting on maternity services provided by non-tertiary public hospitals in the Perth metropolitan area. In response to the projected specialist shortfall identified in the Medical Workforce Report 2013/14\textsuperscript{65}, the review included the recommendation to ‘increase training opportunities in obstetrics and gynaecology in collaboration with Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) and rationalise the rotation of trainees through non-tertiary hospitals’.

Meeting RANZCOG requirements for training continues to pose challenges. Actions to address the specialist workforce shortfall undertaken or proposed by RANZCOG to date include:

- Increased outer metropolitan (east and south) rotations for RANZCOG Diploma trainees to support practise as GP obstetricians for areas without specialist cover.
- An advanced Fellowship trainee position supported in remote WA.
- A proposed increase in RANZCOG Fellowship trainee positions to 8 trainees (an additional 2 positions) from 2017.

Other issues affecting the obstetrics and gynaecology workforce include:

**Recruitment and retention/workforce**

- Ageing workforce with a significant volume of approaching retirements.
- The increasing diversity of the workforce, including the number of females entering the profession, will require strategies that promote flexibility and aim to best utilise resources as trends indicate that more practitioners will seek part-time options or to better balance their work and life commitments.
- Insufficient opportunities for specialists in outer metropolitan sites.
- Increased demand for services.


Training
- Challenges to accessing theatre time are affecting the surgical component of training.
- Insufficient specialist numbers in outer metropolitan sites impacts on training rotations.
Projected shortages in the obstetrics and gynaecology workforce will have an impact on the specialty’s future service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, RANZCOG, HSPs, Women’s and Newborns Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

Recruitment and retention/workforce
- Consider increasing the numbers of funded full-time specialist positions as opposed to sessional appointments in the public sector.
- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support.
- Review opportunities to employ appropriately trained IMGs where there is a workforce need, noting that the availability of IMGs has been relied upon to top up Australian trainees, however, this workforce source is likely to be impacted by a significant health workforce recruitment campaign in Qatar.

Training
- Review the capacity of the training program in WA to identify opportunities to increase the numbers of funded accredited training positions. Increasing training could increase service availability (e.g. surgical capacity in SMHS and East Metropolitan Health Service could support training if funding was available as there are local trainees).
- Support the development of early recruitment plans by health services targeted at senior registrars.
- Support expansion of networked training in the SMHS similar to the North Metropolitan Health Service.
Occupational and environmental health medicine

Occupational and environmental medicine is intrinsically involved with maintaining the safety and health of the workforce in both private and public sector. Occupational and environmental (OEM) physicians provide services including:

- Pre-employment medical assessments
- Fitness for work assessments
- Occupational rehabilitation and return to work programs for work-related and non-work related conditions
- Worksite visits (hazard identification, risk assessments and solutions)
- Health assessments and monitoring for workers exposed to hazards in the workplace (e.g. lead, isocyanates, asbestos, noise)
- Management of drugs and alcohol in the workplace
- Health and wellness programs (workplace stress).
- Involvement in medico-legal work and assessment of permanent impairment under the Workers Compensation system.

In WA, OEM physicians can be employed across the public and private sector, although:

- Most work predominantly in the private sector in private practice or contracting to provide OEM services to organisations in a range of industries (mining, oil and gas, manufacturing, health, education etc) or a mixture of both.
- A minority are employed directly by organisations in the private and public sector.

Access to workplaces and work sites supports OEM physician’s development of in-depth knowledge of the work environment, hazards and organisational culture. OEM physicians work in varying environments including:

- Seeing patients in private practice rooms, industrial medical centres or on worksites (in metropolitan areas and regionally).
- Some travel to regional centres and remote settings as required or on a regular basis.
- Some work in a multi-disciplinary team with nurses, occupational hygienists, ergonomists, injury management specialists, psychologists, allied health, and human resources to assess and resolve safety and health issues in the workplace.

Workforce characteristics

At 30 September 2015 there were 36 occupational and environmental medicine specialists who were registered to practise and engaged in clinical practice, of which 86% were male and 14% were female. The occupational and environmental medicine workforce had a median specialist age of 54.5 years, with 22.2% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 225 and 226.

The workforce was employed across the public and private sectors, although predominantly in the private sector, and there was a geographical imbalance between metropolitan and rural locations with only 6% of specialists registering their principal place of practice as rural. See figures 227 and 228.
Demand and supply projections

In 2015, there were 20 vocational trainees in WA. The current vocational trainee throughput of 4.67 specialists per annum will be sufficient to meet growth in demand and retirement based demand. To address projected growth in service and retirement base demand, nil new specialists will be required per annum. See figures 229 and 230.
Risk assessment and shortfalls

In 2015, there was a surplus of 23 specialists, with projected surplus of 36 and 50 specialists by 2021 and 2025. See figure 231.

Figure 231. Shortfall estimates

- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison

The number of occupational and environmental medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was above that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 232.

Figure 232. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

Issues identified by the OEM workforce include:

Recruitment and retention/workforce

- Although the current workforce faces a significant volume of approaching retirements, there is an immediate and projected surplus of specialists and trainees. Raising awareness of this will help to mitigate a future surplus of vocational trainees in the specialty.
Training
- There is minimal vocational training opportunity in the public sector. Vocational training is undertaken largely in the private sector where vocational trainees are predominantly contracted to industrial medical service providers.
- Supervision of vocational trainees is variable.
- The training settings vary according to the clientele and the availability of access to workplaces in a range of industries. A single training setting generally will not provide the depth and breadth required. This has to be supplemented via other means in the training program.
- With the downturn in the mining industry, vocational trainees face increasing difficulty in getting sufficient OEM practice employment.
- There is minimal vocational training opportunity in the public sector.

Expanded Specialist Reports
Collaboration between the Department, the RACP, HSPs, the private sector and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

Recruitment and retention
- Raise awareness of the immediate and projected surplus of specialists.

Training
- Raise awareness of the immediate and projected surplus of trainees to help mitigate a future surplus of vocational trainees in the specialty.
- Review of the current trainee throughput numbers of 2.27. There is only one specialist graduating per year.
Ophthalmology

Ophthalmology is the branch of medicine concerned with the study and treatment of disorders and diseases of the eye.

Workforce characteristics

At 30 September 2015 there were 71 ophthalmology specialists who were registered to practise, with 69 engaged in clinical practice. Of those registered to practice, 87% were male and 13% were female. The ophthalmology workforce has a median specialist age of 49 years, with approximately 5% of the workforce aged over 65 years and therefore anticipated to retire in the short term. It is also noted that two specialists have resigned from the ophthalmology workforce since 30 September 2015 which is not reflected in the current analysis. See figures 233 and 234.

Only one specialist is employed fulltime in the public sector only, with around 50% of the workforce working across the public and private sectors and providing between one and three sessions a fortnight in the public sector.

Although only 10% of specialists had a rural location as their principal place of practice, another 15% were registered as providing services to metropolitan and rural areas. Rural Health West facilitates ophthalmology specialists to visit and deliver services to rural communities in WA through the MSOAP.

Demand and supply projections

In 2015, there were 9 vocational trainees in WA. To address projected growth in demand and retirements, 6.9 specialists will be required per annum. The current vocational trainee throughput of 1.26 specialists per annum will be insufficient to replace approaching retirements and meet growth in service and retirement based demand. See figures 235 and 236.
Risk assessment and shortfalls

In 2015, there was a shortfall of 15 specialists, with a projected shortfall of 35 and 56 specialists by 2021 and 2025, respectively. See figure 237.

Figure 237. Shortfall estimates
- Medium in 2015
- Projected to be critical by 2021
- Projected to be critical by 2025

National comparison

The number of ophthalmology specialists registered with AHPRA, in WA, is provided for comparative purposes only and is not a true representation of the active workforce. Retired ophthalmologists tend to retain their AHPRA registration and continue to participate in academic and collegial programs only which may falsely inflate the workforce. See figure 238.
Issues and priorities

In 2006 under the leadership of Professor Ian Constable a WA State Eye Health Plan (the plan) was adopted by the Neurosciences and the Senses Health Network as a policy platform on eye health providing key recommendations in relation to preventable eye disease and has been used in developing HSP clinical service plans. Three initial priorities were identified including ensuring that eye health formed part of the new health promotion planning for WA, however due to resource issues and competing priorities limited progress has been made on the plan since 2011-1266.

Issues identified by the ophthalmology workforce include:

**Recruitment and retention**

- Increasing number of female trainees
- Increased age of entry to ophthalmology (with postgraduate medical schools) and resultant shortened working life.
- Cataract surgery is largely undertaken by visiting medical practitioners resulting in less referral to teaching hospitals and insufficient training case mix and opportunities.

**Training**

- There is no ophthalmology tertiary presence at FSH.
- Ophthalmology in WA is projected to enter a critical shortage of doctors by 2017 with no capacity to supervise and train registrars, therefore relying on IMGs.
- Concerns regarding access to supervised surgery as part of the training program.
- There is not a dual discipline pathway for ophthalmology as the objective of the Vocational Training Program is to produce a specialist ophthalmologist who, on completion of training, is equipped to undertake safe, unsupervised, comprehensive, general ophthalmology practice.

**Workforce**

- Lack of progress on implementing the approved hub and spoke model presented in the WA State Eye Health Plan.

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Expanded Specialist Reports

Collaboration between the Department, the Royal Australian and New Zealand College of Ophthalmologists (RANZCO), the Neurosciences and Senses Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Where appropriate, encourage non-specialist staff such as ophthalmic nurses, ophthalmic assistants and clerks to become more involved in service delivery.
- Review current and alternative funding models including:
  - Channelling the current income from public sector cataract surgery into maintaining outpatient services.
  - Further support for macular degeneration injection clinics as another source of activity based funding (ABF).
  - Exploring the legalities of Medicare billing to potentially improve access to Medicare funding for routine services such as plaquenil and diabetic screening, ocular hypertension follow-up, chronic stable glaucoma etc.
- Implement strategies to support the increasing diversity of the workforce, including the number of females entering the profession.
- Support implementation of the WA State Eye Health Plan.

**Training**
- Establishment of additional public sector specialist positions at RPH to support the supervision of trainees and continued accreditation of the ophthalmology training program in WA.
- Support the ophthalmology workforce to apply for specialist training program positions.

**Workforce**
- Review of workforce numbers working across the public and private sector and total workforce numbers (two specialists have resigned from the ophthalmology workforce since 30 September 2015 which is not reflected in the current analysis).
- Recognition of the following considerations in future workforce planning:
  - Onsite specialist staff, dedicated ophthalmic theatre nurses, and surgical devices are required to provide complex eye surgery to patients.
  - The imaging equipment utilised for ophthalmology is expensive so it is most cost-effective to concentrate the subspecialists around the equipment (and each other) in one central location.
  - Patients must remain with the item of equipment on which they were imaged as there is no way of viewing the images in other hospitals.
  - Ophthalmology patients (both outpatient and tertiary) are often elderly, visually impaired, and socioeconomic disadvantaged and a central location with convenient access to public transport, accommodation and social and community support is beneficial.
Oral and maxillofacial surgery

Oral and Maxillofacial Surgery is a combined medical and dental surgical specialty which provides the diagnosis and treatment of conditions affecting the mouth, jaws, face and neck.

To be eligible for the Oral and Maxillofacial Surgery training program, a candidate must have completed a medical degree, a dental degree, a medical intern year, a resident medical officer surgery-in-general year, and hold general registration with both the Dental Board of Australia (DBA) and the Medical Board of Australia (MBA). Fellowship in Oral and Maxillofacial Surgery, following a minimum four years of vocational registrar training, is required for registration with the DBA and the MBA as an Oral and Maxillofacial Surgeon.

In WA, the sole public service provider of specialist dental services is the Oral Health Centre which is part of the School of Dentistry at the University of WA. Dental services for medically compromised children are provided in the Dental Clinic at PMH.

Workforce characteristics

At 30 September 2015 there were 20 oral and maxillofacial surgery specialists who were registered to practise and engaged in clinical practice, of which 75% were male and 25% were female. The oral and maxillofacial surgery workforce had a median specialist age of 49 years, with 10% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 239 and 240.

The workforce was employed across the public and private sectors, although predominantly in the private sector. There was a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, although 15% of specialists are registered as providing services to metropolitan and rural areas. See figures 241 and 242.

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Demand and supply projections

In 2015, there were 5 vocational trainees in WA. To address projected growth in demand and retirements, 1.8 new specialists will be required per annum. The current estimated vocational trainee throughput of 1.33 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 243 and 244.

Risk assessment and shortfalls

In 2015, there was a shortfall of 4 specialists, with a projected shortfall of 4 and 5 specialists by 2021 and 2025, respectively. See figure 245.
Figure 245. Shortfall estimates

- Medium in 2015
- Projected to be medium by 2021
- Projected to be medium by 2025

National comparison

The number of oral and maxillofacial surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined shown in the figure below as AUS-WA. See figure 246.

Figure 246. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

A review of the National Oral Health Plan 2015-2024\(^6\) and Australia’s Future Health Workforce: Oral Health\(^7\) identified the following issues for consideration:

**Recruitment and retention/workforce**

- The similarity of the scope of practice between oral and maxillofacial surgeons and oral surgeons.

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Note: The Association of Oral and Maxillofacial Surgeons hold the view that another tier of training is not necessary for the oral surgery workforce. However, consultation has identified that the scope of practice of oral and maxillofacial surgeons has expanded. Oral surgery became officially recognised as oral and maxillofacial surgery in the 1980s, however, registration as an oral surgeon was not closed in WA and New South Wales, and subsequently the category transitioned across to the nationalised body, AHPRA. There has not been any training program for oral surgery in Australia for almost 30 years. The University of Sydney has recently advertised a Doctor of Clinical Dentistry (Oral Surgery) course, although the scope of practice described in the syllabus does not extend beyond that of a general dentist.

Demand for oral health services is expected to grow due to the growth and ageing of the population, increased tooth retention, consumer expectations and changing dental service provision.

Inequitable geographic distribution of the workforce.

Training

The supply of oral and maxillofacial surgeons is restricted by the number of training places, and that there is currently an insufficient number of training places to meet demand.

Limitations on permanent specialist FTE and theatre lists across tertiary hospital sites (particularly at PMH and SCGH) affect the prospects of accreditation for further vocational registrar training in oral and maxillofacial surgery.

Shortages in the oral and maxillofacial surgery workforce have an impact on the specialty’s immediate service delivery as well as its capacity to train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, the RACP, the Office of the Chief Dental Officer, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

Recruitment and retention/workforce

- Facilitate the development of a cross-sectoral recruitment and business plan to ensure there is sufficient infrastructure for oral and maxillofacial surgery service and trainee recruitment and supervision.
- Support to ensure that the skills and competencies of the oral health multidisciplinary workforce are used to address the needs of the priority populations (i.e., socially disadvantaged).
- Support to ensure a flexible approach to workforce utilisation.

Training

- Review strategies to support the increase in number of vocational training positions including the establishment of funded vocational training positions through the Office of the Chief Dental Officer.
- Support strategies to increase specialist FTE and access to elective theatres to improve the prospects of accreditation for further vocational training positions.

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Orthopaedic surgery

Orthopaedic surgery involves diagnosis, care and treatment of patients with disorders of the bones, joints, muscles, ligaments, tendons, nerves and skin and includes the use of medical, physical and rehabilitative methods as well as surgery.

Workforce characteristics

At 30 September 2015 there were 111 orthopaedic surgery specialists who were registered to practise and engaged in clinical practice, of which 97% were male and 3% were female. The orthopaedic surgery workforce had a median specialist age of 47 years, with 3.6% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 247 and 248.

The workforce was employed across the public and private sectors, although predominantly in the private sector. There was a geographical imbalance between metropolitan and rural locations with only 6% of specialists registering their principal place of practice as rural, although another 15% of specialists are registered as providing services to metropolitan and rural areas. See figures 249 and 250.

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**Figure 247. Specialist age distribution sustainability**

**Figure 248. Specialist age and sex distribution**

**Figure 249. Specialist employment sector**

**Figure 250. Specialist employment location**
Demand and supply projections

In 2015, there were 23 vocational trainees in WA. To address projected growth in demand and retirements, 7.2 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 3.22 specialists per annum will be insufficient to replace approaching retirements, and meet projected growth in service and retirement based demand. See figures 251 and 252.

![Figure 251. Growth in service delivery based demand and retirement based demand versus trainee supply](image)

![Figure 252. Estimated supply and demand of specialists 2015-2025](image)

Risk assessment and shortfalls

In 2015, there was a shortfall of 1 specialist, with a projected shortfall of 23 and 40 specialists by 2021 and 2025, respectively. See figure 253.

![Figure 253. Shortfall estimates](image)

- Low in 2015
- Projected to be medium by 2021
- Projected to be high by 2025

National comparison

The number of orthopaedic surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 254.

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72 Consultation has indicated that there is unlikely to be a significant increase in demand as there is limited capacity for expansion in the public sector and the population growth is slower than previously anticipated.

73 Consultation has indicated that there is likely to be a significant increase in demand as there is limited capacity for expansion in the public sector and the population growth is slower than previously anticipated. It is unlikely that 40 specialists will be required within 10 years.
Issues and priorities

Health Workforce Australia 2025 identified orthopaedic surgery as a workforce where supply was greater than demand. Local workforce analysis indicates that while there is a shortfall of 1 specialist in 2015, by 2025 it is projected that this will increase to 40 specialists.

The Australian Orthopaedic Association (AOA) acknowledges the workforce planning issues and engaged HealthConsult to undertake a project study of the current orthopaedic workforce nationally, to identify issues, formulate a methodology and identify opportunities to address workforce shortages. The survey was completed in October 2016 and the results will provide AOA with a tool to plan for orthopaedic surgeon requirements into the future.74

Issues identified by the orthopaedic surgery workforce include:

**Recruitment and retention**
- Maldistribution is a major issue with difficulties in attracting fellows into the public sector, and a tendency for most practitioners, including IMGs to set up practice in metropolitan areas.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons28.

**Training**
- There is minimal capacity to expand training positions in the public sector.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low28. The movement between the jurisdictions balances out in orthopaedic surgery.
- Selection to a vocational training position in orthopaedic surgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

**Workforce**
- Changing models of care are impacting on conservative and operative management of conditions.

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- There is a trend to perform procedures on patients in older age groups.
- Insufficient infrastructure in rural areas to support efficient practice (e.g. higher rate per procedure).

**Expanded Specialist Reports**

Collaboration between the Department, RACS, the Australian Orthopaedic Association, the Musculoskeletal Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report for the orthopaedic surgery workforce building on feedback received and including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Review incentives in the private sector for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support, including rural incentives.

**Training**
- Review current training sites to identify opportunities to expand into the private sector, where applicable, taking into account a series of challenges pertaining to workload, remuneration, the division of labour between supervisor and trainee, government funding, and patient consent[28].

**Workforce**
- For future workforce projections:
  - Review vocational trainee throughput to account for the changes to the new SET program that appoints at a later stage of training. There are 5 trainees graduating on average per year.
  - The orthopaedic training program will be competency based in the future which may impact on trainee throughput (e.g. may take longer to achieve fellowship).
  - Specialist orthopaedic surgeons typically semi-retire (i.e. cease operating but continue to provide services in some capacity).
Otolaryngology, head and neck surgery
Otolaryngology is the surgical investigation and treatment of conditions of the ear, nose, throat, head and neck.

Workforce characteristics
At 30 September 2015 there were 38 otolaryngology, head and neck surgery specialists who were registered to practise and engaged in clinical practice, of which 95% were male and 5% were female. The otolaryngology, head and neck surgery workforce has a median specialist age of 47 years, with 7.9% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 255 and 256.

The workforce was employed relatively evenly across the public and private sectors. While only 3% of specialists registered a rural location as their principal place of practice, another 21% of specialists were registered as providing services to metropolitan and rural areas. Rural Health West facilitates otolaryngology, head and neck surgery (adult and child) specialists to visit and deliver services rural remote communities in WA through the MSOAP. See figures 257 and 258.
Demand and supply projections

In 2015, there were 8 vocational trainees in WA. To address projected growth in demand and retirements, 4.1 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.12 specialists per annum will be insufficient to replace approaching retirements, and meet growth in service and retirement based demand. See figures 259 and 260.

Risk assessment and shortfalls

In 2015, there was a shortfall of 13 specialists, with a projected shortfall of 22 and 30 specialists by 2021 and 2025, respectively. See figure 261.

National comparison

The number of otolaryngology, head and neck surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 262.
Figure 262. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce Australia 2025 identified otolaryngology as a workforce where supply was greater than demand; however, local workforce analysis indicates a shortfall of 13 specialists in 2015, with a shortfall of 35 specialists projected by 2025.

Issues that have been identified by the orthopaedic surgery workforce include:

**Recruitment and retention**
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons\(^{28}\).
- There are large waitlists for head and neck surgery.

**Training**
- Training and supervision is limited by availability of specialists and ratio of posts/trainees required for accreditation purposes.
- The RACS has a national selection process for trainees (i.e. trainees are ranked nationally) so there is no guarantee that WA will get trainees every year or that trainees will be from WA. In 2015 there were there are seven training registrars, with one training post under accreditation review by RACS. Four of the seven registrars were from WA.
- The national allocation process takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.
- Insufficient access to theatres is limiting ability to increase training posts (FSH lost a training post in 2016 due to inability to meet training requirements).
- Access to specialist positions in WA can be a challenge.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low\(^{28}\).

**Workforce**
- Male dominant workforce.
- FTE is significantly less than headcount.
- Workforce distribution and activity is unevenly allocated between the North Metropolitan Health Service and the South Metropolitan Health Service (SMHS); and between metropolitan and rural locations. Rural services are provided on a visiting basis. Some services can be provided by GP proceduralists.
Of particular concern is the lack of planning for integrated complex cancer surgery and ENT/neurosurgical (intracranial) services in the SMHS which can result in increased treatment response time for patients (and potentially avoidable adverse outcomes). While there is a state-wide neurological service at Sir Charles Gardiner Hospital there may not be capacity to take on additional caseload from SMHS.

Shortages in the otolaryngology, head and neck surgery workforce have an impact on the specialty’s immediate service delivery as well as its ability to train its future workforce and build workforce capacity.

**Expanded Specialist Reports**

Collaboration between the Department, the RACS, the AOA, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Consideration of work-life balance and support for initiatives that maintain current levels of service delivery given impending retirements.

**Training**
- Consideration of the surgical training recruitment process in WA and provision of support for initiatives to increase the competitiveness of WA trainees in the national allocation process.

**Workforce**
- Consider models of care/service delivery that support increased access to operating theatres to support expansion of services to secondary hospitals.
- Support for routine cases to be undertaken in general hospitals to relieve pressure on tertiary hospitals (non-routine caseload).
- Align with the clinical service delivery model (including operating theatre access) to support patients with head and neck cancer, and requiring skull base surgery in the SMHS. This includes review of where increases in specialist FTE could occur to balance distribution.
- Review of future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training, resulting in a falling attrition rate.
Paediatric medicine

General paediatrics is a multidisciplinary specialty providing expert diagnosis, treatment and care for infants, children and young people aged from 0 to 19 years, working closely with other medical professionals including general practitioners, paediatric nurses, allied health professionals and associated community organisations.⁷⁵

Workforce characteristics

At 30 September 2015 there were 194 paediatric medicine specialists who were registered to practise and engage in clinical practice, of which 50.5% were female and 49.5% were male. The paediatric medicine workforce has a median specialist age of 46 years, with 5.2% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 263 and 264.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There was a geographical imbalance between metropolitan and rural locations with only 8% of specialists registering their principal place of practice as rural. Rural Health West facilitates paediatrics – general and paediatrics – psychiatry specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 265 and 266.

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75 https://www.racp.edu.au/
Demand and supply projections
In 2015, there were 109.5 vocational trainees in WA. To address projected growth in demand and retirements, 14.5 specialists will be required per annum. The current estimated vocational trainee throughput of 20.53 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 267 and 268.

Risk assessment and shortfalls
In 2015, there was a shortfall of 36 specialists for paediatric medicine, with a projected surplus of 28 and 60 specialists by 2021 and 2025, respectively. See figure 269.

National comparison
The number of paediatric medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 270.
Issues and priorities

Health Workforce Australia 2025 modelled physicians - paediatrics and child health, finding that it was one of the specialties that would be substantially affected by any moves to reduce immigration, and that advanced training places had more than tripled between 2001 and 2011.

Issues identified by the paediatric medicine workforce include:

**Recruitment and retention**

- There is an increasing prevalence of specialists engaging in part-time work arrangements.
- There is a lack of succession planning for specialists in the public sector.
- There are concerns regarding subspecialty trainees and suitability to practice in general paediatrics.
- Fellow positions are allocated to a sub-specialty usually when a registrar expresses an interest in being a fellow in that area. Many fellows are trainees in adult medicine interested in a rotation in paediatrics.
- A potential mismatch in some sub-specialties between the number of trainees required to provide a service and the number of specialists required. That is, the trainees are required to provide services, however not all are currently required as specialists.
- Models of care are changing, with changes in the transition from child to adult services and paediatricians are increasingly looking after older patients in private practice (consequently influencing demand for services).
- Increased demands for specialist support for trainees because of the move to 24 hour specialist in-house cover, particularly in paediatric emergency medicine, neonatology and general paediatrics.
- There are issues with the geographic distribution of the paediatric workforce with an existing workforce gap in general paediatrics and an ageing workforce in regional centres.
- Re-entry to the acute paediatric workforce is challenging (e.g. for females returning after childbirth).

**Training**

- There are an increased number of females in training programs as well as job share and part-time working arrangements that are likely to impact on working hours and increase the length of training time.
- The training model tends to focus on acute care settings/hospitals. The current training model is not state-wide which impacts on service delivery and case-mix in peripheral hospitals and is not conducive to recruitment and retention of specialists to these locations.
Many trainees do not feel work ready upon completion of training, with corresponding trends of either delaying completion of fellowship, undertaking further post Fellowship training, or dual training extending the time taken to enter the workforce.

Trainees are able to complete any of the divisional training programs in combination as dual training (provided it is in the same division Adult Medicine or Paediatrics and Child Health). The Australian College of Emergency Medicine (ACEM) recognises joint training in Paediatric Emergency Medicine by ACEM and RACP trainees.

There is no cap on numbers entering basic training, although the RACP is considering a ‘selection into training’ or enrolment criteria as a means of limiting numbers. Currently any RMO interested in general paediatric training is eligible to become a basic trainee.

There are no exit exams in paediatric medicine; however, trainees are expected to undertake the college requirements to gain fellowship. It may take longer than 3 years to meet the requirements of advanced training due to availability of opportunities. Extra leave relief and emergency rotations do not necessarily ‘count’ towards college requirements.

The attrition rate once trainees have passed the clinical and written exams and commenced advanced training is very low. Attrition during training is usually due to a change in career or deferment due to lack of term availability, or passing the written exam and deferring the clinical.

Training length is flexible. There is no maximum time.

Training positions in specialties are very competitive and registrars are heading interstate or overseas to complete their training. It is then very hard to encourage registrars training overseas to return to Australia due to a lack of specialist positions in the public sector. Undertaking a PhD or research helps specialists compete in securing a position in a sub-specialty area of paediatrics.

Medical graduates or basic trainees with an interest in paediatrics are encouraged to undertake dual training in general paediatrics and a sub-specialty as there is greater demand in general paediatrics.

Sub-specialties have reported that the following issues impact on training:

- Long waiting list
- Specialist positions are largely tertiary public hospital base
- Considerable uncertainty in training positions per annum related to variable funding leading to trainees completing overseas.
- Procedural components of training are highly competitive and limit opportunities.

**Workforce**

There has been a move to create additional specialties and sub-specialties.

Supply exceeds demand in the paediatric specialty areas. Specialists are choosing to stay on as Fellows as there is a lack of paid public sector positions. It is very competitive to acquire a paid position even though there is not enough specialists to cover rosters in general paediatrics.

Staffing ratios are different between specialties. In general paediatrics (at PMH) there are three teams of 4-6 doctors per team. There is usually 1 registrar and 1 resident on each team. All sub-specialties are allocated a registrar and a resident. This is not dependent on the inpatient load. Sub-specialties may share registrars and residents.

The sub-specialty paediatric areas can have very different patient loads.

- Rheumatology, Renal and Dermatology have a quiet inpatient load. Most of this work is outpatient.
- Respiratory is a very large and busy inpatient department. Most patients are very complex and have a long length of stay.
Rehabilitation has very complex long-stay patients.

Respiratory and Rehabilitation ‘share’ funded fellow positions (which affects data capture).

Cardiology and Gastroenterology have fewer inpatients. Complex eating disorders that used to be classified as gastroenterology are now treated by adolescent medicine.

- Paediatric medicine involves more patient contact time than adult medicine.
- Expressed workforce demand is not adequately captured through existing data sources for community paediatrics (i.e., child protection) and paediatric sub-specialties providing services in public outpatient departments.

**Expanded Specialist Reports**

Collaboration between the Department, the RACP, HSPs, the WA Child and Youth Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Support to continue to include rural rotations in the RACP training program.
- Support for establishment of full-time funded public sector fellow positions, where there is an identified need, for advanced trainees, and to support on-call rosters to minimise the impact on work-life balance in terms of hours and locations of employment.
- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support.
- Review opportunities to support return to the workforce programs.
- Support initiatives such as training networks and hub and spoke models that provide:
  - Opportunities for advanced trainees with an interest in the private sector to establish a private practice, with linkages to an acute care setting.
  - Linkages with rural and metropolitan hospitals to support opportunities for rotating between sites (respite and learning opportunities).
  - Support to implement a networked training model, if appropriate, to assist in service provision at outer metropolitan and rural sites and to improve case-mix (e.g. a trial between FSH and Rockingham General Hospital is currently underway and could serve as a case study).
  - Support for STP applications.

**Training**

- Consideration of including/expanding available training opportunities with simulation training, where applicable.
- Support the examination of the medical training pipeline to identify imbalances of trainees required to provide services versus specialist positions needed and to encourage retention of trainees in WA.

**Workforce**

- Investigate the suitability of alternative models to the WA context (i.e. satellite network at Flinders Children’s Hospital) to support workforce sustainability, including consideration of specialties that could provide services in peripheral sites to provide services closer to home.
- Support the implementation of appropriate tools to assist in the capture of all episodes of treatment in complex patients under ABF. Rural outpatient clinic data capture should also be improved.

- Acknowledgement in workforce planning that:
  - community and child health is an area that has a large workload
  - equity of access to meet demand is a primary factor in determining distribution of services.
Paediatric surgery

Specialist paediatric surgeons usually provide treatment for non-cardiac thoracic surgery, general paediatric surgery and paediatric urology, including involvement in the antenatal management of congenital structural abnormalities, neonatal surgery and oncological surgery for children.

Workforce characteristics

At 30 September 2015 there were 8 paediatric surgery specialists who were registered to practise and engaged in clinical practice, of which 63% were male and 37% were female. The paediatric surgery workforce has a median specialist age of 46 years, with no specialists aged over 65 years. See figures 271 and 272.

The workforce was employed across the public and private sectors, although predominantly in the public sector. There was a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, although 12% of specialists were registered as providing services to metropolitan and rural areas. See figures 273 and 274.

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Figure 271. Specialist age distribution sustainability

Figure 272. Specialist age and sex distribution

Figure 273. Specialist employment sector

Figure 274. Specialist employment location

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Consultation has advised that the FTE is likely to be approximately half of the headcount.

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76 Consultation has advised that the FTE is likely to be approximately half of the headcount.
Demand and supply projections
In 2015, there were 2 vocational trainees in WA; however, consultation has indicated that there are 4 vocational trainees from WA in the paediatric surgery program with RACS. To address projected growth in demand and retirements, 0.8 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.23 specialists per annum will be insufficient to replace approaching retirements, and meet projected growth in service and retirement based demand. See figures 275 and 276.

Figure 275. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 276. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 2 specialists, with a projected shortfall of 3 and 6 specialists by 2021 and 2025. See figure 277.

Figure 277. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

77 Three trainees are in the Eastern States and 2 have recently gained Fellowship.
National comparison

The number of paediatric surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 278.

Figure 278. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

Health Workforce 2025 identified that one of the workforces with an existing shortage was paediatric surgery, however due to the small workforce size it was included in the ‘other surgery’ group. A primary issue identified was that the workforce was struggling to keep pace with demand, particularly with referrals directly to children’s hospitals from other medical specialists.

Other issues identified by the paediatric surgery workforce include:

**Recruitment and retention**
- There are an increasing number of complex cases requiring multiple surgical interventions.
- Increasing trends towards sub-specialisation.
- Existing workforce shortage affecting:
  - provision of on-call cover in the public sector in a low volume specialty
  - capacity to meet clinical loads and address increasing demand
  - capacity to fulfil administrative, research, training and teaching commitments.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons\(^{28}\).

**Training**
- The effect of safe working hours on achieving activity levels required for fellowship.
- Insufficient funding for overseas fellows.
- The RACS has a national selection process for trainees (i.e. trainees are ranked nationally) so there is no guarantee that WA will get trainees every year or that trainees will be from WA.
- The national allocation process takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low\(^{28}\).
Workforce

- Inadequate capture of surgery undertaken in non-government hospitals.
- Waitlist for category 2 patients is 6-8 months resulting in unmet demand.
- Surgical activity must be based on operations, not separations. Separation data misses all surgical activity associated with patients discharged from other units (i.e., paediatric tumour surgery, surgically placed lines, neonatal surgery, antenatal counselling for foetal conditions).

Shortages in the paediatric surgery workforce have an impact on the specialty’s immediate service delivery as well as its ability to train its future workforce and build workforce capacity.

Expanded Specialist Reports

Collaboration between the Department, the RACS, HSPs, the WA Child and Youth Health Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Support implementation of models of care/service delivery that address existing workforce shortages and support succession planning.
- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support, including rural incentives.
- Increasing the level of resourcing and infrastructure to support clinical practice in rural and remote locations, where applicable.

Training

- Review current training sites to identify opportunities to expand into the private sector taking into account a series of challenges pertaining to workload, remuneration, the division of labour between supervisor and trainee, government funding, and patient consent.
- Support models that incorporate simulation into skills training to improve training outcomes.

Workforce

- Review attrition rate for future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training.
Pain medicine

Pain medicine is a fairly new specialty, recognised in Australia in 2005. Specialists in pain medicine achieve fellowship of the Faculty of Pain Medicine (FPM) by undertaking a post-specialisation qualification following qualification or training in anaesthesia, general practice, medicine, surgery, psychiatry or rehabilitation medicine.

Workforce characteristics

At 30 September 2015 there were 22 pain medicine specialists who were registered to practise and engaged in clinical practice, of which 86% were male and 14% were female. The pain medicine workforce was relatively young with a median specialist age of 49 years, and 4.5% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 279 and 280.

The workforce was employed across the public and private sectors, although predominantly in the private sector, and there was a geographical imbalance between metropolitan and rural locations with only 5% of specialists registering their principal place of practice as rural. The National Pain Strategy notes that, in general, geographical isolated people are less likely to have access to evidence-based pain services and community support. See figures 281 and 282.

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Demand and supply projections
In 2015, there were 4 vocational trainees in WA. To address projected growth in demand and retirements, 2.1 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.07 specialists per annum will be insufficient to meet growth in service and retirement based demand. See figures 283 and 284.

Figure 283. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 284. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 4 specialists, with a projected shortfall of 8 and 10 specialists by 2021 and 2025, respectively. See figure 285.

Figure 285. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be high by 2025

National comparison
The number of pain medicine specialists registered with AHPRA, in WA, per 100,000 of population in June 2015 was above that of the rest of Australia combined, shown in the figure below as AUS-WA. The figure for WA is likely to be falsely inflated by dual training registrants (e.g. there were 31 registrants in pain medicine with AHPRA in September 2015 with 22 engaged in clinical practice). See figure 286.

Figure 286. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Pain medicine was not included in Health Workforce Australia 2025 due to data limitations, however, issues identified by the workforce and the FPM were highlighted and are included in this profile.

Current and projected shortages in the pain medicine workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce.

Recruitment and retention
- There is severely limited access to pain medicine specialists in rural and remote locations.
- Waitlists for pain medicine range from 3 to 12 months.

Training
- There are a limited number of funded training positions in public and private hospitals.
- Insufficient exposure to pain medicine at junior doctor level.

Workforce
- An ageing population is likely to impact on demand for pain medicine.

Expanded Specialist Reports
Collaboration between the Department, the RACP FPM, the Department’s Musculoskeletal Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention
- Trainees in pain medicine are progressing to an additional specialist qualification and there has been some difficulty recruiting trainees to the FPM training program.
- Support promotion of pain medicine as a career.
- Support further development of a multidisciplinary approach to pain medicine.

Training
- Encourage dual training in anaesthesia and pain medicine. Dual ANZCA and FPM fellows are of great value to communities especially in regional centres.
Support best practice through encouraging completion of the FPM online education program ‘Better Pain Management – Pain Education for Professionals’ for medical practitioners with an interest in pain management.

**Workforce**

- Co-ordination of state and national workforce modelling planning
  - Development of systems to manage discrepancies between requirement for trainees, capacity to train as a region and workforce requirements for individual hospitals.
  - A clear system to adjust numbers of trainees to meet expected demand in five to 10 years.
- Raise the profile of pain medicine, and ensure that appropriate processes to fill areas of shortage are in effect.
- Consideration of the *Draft WA Framework for Persistent Pain 2016 - 2021* and the National Pain Strategy.

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Palliative medicine

Palliative Medicine is the provision of specialist care by a palliative medicine physician for people with terminal illnesses and chronic health conditions whether in the community, hospital or hospice settings. Palliative care medicine is a holistic approach to address physical, psychological and spiritual aspects of illness and is practised as part of a multidisciplinary team.

Training in palliative medicine is undertaken as an advanced program with the Australasian Chapter of Palliative Medicine (AChPM) following completion of basic training with the RACP, or for those who hold a fellowship in anaesthetics, rural and remote medicine, general practice, intensive care medicine, obstetrics and gynaecology, pain medicine, psychiatry, radiology, rehabilitation medicine and/or surgery.

Workforce characteristics

At 30 September 2015 there were 23 palliative medicine specialists who were registered to practise and engage in clinical practice, of which 61% were female and 39% were male. The palliative medicine workforce had a median specialist age of 46 years, with 8.7% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 287 and 288.

The workforce was employed across the public and private sectors, although predominantly in the private sector. While 9% of specialists registered a rural location as their principal place of practise, another 26% of specialists were registered as providing services to metropolitan and rural areas. Rural Health West facilitates palliative medicine specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 289 and 290.
**Demand and supply projections**

In 2015, there were 12 vocational trainees in WA. To address projected growth in demand and retirements, 1.9 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 3.20 specialists per annum will be sufficient to meet growth in service and retirement based demand. See figures 291 and 292.

**Figure 291. Growth in service delivery based demand and retirement based demand versus trainee supply**

**Figure 292. Estimated supply and demand of specialists 2015-2025**

**Risk assessment and shortfalls**

In 2015, there was a shortfall of 3 specialists, with a projected surplus of 7 and 13 specialists by 2021 and 2025, respectively. See figure 293.

**Figure 293. Shortfall estimates**

- Medium in 2015
- Projected to be low by 2021
- Projected to be low by 2025

**National comparison**

The number of palliative medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 294.
Issues and priorities

Health Workforce 2025 did not model palliative medicine due to data limitations; however issues identified have been included in this profile.

In WA, an extensive range of initiatives for health care providers have been implemented by the WA Cancer and Palliative Care Network\(^81\) under the guidance of the Palliative Care Network Advisory Committee to support the development of an integrated Statewide model of palliative care including a rural model, metropolitan area health services palliative care teams, paediatrics palliative care program, residential aged care training and mentoring programs and substantial resources including models of care.

Issues that have been identified by the palliative medicine workforce include:

**Recruitment and retention**

- Insufficient number of funded public sector specialist positions which is limiting opportunities for newly graduated specialists.
- Increasing numbers of specialists seeking life-work balances including part-time work opportunities, some which may be attributed to the number of females in the workforce.
- Services in the metropolitan area are provided across the public and private sectors leading to fragmentation of care. There is a prevalence of many service providers creating difficulties with establishing networks between specialists, colleges and hospitals.
- Many specialists work part time in palliative medicine due to lifestyle preference or dual specialisation.

**Training**

- Challenges with the STP funding limitations and short term service provision needs may result in the unintended consequence of training palliative care specialists in excess of workforce needs.
- Insufficient interest in rural rotations.
- Increasing numbers of female trainees and a tendency to seek part-time work.
- Paediatric Palliative Care has a specific training pathway recognised by RACP.

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Workforce

- Changes in service delivery may influence the demand for the palliative medicine workforce, including telehealth and changes in referral patterns\(^{82}\).
- Using demographic information is likely to give a more accurate picture than current activity within the specialty.
- The ageing population may increase demand for palliative medicine services.
- A number of trainees and fellows are dual training with the RACP and a number of fellows are also dual qualified which might not be reflected in the numbers\(^{83}\).
- The palliative care medicine workforce should aim align training numbers with workforce projections; however this is challenging if projections are based on inaccurate information and funding models don’t support expansion. Palliative care needs to be expanded to aged care and chronic conditions etc.

Shortages in the palliative medicine workforce have an impact on the specialty’s immediate service delivery as well as its capacity to train its future workforce. Any change to the projected future surplus of specialists in the palliative medicine workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, the AChPM, the RACP, HSPs, Palliative Care WA, WA Cancer and Palliative Care Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support, particularly in rural locations.
- Support alternative models of care and service delivery, particularly in areas where recruitment and retention is difficult, including education of the non-specialist workforce.

Training

- Support exploration of alternative sources for funding to combat the challenges of the current funding model.

Workforce

- Support establishment of networks between metropolitan and rural areas to support service delivery.
- Consider the paediatric palliative medicine workforce in future workforce planning, including:
  - WA population would suggest a requirement of 0.7-1.0FTE when benchmarked against other national units.
  - In WA there is only one specialist with paediatric palliative care qualifications and RACP recognition working across oncology and non-oncology - equivalent to 0.2FTE in paediatric palliative care.
  - There is significant risk to this facet of palliative care as there are no advanced trainees in the field WA.


\(^{83}\) Identification of dual trainees on the AHPRA registrar is being considered nationally.
Pathology

Pathology as a medical specialty underpins every aspect of medicine, from diagnostic testing and monitoring of chronic conditions, to genetic research and blood transfusion technologies and is integral to the diagnosis of every cancer.

Pathology includes the sub-specialties of anatomical pathology, chemical pathology, clinical pathology, forensic pathology, general pathology, genetics pathology, haematology, immunopathology and microbiology. Training can occur in one of the nine disciplines or trainees can undertake joint training with the RACP in haematology, immunopathology, endocrinology/chemical pathology or microbiology/infectious diseases. Post-fellowship training in some of the specialties is also available.

Workforce characteristics

At 30 September 2015 there were 216 pathology specialists who were registered to practise and engaged in clinical practice, of which 66% were male and 34% were female. The pathology medicine workforce had a median specialist age of 48 years, with 8.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 295 and 296.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 1% of specialists registering their principal place of practice as rural. See figures 297 and 298.
Demand and supply projections
In 2015, there were 45.5 vocational trainees in WA. To address projected growth in demand and retirements, 17.8 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 6.37 specialists per annum will be insufficient to replace approaching retirements, and meet projected growth in service and retirement based demand. See figures 299 and 300.

Figure 299. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 300. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 30 specialists, with a projected shortfall of 70 and 114 specialists by 2021 and 2025, respectively. See figure 301.

Figure 301. Shortfall estimates

- Medium in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

National comparison
The number of pathology specialists in WA, registered with AHPRA, per 11,700 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 302.
Issues and priorities

Health Workforce 2025 identified pathology as one of the specialties most likely to be in undersupply. Over the period 1999 to 2009 the proportion of the total clinical workforce for general pathology more than halved with advanced training places increasing by less than 50 percent between 2001 and 2011.

Issues identified by the pathology workforce include:

**Recruitment and retention**
- A trend towards reduced working hours among trainees and new fellows.
- There are a large number of joint trainees who do not practise in pathology following Fellowship.
- There are differences between private and public sector workforce practices, with higher proportions of time spent outside the laboratory in the public sector.
- There is currently a sufficient level of investment in research; however there is insufficient support from research institutes and established linkages within the health services in WA to support a Statewide research culture.
- Recent fiscal pressures have impacted on specialist retention and increased vulnerability of the workforce.
- Insufficient number of specialists and difficulties attracting specialists to regional and rural areas.
- There are significant cost barriers for pathologists to start their own practice.

**Training**
- There are an increasing proportion of female trainees.
- Trainees in the first three years of training tend to require a high degree of supervision and are not likely to contribute significantly to the workload.

**Workforce**
- Increasing sub-specialisation is an issue for service provision and affordability in the public sector.
- New innovations will change service requirements in pathology in the future.
- The clinical pathologist’s role is expanding into wards, ongoing clinical audit, adverse occurrence screening and critical incident monitoring.
- There is an existing shortage of pathologists.
- Services not billed under Medicare in the public sector are not included in demand calculations (e.g. unmet demand).
The demand for pathology services is expected to increase beyond historical rates because of the increasing knowledge of genetics and its role in disease (leading to more tests). Genetic components exist on all pathology training programs.

Current and projected shortages in the pathology workforce have an impact on the specialty’s ability to provide immediate service and future service, as well as its capacity to train its future workforce, particularly in some subspecialties.

**Expanded Specialist Reports**

Collaboration between the Department, the RCPA, the RACP, the Department’s Health Networks, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Support an appropriate geographic spread of pathology services to provide affordable and timely access to results.
- Consider options to improve rural incentives which would help to encourage the provision and retention of service in rural areas.
- Support to implement a career pathway that would help to provide for succession planning, address placements for vocational trainees, and seek to maximise the number of training positions.
- Encourage the development of centres of research excellence and linkages between health services to support the growth of research activity.

**Training**

- There is an opportunity cost in not providing those places to trainees who will practise in pathology.
- The creation of more funded training positions to expand the workforce and provide more adequate future training conditions.

**Workforce**

Consideration needs to be given during workforce planning to ensure that:

- There are sufficient experts in all areas of pathological diagnosis who can provide a second opinion in difficult diagnoses.
- There is some overlap with haematology, clinical immunology, pathology and endocrinology and some cross-referencing will be needed between clinical immunology and clinical haematology.
- There continues to be an overall shortage of appropriately qualified and accredited people working in the pathology sector.
Plastic and reconstructive surgery

Plastic and reconstructive surgery covers a broad spectrum of practice from aesthetic procedures to reconstructive surgery including trauma, burns and congenital defects. Plastic surgeons manipulate, repair and reconstruct skin, soft tissue and bone with the emphasis on maintain or restoring form and function, and they often operate as part of a team.

Workforce characteristics

At 30 September 2015 there were 43 plastic and reconstructive surgery specialists who were registered to practise and engaged in clinical practice, of which 88% were male and 12% were female. The plastic and reconstructive surgery workforce had a median specialist age of 48 years, with 7% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 303 and 304.

The workforce was employed across the public and private sectors, although predominantly in the private sector. There was a geographical imbalance between metropolitan and rural locations with no specialists registering their principal place of practice as rural, although 14% of specialists were registered as providing services to metropolitan and rural areas. Rural Health West facilitates plastic and reconstructive surgery specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 305 and 306.
Demand and supply projections
In 2015, there were 10 vocational trainees in WA. To address projected growth in demand and retirements, 2.7 new specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.4 specialists per annum will be insufficient to replace approaching retirements, and meet projected growth in service and retirement based demand. See figures 307 and 308.

Risk assessment and shortfalls
In 2015, there was a surplus of 4 specialists, with a projected shortfall of 4 and 13 specialists by 2021 and 2025, respectively. See figure 309.

National comparison
The number of plastic and reconstructive surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 310.
Issues and priorities

Health Workforce 2025 identified that plastic surgery was a workforce with sufficient current supply to meet demand.

Issues identified by the plastic and reconstructive surgery workforce include:

**Recruitment and retention**

- Difficulties recruiting plastic surgeons into the public sector (due to insufficient succession planning), with most plastic surgery conducted within the private sector impacting on the capacity to provide supervision of junior doctors and registrars, and results in the need to recruit internationally.
- Insufficient access to services in rural and remote communities.

**Training**

- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low.
- Selection to a vocational training position in plastic and reconstructive surgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

**Workforce**

- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons.
- Demand and supply is projected to cross-over in 2017, however consultation indicates that supply is likely to have already exceeded demand.
- Caseload is very cancer orientated. Trauma and congenital defects are also a significant component.
- Most plastic surgeons in the public sector, work fulltime.

Projected shortages in the plastic and reconstructive surgery workforce have an impact on the specialty’s future service delivery as well as its capacity to train its future workforce and build workforce capacity.
Expanded Specialist Reports
Collaboration between the Department, RACS Australian Board of Plastic and Reconstructive Surgery, the Department’s Injury and Trauma Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention
- Support tailoring of models of care for rural communities\(^{84}\), including development and maintenance of emergency surgical skills in the rural surgical workforce and support for a manageable workload for resident plastic surgeons and access to professional development leave, recreational leave and appropriate remuneration.
- Continued support to build on world-leading research in plastic and reconstructive surgery.

Training
- Support networked plastic surgery training between the public and private sector.

Workforce
- Review attrition rate for future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training.

Psychiatry

Psychiatry as a medical specialty involves working closely with a range of health care professionals in a variety of settings. Trainees in psychiatry develop a holistic understanding of the physical, mental, social and behavioural aspects of mental health problems.\(^{85}\)

Workforce characteristics

At 30 September 2015 there were 281 psychiatry specialists who were registered to practise and engaged in clinical practice, of which 60% were male and 40% were female. The psychiatry workforce had a median specialist age of 52 years, with 8.9% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 311 and 312.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 8% of specialists registering their principal place of practice as rural. Rural Health West facilitates psychiatry specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 313 and 314.

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\(^{85}\) The Royal Australian and New Zealand College of Psychiatrists. Accessed from: [https://www.ranzcp.org/Pre-Fellowship/Students-and-graduates/Why-choose-psychiatry.aspx](https://www.ranzcp.org/Pre-Fellowship/Students-and-graduates/Why-choose-psychiatry.aspx)
Demand and supply projections
In 2015, there were 80.5 vocational trainees in WA. To address projected growth in demand and retirements, 25.0 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 11.27 specialists per annum will be insufficient to replace approaching retirements, and meet projected growth in service and retirement based demand. See figures 315 and 316.

Figure 315. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 316. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 35 specialists, with a projected shortfall of 92 and 137 specialists by 2021 and 2025, respectively. See figure 317.

Figure 317. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

National comparison
The number of psychiatry specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 318.
Figure 318. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

Health Workforce 2025 indicated that psychiatry is one of a number of medical specialties faced with geographic maldistribution as well as maldistribution within the specialty. Psychiatry was already in undersupply in 2009 and was one the specialties most reliant on IMGs therefore workforce projections to 2025 proposing continued shortages are concerning.

Issues identified by the psychiatry workforce include:

**Recruitment and retention**
- High proportions of (and consequent reliance on) specialist IMGs in the existing psychiatry workforce.
- Challenges in attracting Australian-trained graduates to the profession.
- Inequitable distribution of the psychiatry workforce, evidenced by a high reliance on IMGs in regional areas.
- The number of funded specialist positions in the public sector is a significant factor for retention of locally trained psychiatrists in adult psychiatry and in subspecialties (e.g. child; psychiatry of older adults). There are likely to be trainees completing in the next few years who are unable to secure a specialist position.

**Training**
- Increasing numbers of females in training and in the workforce (many doctors train in psychiatry as a second specialty).
- Improved utilisation of the private sector for training as a consequence of the STP.
- Strains on supervisory capacity due to significant increases in vocational trainees; and the inability of some of the IMG workforce to supervise trainees, due to their registration requirements.
- Insufficient integrated planning to link trainee throughput with demand and availability of specialist positions in adult psychiatry and subspecialties (e.g. child and psychiatry of older adults).

**Workforce**
- Ageing workforce with a significant volume of approaching retirements.
- Increasing interest in part-time work arrangements.
- Workforce shortages for psychiatry are focused in the public sector, with acute psychiatry and adolescent psychiatry particular areas of concern.
Current unmet demand for psychiatrist services with the introduction of mental health reforms in recent years also expected to increase demand for services beyond historical rates. Projected shortages in the psychiatry workforce have an impact on the specialty’s future service delivery as well as its capacity to train its future workforce.

**Expanded Specialist Reports**
The psychiatry workforce was the first specialty to be produced under the National Medical Training and Advisory Network’s (NMTAN) subcommittee tasked with exploring the capacity for and distribution of medical training, including the geographic distribution of medical training and community needs. The key findings of the NMTAN report include:

- Intake needs to increase to address the projected undersupply by 2030.
- Partnerships between governments, employers, the college and trainees are required to factor in local circumstances.
- The future training pipeline should be reviewed in 2017 to factor in the transition to the new training program.
- Planning for the number of trainees is required for rotations into child and adolescent psychiatry or consultation liaison psychiatry, including consideration of other ways of learning and different settings.
- Integrated planning across all stages of training is required taking into account local needs.
- Planning for the increased numbers of supervisors is required, including identification, training and development of supporting resources.
- Consideration of strategies to support supervisors in private practice and rural locations taking into account appropriate supervision requirements.
- Review of administrative capacity of Branch Training Committees.
- Continue increasing training in non-traditional locations, including support for projects that ensure adequate distribution, recruitment, retention, professional development and job satisfaction.

At a local level, collaboration between the Department, RANZCP, HSPs, the Department’s Mental Health Network and specialty representatives is suggested to develop an expanded specialist report for the psychiatric workforce, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Support to continue telepsychiatry in eligible locations.
- Support to develop resources such, as online modules and peer support activities, would provide additional support for supervisors, including in rural and remote areas.

**Training**
- Support to raise awareness of psychiatry as a career option from high school, with reinforcement during undergraduate and postgraduate medical training.
- Consideration of opportunities to address retention of trainees including ongoing support and professional development opportunities for trainees, their supervisors and Directors of Training.

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87 The Royal Australian and New Zealand College of Psychiatrists. Accessed from: [https://www.ranzcp.org/Mental-health-advice/Telepsychiatry.aspx](https://www.ranzcp.org/Mental-health-advice/Telepsychiatry.aspx)
and establishment of well-supported training opportunities in regional facilities. (There has been some improvement in distribution through the high uptake of the MSOAP).

- Support to implement integrated career planning to link trainee throughput with demand and availability of specialist positions in adult psychiatry and subspecialties (e.g. child and psychiatry of older adults).

**Workforce**

- Consideration of service redesign and the impact on future workforce demand (e.g. development of shared care models).
- Consideration of the recommendations from the Stokes Review\(^\text{88}\).

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\(^{88}\) Stokes, B. 2012. Review of the admission or referral to and the discharge and transfer practices of public mental health facilities/services in Western Australia. Accessed from: http://www.mentalhealth.wa.gov.au/Libraries/pdf_docs/Mental_Health_Review_Report_by_Professor_Bryant_Stokes_AM_1.sflb.ashx
Public health medicine

Public health medicine is concerned with the health and care of populations with training in both clinical and public health medicine. Public health physicians (PHPs) are involved with the health and care of populations, health promotion, prevention of disease and illness, assessment of community health needs, provision of health services to communities and smaller population groups and public health research⁸⁹.

Workforce characteristics

At 30 September 2015 there were 27 public health medicine specialists who were registered to practise and engaged in public health practice, of which 63% were female and 37% were male. The public health medicine workforce had a median specialist age of 55 years, and no specialists aged over 65 years⁹⁰. See figures 319 and 320.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and 26% of specialists had a registered principal place of practice as rural. See figures 321 and 322.


⁹⁰ Consultation has identified that there is likely to be at least one public health physician over 65 years of age.
Demand and supply projections
In 2015, there were 8.5 vocational trainees in WA. To address projected growth in demand and retirements, 0.8 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 2.27 specialists per annum will be sufficient to meet projected growth in service and retirement based demand. See figures 323 and 324.

Figure 323. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 324. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a surplus of 6 specialists, with a projected surplus of 13 and 15 specialists by 2021 and 2025, respectively. See figure 325.

Figure 325. Shortfall estimates
- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison
The number of public health medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia shown in the figure below as AUS-WA. See figure 326.
Issues and priorities

Health Workforce 2025 did not include an assessment on public health medicine due to data limitations however issues identified by stakeholders are included:

Recruitment and retention

- The role of the public health physician (PHP) is expanding beyond established roles to encompass leading clinical strategies to meet current and emerging health challenges, such as management of chronic conditions, health system planning and whole system leadership and management which may impact on workforce supply and demand.
- Occasional difficulty recruiting specialists to some rural areas.

Training

- Training is funded through a mix of state-funded and STP programs.

Workforce

- Many specialists work part-time so headcount does not accurately represent the workforce availability.
- A number of specialists are dual qualified and will not have indicated public health as their main speciality.
- Ageing workforce with a significant number of imminent retirements with insufficient succession planning.
- PHP posts may be occupied by specialists in other fields including infectious diseases.

Any change to the current and future projected surplus of specialists in the public health medicine workforce will have an impact upon the specialty’s ability to provide service and train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, the RACP’s Australasian Faculty of Public Health Medicine, HSPs, the Department’s Public Health Directorate and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Acknowledgement that PHPs were highlighted in Health Workforce 2025 as being in shortage in WA and are a critical component of the medical service delivery workforce, particularly with expansion of the PHP role.
**Training**
- Consideration of initiatives that support early career exposure to public health medicine.
- Support for the development of a career pathway that incorporates succession planning.

**Workforce**
- In future workforce planning, take into consideration:
  - Many PHPs work outside of the state health department, including in academia, the private health and non-government sectors, Aboriginal Medical Services etc.
  - An SPR breakdown by (1) metro only (PHP FTE per 100,000), (2) rural only (PHP FTE per 100,000), and (3) state-wide responsibility (PHP FTE per 100,000) would be useful.
  - Local trainee numbers and anticipated throughput should be considered.
  - Data sources such as hospital utilisation rates and Medicare data do not capture PHP activity and other data sources should be explored.
  - Consultation with PHPs should be undertaken to identify those that are dual trained and may not list their main position as public health medicine.
Radiation oncology

Radiation oncologists use radiation to treat cancer and other diseases. Radiation oncologists work closely with the multidisciplinary team including with other medical specialists such as surgeons, medical oncologists and palliative care physicians.

Workforce characteristics

At 30 September 2015 there were 19 radiation oncology specialists who were registered to practise and engaged in clinical practice, of which 74% were male and 26% were female. The radiation oncology workforce had a median specialist age of 46 years, and no specialists aged over 65 years. See figures 327 and 328.

The workforce was employed across the public and private sectors, although predominantly in the private sector. While 5% of specialists had a rural location as their principal place of practice, another 21% of specialists were registered as providing services to metropolitan and rural areas. See figures 329 and 330.
Demand and supply projections
In 2015, there were 5.5 vocational trainees in WA. To address projected growth in demand and retirements, 1.8 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.77 specialists per annum will not be sufficient to meet estimated growth in service and retirement based demand. See figures 331 and 332.

Figure 331. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 332. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 5 specialists, with a projected shortfall of 7 and 10 specialists by 2021 and 2025, respectively. See figure 333.

Figure 333. Shortfall estimates
- High in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

National comparison
The number of radiation oncology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 334.
**Issues and priorities**

Health Workforce 2025 identified radiation oncology as a specialty perceived to be in shortage in 2009 with shortages increasing to 2025 if supply and demand trends are unchanged. Radiation oncology was a workforce that was not highly reliant on IMGs at this time. Demand for this workforce is anticipated to increase at greater than historical rates due to the increasing incidence of cancer and the impact of new cancer centres.

Issues identified within the radiation oncology workforce include:

**Recruitment and retention**

- Insufficient funded specialist positions.
- Insufficient support staff or protected time in the public sector work environment to support research and teaching activities.

**Training**

- Insufficient funded accredited vocational training and Fellowship (fifth year of vocational training) positions.
- Access to training in the private sector.
- Trainees may undertake dual training in Nuclear Medicine offered in conjunction with RACP.

**Workforce**

- A shortage of specialty support staff such as medical physicists and radiation therapists.

It is anticipated that current and projected shortages in the radiation oncology workforce will have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, the Royal Australian and New Zealand College of Radiologists, HSPs, the Department’s Cancer and Palliative Care Network and specialty representatives is recommended to develop an expanded specialist report, including a Statewide workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Exploration of opportunities to increase funded specialist positions.
Review incentives for recruitment and retention such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support, taking into consideration the maintenance of adequate rights of private practice for radiation oncologists attached to public hospitals.

**Training**
- Explore opportunities to increase the number of training positions.

**Workforce**
- Review numbers of support staff, including radiation therapists, medical physicians, nursing and clerical staff and determine applicability to service demand requirements.
Rehabilitation medicine

Rehabilitation medicine specialists diagnose, assess and manage individuals with a disability due to illness or injury to help them achieve an optimal level of performance and improve their quality of life.

Workforce characteristics

At 30 September 2015 there were 12 rehabilitation medicine specialists who were registered to practise and engaged in clinical practice, of which 67% were female and 33% were male. The rehabilitation medicine workforce had a median specialist age of 44 years, with 8.3% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 335 and 336.

The workforce was employed across the public and private sectors, although predominantly in the public sector, in the metropolitan area. See figures 337 and 338.

Figure 335. Specialist age distribution

Figure 336. Specialist age and sex distribution

Figure 337. Specialist employment sector

Figure 338. Specialist employment location
Demand and supply projections
In 2015, there were 8 vocational trainees in WA. To address projected growth in demand and retirements, 1.1 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 1.87 specialists per annum will be sufficient to meet estimated growth in service and retirement based demand. See figures 339 and 340.

Risk assessment and shortfalls
In 2015, there was a shortfall of 4 specialists, with a projected surplus of 4 and 8 specialists by 2021 and 2025, respectively. See figure 341.

National comparison
The number of rehabilitation medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 342.
Figure 342. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 did not model rehabilitation medicine due to data limitations, however, issues identified included that demand is expected to grow at a greater rate than historical levels.

Other issues identified include:

**Recruitment and retention**
- Insufficient funded specialist positions to meet demand and for trainee career progression.
- The specialist workforce is relatively young and is expected to have a low exit rate to 2025.
- Distributional inequity, with specialists currently located only in metropolitan locations.

**Training**
- There have been significant increases in trainee numbers, with demand for training positions exceeding positions available and training capacity.
- Current vocational trainee throughput in WA is estimated to be in excess of projected demand.

**Workforce**
- Increasing demands for part-time work and competing demands between clinical and non-clinical tasks.
- Lack of understanding of the role of the rehabilitation medicine physician and what the specialty has to offer in terms of the patient journey.
- New models of care, the introduction of the National Disability Insurance Scheme, increased demand for regional/rural local services, and changing demographics and disease patterns will likely impact on demand for rehabilitation medicine specialists, with demand expected to grow at a rate greater than historical levels.
- Rehabilitation services are provided within a multidisciplinary and ambulatory model, and demand may be understated.

It is anticipated that any change to the projected surplus of specialists in the rehabilitation medicine workforce would have an impact upon the specialty’s ability to provide service and train its future workforce.
**Expanded Specialist Reports**

Collaboration between the Department, the Australasian Faculty of Rehabilitation Medicine, the Department’s Health Networks, Health Service Providers and specialty representatives is recommended to develop an expanded specialist report for the rehabilitation medicine workforce building on the feedback received, including a Statewide medical workforce plan for the rehabilitation medicine workforce with strategies grouped under the following categories:

**Recruitment and retention**
- Exploration of opportunities to increase funded specialist positions to meet estimated and projected service demand and improve retention.

**Training**
- Review the number of vocational trainees in WA, to ensure that trainees who completed their core rotations interstate and are completing non-core terms in WA are excluded from projections.
- Explore opportunities to align vocational trainee throughput with projected specialist demand.

**Workforce**
- Support marketing to increase the attractiveness and foster understanding of rehabilitation medicine.
Respiratory and sleep medicine

Respiratory and sleep medicine encompasses diseases of the respiratory system including the upper airway, the lungs, the chest wall, the pulmonary circulation and the ventilatory control system. Sleep medicine involves the diagnosis and therapy of sleep disturbances and disorders. Sleep medicine and respiratory medicine are separate training programs; however, dual accreditation can occur. Other specialties can train in sleep medicine.

Workforce characteristics

At 30 September 2015 there were 57 respiratory and sleep medicine specialists who were registered to practise and engaged in clinical practice, of which 82% were male and 18% were female. The respiratory and sleep medicine workforce had a median specialist age of 48 years, and 12.3% of the workforce was aged over 65 years and therefore anticipated to retire in the short term. See figures 343 and 344.

The workforce was employed across the public and private sectors, although predominantly in the public sector, and there was a geographical imbalance between metropolitan and rural locations with only 4% of specialists having registered their principal place of practice as rural. Rural Health West facilitates respiratory and sleep medicine specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 345 and 346.

**Figure 343.** Specialist age distribution

**Figure 344.** Specialist age and sex distribution

**Figure 345.** Specialist employment sector

**Figure 346.** Specialist employment location
Demand and supply projections
In 2015, there were 10 vocational trainees in WA. To address projected growth in demand and retirements, 4.4 specialists will be required per annum. The current estimated vocational trainee throughput of 2.33 specialists per annum will not be sufficient to meet projected growth in demand and retirement based demand. See figures 347 and 348.

Figure 347. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 348. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 5 specialists, with a projected shortfall of 12 and 21 specialists by 2021 and 2025, respectively. See figure 349.

Figure 349. Shortfall estimates

- Low in 2015
- Projected to be medium by 2021
- Projected to be high by 2025

National comparison
The number of respiratory and sleep medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 350.
Figure 350. Crude specialist to population ratio

<table>
<thead>
<tr>
<th></th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>AUS-WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialists per 100,000 Population</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3.5</td>
<td>2.5</td>
<td>2.5</td>
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</tr>
</tbody>
</table>

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 did not model respiratory and sleep medicine due to small workforce size, however, issues identified have been included.

Recruitment and retention
- A shortage of specialists to meet demand in both the public and private sectors.
- Insufficient public sector funded specialist positions to meet demand and for trainee career progression.
- Private sector offers better access to infrastructure, equipment and facilities, and improved opportunities for research and development.

Training
- Insufficient number of funded accredited vocational training positions to meet projected demand.
- Simulation may be able to assist future learning and training opportunities.

Workforce
- A significant number of retirements are anticipated prior to 2025.
- Distributional inequity, with specialists underrepresented in rural locations.
- New procedures such as endobronchial and thoracic ultrasounds and pleural procedures, and the increasing number of cancer cases are likely to cause an increase in demand.
- New models of care that promote a multidisciplinary approach may impact on future workforce needs.

It is anticipated that shortages in the respiratory and sleep medicine workforce will have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.

Expanded Specialist Reports
Collaboration between the Department, RACP, the Department’s Respiratory Health Network, HSPs and specialty representatives is suggested to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention
- Exploration of opportunities to increase funded specialist positions in the public sector.
- Review incentives for recruitment and retention, particularly in rural locations, such as support for specialists to access continuous professional development, research opportunities, and other forms of professional support.
- Review levels of public sector resourcing such as support staff, infrastructure, equipment and facilities.

**Training**
- Exploration of opportunities to increase the number of funded vocational training positions.
- Exploration of opportunities to improve training capacity through use of simulation training.
- Review training models to improve coordination across sites and improve continuity for trainees.

**Workforce**
- Consider future service provision including support to develop a succession plan at HSP level to address expected retirements by increasing the number of training positions.
- Exploration of opportunities to improve access to respiratory and sleep medicine services in rural areas, including the provision of outreach services, use of Teleheath, and the provision of professional development to resident general practitioners/paediatricians.
Rheumatology

Rheumatologists have expertise in the diagnosis and holistic management of diseases affecting joints, muscles, and bones. Key aspects of their clinical practice are pain management, the reduction of inflammation, and preservation of musculoskeletal function. Rheumatology can be practised across a variety of settings (i.e. private practice, public hospitals or in conjunction with academic or research posts, combined with related clinical expertise such as general medicine, nuclear medicine, aged care, or sports medicine).

Workforce characteristics

At 30 September 2015 there were 23 rheumatology specialists who were registered to practise and engaged in clinical practice, of which 74% were male and 26% were female. The rheumatology workforce had a median specialist age of 49 years, with 26.1% of the workforce aged over 65 years and therefore anticipated to retire in the short term. See figures 351 and 352.

The workforce was employed across the public and private sectors, although predominantly in the private sector, in metropolitan locations. Rural Health West facilitated rheumatology specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 353 and 354.
Demand and supply projections
In 2015, there were 3 vocational trainees in WA. To address projected growth in demand and retirements, 3.4 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.70 specialists per annum will be insufficient to meet projected growth in service and retirement based demand. See figures 355 and 356.

Figure 355. Growth in service delivery based demand and retirement based demand versus trainee supply

Figure 356. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 11 specialists, with a projected shortfall of 22 and 27 specialists by 2021 and 2025, respectively. See figure 357.

Figure 357. Shortfall estimates

- Critical in 2015
- Projected to be critical by 2021
- Projected to be critical by 2025

National comparison
The number of rheumatology specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 358.
Figure 358. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 did not model rheumatology due to the small workforce size; however, issues have been included.

Recruitment and retention
- A significant existing shortage of specialists leading to limited access to outpatient rheumatology in metropolitan area for Medicare-reliant patients (unless co-paying) and very limited access in rural WA.
- Insufficient public sector funded specialist positions to meet projected demand.
- Difficulties in retaining newly qualified specialists due to relatively poor remuneration and professional development opportunities overseas and interstate.
- Lack of exposure to the specialty at junior doctor level, which does not support attraction to the specialty.

Training
- Insufficient number of funded accredited vocational training positions to meet projected demand.
- Limitations with regard to training capacity/supervision.
- Delayed entry of new fellows to the workforce due to large numbers pursuing further training.

Workforce
- Relatively aged workforce with a significant volume of retirements anticipated to 2025.
- Distributional inequity, with no known resident specialists located in rural or remote locations.
- An anticipated reduction in average hours worked as demand for part-time work increases.
- Changing technologies have led to an increase in clerical and administrative work.
- Impact on demand and supply of advances in technology and changing models of care, including the increased use of multidisciplinary teams.

It is anticipated that current and projected shortages in the rheumatology workforce will have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.
Expanded Specialist Reports

Collaboration between the Department, RACP, Australian Rheumatology Association, the Department’s Musculoskeletal Health Network, HSPs and specialty representatives is recommended to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**
- Exploration of opportunities to increase funded specialist positions to meet demand.
- Review incentives for recruitment and retention of younger specialists such as improved remuneration and support for access continuous professional development, research opportunities, and other forms of professional support.
- Review opportunities to develop academic infrastructure and collaborative research opportunities with other disciplines as a means of increasing academic investment in rheumatology.
- Establish dual training programs with other specialties.

**Training**
- Exploration of opportunities to increase the number of funded vocational training positions.
- Consider opportunities to develop dual training with other specialties e.g. immunology, general medicine and geriatrics.
- Support marketing to increase the attractiveness of rheumatology as a career option including the provision of Summary Sheets at the Medical Careers Expo, and making these available online.

**Workforce**
- Consider future service provision including support to develop a succession plan at HSP level to address expected retirements.
- Review models of care to:
  - Support a more multi-disciplinary approach to patient care for specific illnesses in order to utilise the expertise of general practitioners and other specialties, as appropriate.
  - Explore opportunities to train rheumatology nurse specialists/practitioners or extended scope allied health practitioners to develop skills in patient education, care coordination, clinical metrology and chronic disease management.
  - Consider expansion of services to general hospitals, including development of infrastructure.
- Review options to improve access to services in rural and remote locations, including the increased utilisation of Telehealth.
- Review levels of public sector resourcing, such as support staff and infrastructure especially in outer metropolitan areas, to determine applicability to service demand requirements.
Sexual health medicine

Sexual health medicine is the specialised area of medical practice concerned with healthy sexual relations, including freedom from sexually transmissible infections (STIs), unplanned pregnancy, coercion, and physical or psychological discomfort associated with sexuality.

Workforce characteristics

At 30 September 2015 there were 4 sexual health medicine specialists who were registered to practise and engaged in clinical practice, of which 75% were female and 25% were male. See figures 359 and 360. The sexual health medicine workforce had a median specialist age of 62 years, with no specialists aged over 65 years. See figures 361 and 362.

The workforce was employed predominantly in the public sector, in the metropolitan area.
Demand and supply projections
In 2015, there were 2 vocational trainees in WA. To address projected growth in demand and retirements, 0.5 specialists will be required per annum. The current estimated vocational trainee throughput of 0.53 specialists per annum will be sufficient to meet growth in demand and retirement based demand. See figures 363 and 364.

Risk assessment and shortfalls
In 2015, there was a shortfall for sexual health medicine, with a projected shortfall of 1-2 specialists by 2021. The workforce is projected to be in balance by 2025. See figure 365.

National comparison
The number of sexual health medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 366.

91 Consultation has identified that there was 1 vocational trainee.
Issues and priorities

Health Workforce 2025 did not model sexual health medicine due to data limitations; however, issues have been included.

Sexual health medicine is currently faced with a number of issues including:

**Recruitment and retention**

- There has been no increase in funded specialist FTE since 1998 despite increasing demand and insufficient funded specialist positions for trainee career progression.
- There is a trend for sexual health physicians to work in the public sector, or with a public / private mix, due to interest in the public health aspects of sexual health medicine. Private practice is not viable.

**Training**

- Insufficient permanently funded training positions, implying that the steady production of vocational trainees assumed by SWCP modelling may not occur as projected.
- A site-based approach to training, based upon the availability of funding, rather than a state-wide approach.
- Difficulties in attracting trainees due to limited public sector specialist employment opportunities, lack of remuneration and perceived lack of high regard.
- In a small volume specialty, any change in the number of vocational trainees is a significant issue.
- Siloed approach to training rather than a Statewide integrated model.

**Workforce**

- The workforce has some anticipated retirements and, in such a small volume specialty, the loss of specialists is a significant issue.
- Large female workforce.
- Anticipated falls in average hours worked as demand for part-time work increases.
- Sexual health physicians work predominantly in the public sector, or with a public/private mix, due to interest in the public health aspects of sexual health medicine, and the historical lack of Medicare item numbers favouring public sector work.
- Demand is expected to increase due to increasing rates of HIV and sexually transmitted infections, and multi-drug resistant diseases.

It is anticipated that shortages in the sexual health medicine workforce will have an impact on the specialty’s ability to provide service in the short term, as well as its capacity to train its future workforce.
Expanded Specialist Reports

Collaboration between the Department, RACP, HSPs, the Department’s Health Networks and specialty representatives is suggested to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

Recruitment and retention

- Exploration of opportunities to increase the number of funded specialist positions to align supply with demand and provide opportunities for the career progression of sexual health trainees.
- Review incentives for recruitment and retention, such as improved public sector remuneration and support for specialists to access continuous professional development, research opportunities, and other forms of professional support.

Training

- Review the model of funding for sexual health medicine and explore opportunities to increase the number of permanently funded vocational training positions to align supply with demand (i.e., a minimum of 1 new funded training position) and support the development of the training program.
- Support development of an integrated training program so that one training position is available across the health system and trainees can rotate to sites to widen exposure.

Workforce

- Consider future service provision including support to develop a succession plan at HSP level to address expected retirements as required by the WA Health Clinical Services Framework 2014-2024.
Sports and exercise medicine

Sport and exercise medicine physicians care for people of all ages who exercise at all levels. The practice of sports medicine involves management of acute or chronic exercise related injuries; management of medical problems associated with sport and exercise; doping related issues; and exercise prescriptions for both healthy people and those suffering from chronic conditions. Sports and exercise medicine is an advanced training program and was recognised as a specialty in 2009.

Workforce characteristics

At 30 September 2015 there were 9 sports and exercise medicine specialists who were registered to practise and engaged in clinical practice, of which 67% were male and 33% were female. See figures 367 and 368. The sports and exercise medicine workforce had a median specialist age of 54 years, with no specialists aged over 65 years.

The workforce was employed solely in the private sector, in the metropolitan area. See figures 369 and 370.

Figure 367. Specialist age distribution

Figure 368. Specialist age and sex distribution

Figure 369. Specialist employment sector

Figure 370. Specialist employment location
Demand and supply projections

In 2015, there were 3 vocational trainees in WA. To address estimated growth in demand and retirements, 0.7 specialists will be required per annum to 2025. The current estimated vocational trainee throughput of 0.80 specialists per annum will be sufficient to meet projected growth in demand and retirement based demand. See figures 371 and 372.

Figure 371. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 372. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls

In 2015, there was a shortfall of 1 specialist, moving to a projected surplus of 2 and 1 specialists by 2021 and 2025 respectively. See figure 373.

Figure 373. Shortfall estimates

- Low in 2015
- Projected to be low by 2021
- Projected to be low by 2025

National comparison

The number of sports and exercise medicine specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 374.
Issues and priorities

Health Workforce 2025 did not model sports and exercise medicine due to data limitations; however, issues have been included.

Recruitment and retention

- The workforce across Australia is almost exclusively based in the private sector and mostly in large metropolitan centres.

Training

- There are no funding streams to support training, although the STP could provide support.

Workforce

- There are overlaps in scope with orthopaedics and general practice.
- Issues relating to small volume specialties have the potential to impact on sports and exercise medicine i.e. anticipated retirements and any change to vocational trainee throughput or specialist numbers.

It is anticipated that any change to the future projected surplus of specialists in the sports and exercise medicine workforce will have an impact upon the specialty’s ability to provide service, and to train its future workforce.

Expanded Specialist Reports

Collaboration between the Department, Australasian College of Sports and Exercise Physicians, HSPs and specialty representatives is suggested to develop an expanded specialist report, including a Statewide medical workforce plan that considers the following strategies:

Recruitment and retention/workforce

- Exploration of opportunities for sports medicine physicians to provide support (review and consultation) to public sector musculoskeletal patients to provide conservative management where appropriate.

Training

- Provide support to develop a clear career pathway to increase attractiveness to trainees.
Urology
Urology specialists manage diseases of the kidneys, bladder, prostrate and male reproductive organs across all ages.

Workforce characteristics
At 30 September 2015 there were 39 urology specialists who were registered to practise and engaged in clinical practice, of which 85% were male and 15% were female. The urology workforce had a median specialist age of 47 years, with no specialists aged over 65 years. See figures 375 and 376.

The workforce was employed across the public and private sectors, but predominantly in the private sector. While 8% of specialists had a rural location listed as their principal place of practice, an additional 25% of specialists were registered as providing services in both metropolitan and rural areas. Rural Health West facilitates urology specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 377 and 378.

Figure 375. Specialist age distribution
Figure 376. Specialist age and sex distribution
Figure 377. Specialist employment sector
Figure 378. Specialist employment location
Demand and supply projections
In 2015, there were 5 vocational trainees in WA. To address growth in demand and retirements, 2.7 new specialists will be required per annum. The existing vocational trainee throughput of 0.7 specialists per annum will be insufficient to replace approaching retirements and meet growth in demand. See figures 379 and 380.

Figure 379. Growth in service delivery based demand and retirement based demand versus trainee supply
Figure 380. Estimated supply and demand of specialists 2015-2025

Risk assessment and shortfalls
In 2015, there was a shortfall of 6 specialists, with a projected shortfall of 13 and 20 specialists by 2021 and 2025, respectively. See figure 381.

Figure 381. Shortfall estimates
- Medium in 2015
- Projected to be high by 2021
- Projected to be critical by 2025

National comparison
The number of urology surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia combined, shown in the figure below as AUS-WA. See figure 382.
Figure 382. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily ‘active and practising’ in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities
Health Workforce 2025 modelled urology within the ‘other surgery’ group due to small workforce numbers. There was no perceived workforce shortage in this group in 2009; however, at this time there were a high number of new fellows entering the workforce and a high reliance on IMGs, with at least half of all new fellows coming through the IMG pathway.

In a context of changing models of care, issues identified relating to the urology workforce includes:

Recruitment and retention
- Insufficient funded FTE in the public sector to meet demand and provide training and supervision to trainees.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons\(^{28}\).

Training
- An insufficient number of funded accredited vocational training positions to meet future demand.
- Limited training/supervision capacity.
- Historically low exposure to the specialty at undergraduate and junior doctor level.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low\(^{\text{Error! Bookmark not defined.}}\).
- Selection to a vocational training position in urology occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

Workforce
- A lack of urology specialists is WA is impacting on opportunities to sub-specialise. Complex surgery needs to be undertaken in high volume centres by high volume surgeons who sub-specialise.
- Limited and ad hoc access to specialist services in some rural locations.
- Complex services are centralised and there is a lack of networks for providing sub-specialist care.
- Limited academic and research opportunities and facilities in the public sector.
It is anticipated that shortages in the urology workforce will have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, RACP, HSPs, health networks and specialty representatives is suggested to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Explore opportunities to increase full-time funded specialist positions in the public sector to align supply with demand.

**Training**

- Explore opportunities to increase funded accredited training positions in the public sector to align supply with projected demand.
- Explore opportunities to increase junior doctors’ exposure to urology.
- Support marketing to increase the attractiveness of urology as a career option.
- Support career planning through the provision of Summary Sheets at the Career Expo, and making these available online on the Department’s website.

**Workforce**

- Review potential to fill workforce gaps by recruitment of IMGs, if required, or upskilling IMGs currently working in WA.
- Provide support to develop networking arrangements between rural, remote and metropolitan locations.
- Explore opportunities to establish regional centres for complex urological cases.
- Support improvement of academic urology opportunities in the public sector as a foundation for providing professional development and to attract specialists to the WA urology workforce.
- Review the level of support services and resourcing in the public sector, including information technology, specialist nurses, research nurses and research infrastructure.
- Review of future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training.
Vascular surgery

Vascular surgery specialists manage diseases of the vascular system, or arteries and veins, by medical therapy, minimally-invasive catheter procedures and surgical reconstruction.

Workforce characteristics

At 30 September 2015 there were 15 vascular surgery specialists registered to practise and engaged in clinical practice, of which 93% were male and 7% were female. The vascular surgery workforce had a median specialist age of 47 years, with no specialists aged over 65 years. See figures 383 and 384.

The workforce was employed across the public and private sectors, but predominantly in the public sector. Although no specialists had a rural location as their principal place of practice, 27% of specialists were registered as providing services to both metropolitan and rural locations. Rural Health West facilitates vascular surgery specialists to visit and deliver services rural communities in WA through the MSOAP. See figures 385 and 386.
Demand and supply projections

In 2015, there were 2 vocational trainees in WA. To address projected growth in demand and retirements, 1.3 new specialists will be required per annum. The current estimated vocational trainee throughput of 0.28 specialists per annum will be insufficient to replace approaching retirements and meet projected growth in demand. See figures 387 and 388.

Risk assessment and shortfalls

In 2015, there was a shortfall of 4 specialists, with a projected shortfall of 6 and 10 specialists by 2021 and 2025, respectively. See figure 389.

National comparison

The number of vascular surgery specialists in WA, registered with AHPRA, per 100,000 of population in June 2015 was below that of the rest of Australia (combined) shown in the figure below as AUS-WA. See figure 390.
Figure 390. Crude specialist to population ratio

Note:
1. SPR data is not an output of the SWCP and is provided for comparative purposes only.
2. AHPRA data includes all specialists registered with qualifications in a specialty, but not necessarily 'active and practising' in the workforce.
3. AUS-WA is the total number of AHPRA registrants in Australia, minus the number of registrants in WA.

Issues and priorities

Health Workforce 2025 modelled vascular surgery within the ‘other surgery’ group due to small workforce numbers. There was no perceived workforce shortage in this group in 2009; however, at this time there were a high number of new fellows entering the workforce and a high reliance on IMGs, with at least half of all new fellows coming through the IMG pathway.

In a context of changing models of care, an ageing population and the impact of chronic conditions (cardiovascular disease and diabetes), issues identified relating to the vascular surgery workforce include:

**Recruitment and retention**
- An insufficient number of specialist positions in the public sector to meet current and projected demand.
- The private sector offers better remuneration and is attractive to specialists.
- Difficulties in retaining specialists allocated from interstate upon the completion of their training.
- Given that both male and female trainees are requesting work-life balance; consider work-life balance as an issue for all surgeons.

**Training**
- An insufficient number of funded accredited vocational training positions to meet future demand.
- Difficulties in attracting local junior doctors.
- Due to national allocation processes, many training positions are filled by non-WA trainees.
- During surgical training jurisdictional drift occurs, due to the nature of specialty training and rotations through different posts. Admission to Fellowship and establishment of practice decreases the flow between jurisdictions. Flow between local regions is common as with the case of visiting medical officers. Flow between state and territory jurisdictions is low.
- Selection to a vocational training position in vascular surgery occurs through a national allocation process, and takes into account the preferences, experience and level of training of the applicant as well as the level of training available at each hospital.

**Workforce**
- There are a significant number of anticipated retirements before 2025.
- Infrastructure requirements (endovascular suite) and case mix (high co-morbidity of many patients) require most inpatient care to be located in metropolitan area.
Units function best with a mixture of fulltime and sessional surgeons. A lack of specialists in the public sector jeopardises unit function particularly with regard to teaching and training, clinical leadership and other related activities.

Emerging technologies and changing techniques are impacting on demand and models of care.

Regional on call system creates problems treating patients with leading edge technologies in unfamiliar environments.

IMGs have filled workforce shortages but there are geographic limitations and the recruitment process is time-consuming and complex.

It is anticipated that shortages in the vascular surgery workforce will have an impact on the specialty’s ability to provide immediate and future service, as well as its capacity to train its future workforce.

**Expanded Specialist Reports**

Collaboration between the Department, RACS, HSPs and specialty representatives is suggested to develop an expanded specialist report, including a Statewide medical workforce plan with strategies grouped under the following categories:

**Recruitment and retention**

- Explore opportunities to increase funded specialist positions to align supply with demand and provide opportunities for the career progression of vascular surgery trainees.
- Review incentives for recruitment and retention, such as improved public sector remuneration and support for specialists to access continuous professional development, research opportunities, and other forms of professional support.

**Training**

- Explore opportunities to increase the number and location of funded accredited training positions in the public sector to align supply with projected demand.
- Explore opportunities to increase junior doctors’ exposure to vascular surgery.
- Support marketing to increase the attractiveness of vascular surgery as a career option.
- Support career planning through the provision of Summary Sheets at the Career Expo, and making these available online on the Department’s website.

**Workforce**

- Consider future service provision including support to develop a succession plan at HSP level to address expected retirements.
- Ensure that appropriate processes are followed to enable an AoN position to be identified and established to facilitate the recruitment of IMGs where there is a workforce shortage.
- Review autonomy to manage vascular imaging (specifically ultrasound) relevant to vascular surgery. This includes access to PACS.
- Support improvement of the emergency roster system.
- Consider the potential development of a role for vascular physicians, especially as workload relating to the complications of diabetes increases.
- Review of future vocational trainee throughput projections to account for the changes to the new SET program that appoints at a later stage of training.
Section 3: Appendices
1. SWCP 2015 data sources and considerations

The SWCP utilises a number of different data sources and collections from the public and private sectors to assist in identifying specialist workforce demand, supply and shortfall risk assessments in WA. A primary data source is a dataset where key identification and data linkage information is known to be complete and accurate. A secondary data source is a dataset where key identification and linkage information may be absent, incomplete or questionable in quality.

The main data sources and datasets utilised in SWCP 2015 and their limitations are described below.

Supply

Australian Health Practitioner Regulation Agency dataset

The Australian Health Practitioner Regulation Agency (AHPRA) dataset is the primary data source of the SWCP. The AHPRA public online database is a detailed nationwide regulatory register of health professionals and is the primary data source of SWCP supply information. The dataset provides a medical practitioner’s:

- formal name and unique registration number
- registration status, registration type and principal place of practice
- professional qualifications, profession, specialty and subspecialty where applicable
- gender.

An extract of the database that included date of birth was provided to the Department's MWB, by AHPRA, at an optimal time, after annual registration closing date for medical practitioners (30th September each year with allowance for late registration processing).

A validation process was undertaken to improve data accuracy. After cleaning the AHPRA database, all other validated information was sequentially appended (after further cleaning and validation prior to appendage) to form a master file of all WA medical personnel. The final step of the SWCP master file construction and validation was to allocate the primary specialty of practice for every specialist based on all data sources available.

The registration numbers are accurate and unique (data linkage to an individual), medical practitioner formal names are used and are complete and accurate, personnel date of birth and sex is complete and accurate and mandatory registration data fields are complete and accurate. Other AHPRA optional data fields (including qualifications and second or subsequent specialty of practice) may be absent or incomplete. While the AHPRA database is generally of high quality it has some limitations:

- All AHPRA supplied data and AHPRA Annual Report data contain “double counted” data. If a specialist has more than one listed specialty of practice, data will be supplied as a single record, but counted in each specialty in all AHPRA published reports.
- Some retired specialists will re-register on AHPRA as a specialist, some will re-register as non-practising and some who are active in the workforce, but not in clinical practice, will register under general registration.
- It is possible to appear on the AHPRA database as a specialist in three specialties with the one qualification and only one specialty, e.g. a medical practitioner can appear to be a specialist in child and adolescent health; paediatric medicine; and cardiology, although their registration details indicate they have completed standard vocational training (RACP) in paediatric medicine, with a subspecialty in cardiology.

92 Except in isolated cross-profession specialties such as oral and maxillofacial surgery where an individual may register as a dental specialist, a medical specialist or both and have two distinct registration numbers
Some specialists with multiple specialty qualifications (including dual training qualifications such as general medicine and endocrinology) may only provide the specialty discipline of their current principal employment, omitting their other specialty or sub-specialty discipline.

Most medical practitioners do not update their AHPRA information for a change in circumstances (except newly qualified specialists) until the next registration period, or if they leave the workforce will then simply allow their registration to lapse. Interim registration period AHPRA data must be treated with caution.

There is no guarantee that specialists listed on the AHPRA database are actively employed in a clinical role, in any stated specialty.

**WA Health datasets (supply)**

**Human Resource Information System data**

Payroll data extracts (non-financial information) were obtained from the Department’s HRIS data warehouse. The dataset was provided to MWB by Workforce Modelling and Data, System Policy and Planning, for use as a secondary data source to validate the WA specialist data.

HRIS data quality has been enhanced by the WA Health Standardised Medical Position Titles project, which has supported continuous improvement of unique position titles and now includes APHRA registration numbers, contributing to the streamlining of validation processes; however, there were limitations with HRIS data which limited its utilisation as a primary SWCP data source in 2015. These included:

- incorrect names in the data set
- the use of multiple position titles for identical positions
- incorrect or absent AHPRA registration numbers due to a time lag in processing
- incorrectly allocated position titles
- the allocation of individuals to the incorrect specialty.

FTE and hospital codes are assumed to be accurate, but FTE may reflect what an individual is paid (in terms of FTE and allowances) rather than productive FTE\(^3\). The extract does not adequately identify personnel on long-term leave.

**WACHS medical service agreement dataset**

This dataset contains the detailed scope of practice of GPs and GP registrars providing services to WA rural hospitals under a medical service agreement (MSA) or similar contract (non-payroll). Most general practitioners (GPs) in this dataset are drive-in drive-out or fly-in fly-out with about one-third being non-WA residents, and are therefore, excluded from SWCP under the self-sufficiency scenario.

**Specialist visiting medical practitioner dataset**

This data set contains the detailed source and destination of WA visiting medical practitioner (VMP) providing sessional services to outer metropolitan and rural hospitals. The dataset has been used extensively in validating personnel and identifying gaps in rural service delivery.

**Medical Workforce Branch general practice dataset**

This dataset contains GPs from more than 400 WA general practice medical centres/family practices. Data was mostly sourced from website listings and online appointment booking systems; used to further validate GP details.

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\(^3\) Productive FTE is FTE attributed to earnings codes rolling up to the Ordinary or Overtime application groups, which relate to time spent performing the duties of an employee’s role.
WA private sector medical data sets
A dataset of private sector specialists was developed for use as a secondary data source for the identification and validation of WA private sector specialist data utilising:

- lists of private hospital (and other private business entity) specialists sourced directly from the private hospitals/entities
- private hospital and entity websites.

Entities such as the RFDS, pathology services and medical imaging services are included within this dataset.

Medical Training and Review Panel 18th Annual Report
The Australian Government’s Medical Training Review Panel (MTRP) provides national and state data annually on vocational trainee commencements by medical college program and specialty/subspecialty, and information on the training program course outline (basic and advanced), eligibility criteria, duration, and examination and assessment requirements. This data was used to estimate the supply of new specialists expected during future years by applying a retention rate.

Medical college vocational training number dataset
Medical colleges were contacted and requested to provide information on the total number of vocational trainees undertaking training with the relevant medical college in 2015 and the breakdown of the number of trainees in each year of training. Accredited training positions, gender, breakdown, part-time and break in training was also requested. This information was used to calculate vocational trainee throughput for SWCP 2015.

Demand
Independent Hospital Pricing Authority patient classification codes cost weights and determinations
The following data was provided by the Department’s Purchasing and System Performance Division (PSP) to assist MWB in mapping reported activity against the specialties in order to estimate current, and project future, demand using the Weighted Activity Based (WAB) demand model, described in appendix 2.

- Inpatient data: Aggregated (non-episode level) separation data for each Australian Refined Diagnosis Related Group (AR-DRG) code.
- Outpatient data: Aggregated (non-episode level) occasions of service data for each Tier 2 specialist outpatient clinic code.
- Emergency medicine: Aggregated episodes of care data for each URG triage code.

The quality of the data provided by the Department of health’s Purchasing and System Performance Division to determine demand, varied by type:

- Aggregated (non-episode level) separation data for each AR-DRG code or inpatient AR-DRG data is dependent upon the quality of the patient discharge summary which is used by clinical coders at hospital or HSP level to assign the correct AR-DRG.
- Aggregated (non-episode level) occasions of service data for each Tier 2 specialist outpatient clinic code or outpatient data (Tier 2) is not fully ascertained as not all outpatient data has been captured.
- Emergency medicine (URG) activity data is accurate.

It should be noted that although the reporting of outpatient activity data at hospital and health service provider level is improving as ABF/M is implemented, demand is likely to be understated.
**WA Department of Planning population projections**

The median projection series (Band C) of the WA Department of Planning population projections\(^94\) was employed by MWB for all analyses as the minimal risk option. Band C is essentially the ABS – ERP (Estimated Residential Population) data derived from the most recent Australian Census (2011) and projected for future years. The ABS data is not rounded and is the preferred data for precision. Population data is available in five year age and gender specific groups rounded to the nearest 100 from the WA Department of Planning.

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\(^{94}\) Western Australia Tomorrow (2012) produced by the WA Department of Planning provides population projections in five series or population bands (2006 to 2026).
2. SWCP 2015 data modelling and methodology

SWCP 2015 utilised the following methodologies to determine estimated and projected demand, supply and shortfall risk assessments for each specialty:

Weighted Activity Based Specialist Demand Model

SWCP 2015 provides specialist demand estimates for 2015, and projections to 2021 and 2025.

The WAB demand model was developed by MWB for SWCP 2013 to provide precise estimates of specialist service delivery demand by specialty compatible with the ABF/M framework. It maps reported activity data against each specialty to provide weighted volume of activity by specialty and average weighted volume of activity by specialist. The multiplication of that activity by the National Efficient Price provides the value of activity by specialty and, consequently, the value of activity by specialist.

The first step in implementing the WAB demand model is mapping the activity data to each specialty. All specialties have been mapped to the inpatient AR-DRG classification system and/or outpatient Tier 2 Specialist Outpatient Clinic Code, and emergency medicine was mapped to the URG Triage Codes as follows:

- Some AR-DRGs were mapped to one specialty but many were mapped against several specialties (especially core support service specialties) reflecting the multi-disciplinary treatment of patients assigned to that AR-DRG.
- There was a one-to-one mapping of Tier 2 specialist outpatient clinic code and specialty. Some multidisciplinary specialist clinics have been assigned to the “next best” Tier 2 specialist outpatient clinic code.
- There was a simple one-to-one mapping of URG Triage Code and the specialty of emergency medicine.

Data on national cost weights and WA aggregated (non-episode level) activity data has been collected since 2011, and this information was used to calculate weighted activity (volume and value of activity) by medical specialty for the most recent three year period (up to June 2015). Annual change in demand by specialty was calculated by change in weighted activity by specialty during the last three year period (with adjustment for population).

The WAB demand model was used to estimate specialist demand by specialty for 2015 and projected specialist demand by specialty to 2021 and 2025. Estimated under or over supply in demand by specialty was confirmed by comparing vocational trainee throughput to growth in demand and retirements.

During SWCP 2015, demand estimates were shown to be consistent with estimates derived from alternative sources and expert opinion. The WAB model worked effectively for inpatient mappings for surgical specialties and clinical specialties, as well as, outpatient and emergency medicine; however, there are some limitations:

- Core support specialties (anaesthesia, pathology and medical imaging) may be less precise as activity was measured by proxy activity derived from the surgical and clinical specialties, e.g. anaesthesia activity was estimated from the total volume of surgical procedures performed requiring anaesthetic services.
- Medical administration, public health medicine and clinical pharmacology may be less precise as activity was measured by proxy activity derived from the total volume of hospital activity. These specialties have no directly assignable patients and cannot be mapped to a patient type classification.
- Sports and exercise medicine was confined to the private practice sector and activity could not be mapped to a hospital patient type classification. Demand was calculated from headcount data and assumed to meet supply in the private sector.
- Occupational and environmental health medicine was derived and validated from the private sector.
- Oral and maxillofacial surgery and general practice are not currently estimated using the WAB model. Specialty demand for these two specialties is based wholly on the national SPR estimate. The WAB demand model will be updated to include the most recently available activity data, and reviewed on an annual basis to ensure that:
  - All IHPA determinations are incorporated in the patient classification systems to enable series continuity of the data sets.
  - Annual national cost weight data for all patient classification types are updated when the most recent financial year data are released.
  - Newly recognised specialties and subspecialties require mapping throughout the patient type classification systems on an annual basis.

A new patient type classification code developed to enable inclusion of sub-acute and non-acute hospital patients, the Australian National-Subacute and Non-Acute Patient (AN-SNAP) code, will feed into the WAB model when it becomes available. This classification system will enable capture of further hospital activity data, and improve the precision of a small subset of specialties, especially palliative care medicine, rehabilitation medicine, geriatric medicine and psychiatry.

**Stock and Flow Specialist Supply Model**

SWCP 2015 provides specialist supply estimates for 2015, and projections to 2021 and 2025.

The ‘stock and flow’ specialist supply model (supply model) shown in Figure 1 has been used to estimate specialist supply.

**Figure 1: Stock and flow specialist supply model**

- **Number of specialists registered to practise in the current time period**
- **Number of vocational trainees expected to graduate in the next time period**
- **Number of specialists expected to retire in the next time period**
- **Specialist Supply (i.e. number in next time period)**
## Supply model assumptions

### Specialists

- The SWCP 2015 specialist validation results for both the public and private sector are accurate.
- Head count numbers are used (not FTE).
- The age of retirement is 65 years for all specialists (male and female), and specialists working aged 65 or over will retire with equal probability annually over the next 5 years. This assumption is known to be false, but as a proxy continues to provide reliable aggregate estimates.
- Resigning specialists are replaced.
- A specialist is counted within their AHPRA principal specialty of practice only (based on FTE or other information).
- SWCP estimates and projections are calculated under the assumption of self-sufficiency, i.e. WA’s specialist workforce demand is met through producing sufficient WA vocational trainees.
- For projections, net migration (from interstate and overseas) is assumed to be zero.

### Vocational trainees

- Numbers are for vocational trainee registrars only as reported by the medical colleges for 2015 (non-vocational registrars are excluded).
- Vocational training program length is the minimum time required to complete specialist training as reported in the MTRP. If a vocational trainee is part-time they are counted as 0.5 for the minimum completion time.
- The program length for vocational training programs is mostly for advanced trainees only. For some specialties the program length has been adjusted due to high and volatile attrition rates in the initial year(s) of training.
- Vocational trainee throughput rate is the expected number of trainees successfully completing the training program per annum fixed at 2015 rates.
- A retention rate has been applied to all specialties based on prior year average attrition rates for the specialty, these range between 0.7 and 0.8. The retention rate utilised for each specialty is provided in table 1 below.
- Vocational trainees who study in WA will be employed as a specialist in WA at the end of their training program. This assumption is questionable at the specialty specific level, especially surgical specialties, specialties that have a national allocation process, specialties in oversupply in WA and specialties where employment opportunities are greater (centres of excellence) interstate or overseas.
- The specialty specific percentage growth increment used for health service delivery based demand is between 2.4% and 4.5% per annum (based on 2015 estimates).

### IMGs

- IMGs with limited registration required to work under supervision are not included in specialist estimates or projections under the self-sufficiency scenario. They may or may not remain in WA if they obtain general registration with the MBA or fellowship of an Australian medical college.
Table 8: Specialty vocational trainee retention rates used in SWCP 2015

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Retention rate utilised</th>
<th>Specialty</th>
<th>Retention rate utilised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaesthesia</td>
<td>0.7</td>
<td>Orthopaedic Surgery</td>
<td>0.7</td>
</tr>
<tr>
<td>Addiction Medicine</td>
<td>0.8</td>
<td>Otolaryngology</td>
<td>0.7</td>
</tr>
<tr>
<td>Cardiology</td>
<td>0.8</td>
<td>Paediatric Medicine (PM)</td>
<td>0.75</td>
</tr>
<tr>
<td>Cardiothoracic Surgery</td>
<td>0.7</td>
<td>- PM - Emergency Medicine</td>
<td>0.75</td>
</tr>
<tr>
<td>Clinical Genetics</td>
<td>0.8</td>
<td>- PM - General Paediatrics</td>
<td>0.75</td>
</tr>
<tr>
<td>Clinical Pharmacology</td>
<td>0.8</td>
<td>- PM - Physician Subspecialties</td>
<td>0.75</td>
</tr>
<tr>
<td>Dermatology</td>
<td>0.75</td>
<td>- PM - Neonatal and Perinatal</td>
<td>0.75</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>0.7</td>
<td>Paediatric Surgery</td>
<td>0.7</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>0.8</td>
<td>Pain Medicine</td>
<td>0.8</td>
</tr>
<tr>
<td>Gastroenterology and Hepatology</td>
<td>0.8</td>
<td>Palliative Care Medicine</td>
<td>0.8</td>
</tr>
<tr>
<td>General Medicine</td>
<td>0.8</td>
<td>Pathology</td>
<td>0.7</td>
</tr>
<tr>
<td>General Practice</td>
<td>0.9</td>
<td>- Anatomical Pathology</td>
<td>0.7</td>
</tr>
<tr>
<td>General Surgery</td>
<td>0.7</td>
<td>- Chemical Pathology</td>
<td>0.7</td>
</tr>
<tr>
<td>Geriatric Medicine</td>
<td>0.8</td>
<td>- Forensic Pathology</td>
<td>0.7</td>
</tr>
<tr>
<td>Haematology</td>
<td>0.7</td>
<td>- General Pathology</td>
<td>0.7</td>
</tr>
<tr>
<td>Immunology and Allergy</td>
<td>0.8</td>
<td>- Haematology</td>
<td>0.7</td>
</tr>
<tr>
<td>Intensive Care Medicine</td>
<td>0.7</td>
<td>- Immunopathology</td>
<td>0.7</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>0.8</td>
<td>- Microbiology</td>
<td>0.7</td>
</tr>
<tr>
<td>Medical Administration</td>
<td>0.8</td>
<td>Plastic and Reconstructive Surgery</td>
<td>0.7</td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>0.7</td>
<td>Psychiatry</td>
<td>0.7</td>
</tr>
<tr>
<td>Medical Oncology</td>
<td>0.8</td>
<td>Public Health Medicine</td>
<td>0.8</td>
</tr>
<tr>
<td>Neonatal and Perinatal Medicine</td>
<td>0.75</td>
<td>Radiation Oncology</td>
<td>0.7</td>
</tr>
<tr>
<td>Nephrology</td>
<td>0.8</td>
<td>Rehabilitation Medicine</td>
<td>0.7</td>
</tr>
<tr>
<td>Neurology</td>
<td>0.8</td>
<td>Respiratory and Sleep Medicine</td>
<td>0.7</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>0.7</td>
<td>Rheumatology</td>
<td>0.7</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>0.8</td>
<td>Sexual Health Medicine</td>
<td>0.8</td>
</tr>
<tr>
<td>Obstetrics and Gynaecology</td>
<td>0.7</td>
<td>Sport and Exercise Medicine</td>
<td>0.8</td>
</tr>
<tr>
<td>Occupational and Environmental Health Medicine</td>
<td>0.7</td>
<td>Urology</td>
<td>0.7</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>0.7</td>
<td>Vascular Surgery</td>
<td>0.7</td>
</tr>
<tr>
<td>Oral and Maxillofacial Surgery</td>
<td>0.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shortfall and shortfall risk assessment methodology

The SWCP provides shortfall estimates for 2015 and projections for 2021 and 2025, and estimated shortfall risk assessments for 2015 and projections for 2021 and 2025 for each specialty.

Shortfalls are the difference between the demand and supply estimates rounded to the nearest integer. The formula represented in Equation 1 is used to determine the shortfall estimate for each specialty.

**Equation 2: Estimating shortfall**

\[
\text{Shortfall estimate equals: } \frac{\text{supply of specialists}}{\text{demand for specialists}} \times 100\%
\]

The following shortfall risk assessment criteria were applied to the shortfall estimates and projections to provide a shortfall risk assessment for each specialty. Selection of the cut-off values 70%, 80%, and 90% is based on the risk alignment of events and consequences experienced within the hospital setting.
<table>
<thead>
<tr>
<th>Supply ≥ 90% Demand</th>
<th>Low risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply ≥ 80% and &lt; 90% Demand</td>
<td>Medium risk</td>
</tr>
<tr>
<td>Supply ≥ 70% and &lt; 80% Demand</td>
<td>High risk</td>
</tr>
<tr>
<td>Supply &lt;70% Demand</td>
<td>Critical risk</td>
</tr>
</tbody>
</table>

Information on the potential implications of the different shortfall risk criterion in a hospital setting is provided in table 10 below.

### Table 10: Risk assessment criterion applied to shortfalls in SWCP 2015

<table>
<thead>
<tr>
<th>Supply criterion</th>
<th>Risk assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply &gt; demand</td>
<td>Low risk</td>
</tr>
</tbody>
</table>
| - The workforce is in balance or there is an oversupply.  
- No difficulty in servicing patient demand.  
- No complex rostering of staff and no true waiting list. |
| Supply ≥ 90% Demand | Low risk  |
| - Servicing patient demand is manageable.  
- Some simple rostering of staff may be required.  
- Waiting lists may be measured in a few weeks and patients may need to be rescheduled based on priority or severity. |
| Supply ≥ 80% and < 90% Demand | Medium risk  |
| - Servicing patient demand can become unmanageable and is noticeable by both staff and patients.  
- Creative rostering of staff is required.  
- Waiting lists tend to increase and may be measured in one to a few months if this shortfall is prolonged. |
| Supply ≥ 70% and < 80% Demand | High risk  |
| - Servicing patient demand is unmanageable and is clearly noticeable by both staff and patients.  
- Creative rostering of staff breaks down on a frequent basis.  
- Waiting lists can increase to several months and continue to grow. |
| Supply <70% Demand | Critical risk |
| - Patients are at increased risk of not receiving treatment.  
- Wards, clinics, units and departments may be reviewed for sustainability.  
- Staff “burn out” can occur with increased frequency.  
- Specialist numbers may decrease further with increased likelihood of resignation or early retirement.  
- In some specialties, expensive cross-border referrals may be required. |
3. Specialist to population ratios: National Comparison Model

One measure of medical workforce availability by location is specialist to population ratio (SPR). SPR is calculated by dividing the estimated population by the number of specialists and expressing the result as a rate per 100,000 of population (or alternatively as one specialist per population). To enable a comparison of SPR between WA and other jurisdictions, the national comparison model was developed by MWB in 2015.

Data sources

The following data sources for area population and the number of specialists by location were utilised to calculate the June 2015 crude SPRs:

Population

ERP by Australian State and Territory, June 2015. ABS, Cat 3101.0, 30th June 2015.

Table 11: ERP by Australian State and Territory

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Population end June 2015 (1000's)</th>
<th>Change since June 2014 (1000's)</th>
<th>Percentage increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>7,618.2</td>
<td>104.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Victoria</td>
<td>5,938.1</td>
<td>99.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Queensland</td>
<td>4,779.4</td>
<td>58.9</td>
<td>1.2</td>
</tr>
<tr>
<td>South Australia</td>
<td>1,698.6</td>
<td>13.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Western Australia</td>
<td>2,591.6</td>
<td>33.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Tasmania</td>
<td>516.6</td>
<td>1.9</td>
<td>0.4</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>244.6</td>
<td>0.9</td>
<td>0.4</td>
</tr>
<tr>
<td>ACT</td>
<td>390.8</td>
<td>5.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Australia</td>
<td>23,781.2</td>
<td>317.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Specialist numbers

Australian Health Practitioner Regulation Agency (AHPRA) Annual Report 2014/2015 (June 2015): State and Territory Summaries for each state and territory (Table 6 in each jurisdictional report). Specialist registrations by principal place of practice were released by AHPRA on 12 February 2016.

Data considerations

When considering the June 2015 Crude SPR data it should be noted that the purpose is to provide an estimation of WA’s position in relation to other jurisdictions and it is not utilised in WA Health’s workforce modelling activities, consequently:

- No adjustments have been made. The data has not been validated and it cannot be guaranteed that all specialists registered with AHPRA in WA are employed in a clinical role.
- The AHPRA Annual Report data is “double counted data”. This implies that if a doctor has more than one specialty they will be counted in each specialty (such as those medical practitioners that have undertaken dual training, e.g. general medicine and endocrinology).
Results by speciality
Graphical representations are provided in Section 2 of this report and are WA-specific. The following considerations apply:

- Crude SPRs for WA are the red/green column. WA’s data is coloured green when its SPR exceeds the national average, and red when it falls below.
- Crude SPRs for other jurisdictions are the blue columns.
- Total crude SPRs for Australia (excluding WA) are the black column.

Please note it is valid to compare:

- WA to other jurisdictions, and to compare between jurisdictions.
- WA to Australia (excluding WA).

It is not valid to compare:

- other jurisdictions (blue columns) with the total crude SPR of Australia, excluding WA (black column).
## 4. Specialist age profile by specialty

<table>
<thead>
<tr>
<th>Specialty</th>
<th>N</th>
<th>Mean Age</th>
<th>Median Age</th>
<th>Q3 (Upper quartile)</th>
<th>P90 (90th percentile)</th>
<th>% &gt; 65 years</th>
</tr>
</thead>
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5. **Specialist age distribution by specialty**

A graphical series of the age distribution for each specialty is provided in section 2, colour coded for sustainability. The graphical series should be viewed with consideration of the volume of specialists within each specialty.

Current SWCP practice is to colour code specialist workforce age distributions in need of attention for long term sustainability without any consideration of current surplus or shortage estimates.

| Sustainable in the short term | A positively skewed distribution with a rapid increase in specialist numbers in the younger age groups to a peak left of centre for the age distribution (preferably <50 years) with a decline in numbers in the older age groups (a longer distributional tail to the right of the distribution).
If the number of specialists in the younger age groups (<40 years) exceeds the number of specialists aged in the older age groups (>60 years) the workforce numbers will increase with potential to service future health demand from a growth in population or other health service demand factors. |
|---|---|
| At risk of becoming unsustainable | In danger of becoming a symmetric distribution, i.e. an ageing workforce distribution where the number of specialists in the younger age groups is equivalent to the decline in numbers in the older age groups and the peak of the age group is in the centre of the age distribution.
If the number of specialists entering practice in the younger age groups is similar to the number of specialists in the older age groups then specialist numbers can only be sufficient to replace approaching retirements. There will be no growth in workforce volume to service future growth in demand. |
| Unsustainable | Either a symmetric, negatively skewed or bimodal distribution. A negatively skewed distribution has a peak age to the right of the middle for the distribution and a longer distributional tail to the left of the distribution.
A negatively skewed age distribution has insufficient young medical specialists commencing practice to replace retirements in the older age groups. The result can only be a reduction in the specialist workforce with danger of rapid depletion. |

Age distributions displaying multiple peaks and/or troughs, erratic or bimodal distributions will result in significant periods of medical specialist shortfall that result from a volume of retirements during short (5 year) time periods.
6. Specialist age profiles by gender and specialty

Table 12: Male specialist age profile by specialty 2015

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7. Specialist employment sector distribution by specialty

The number of specialists providing services in the public sector, private sector or both sectors, and the estimated public/private sector workforce percentage (by headcount) was identified in SWCP 2015 and is provided by sector in table 14.

Each specialty was allocated a percentage of public and private employment by assuming that specialists that were identified as working in both sectors spent 50% of their time in each sector.

Table 14: Specialist employment sector distribution by specialty

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A separate analysis was undertaken to compare the data and outcomes of SWCP 2013 with SWCP 2015 by employment sector. Specialty specialist distribution across sectors was identified and analysed for the interim SWCP period.

The WA column is the overall increase/decrease in workforce (public and private sectors).

**Table 15: Employment sector comparison by specialty between SWCP 2013 and SWCP 2015**

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Notes:
1. General practice and the paediatric and pathology subspecialties have been excluded from this analysis.
2. The figures are estimated and are not comparable to supply-based headcount figures.
3. Adjustments have been made in some specialties to maintain consistency of aggregate counts and differences in classification between SWCP reporting periods.
9. Metropolitan and rural specialist distribution

Estimates of the number of specialists that were providing services in metropolitan, rural and a mix of both locations and the estimated metropolitan/rural workforce percentage (by headcount) for each specialty are provided.

Table 16: Distribution of specialists by metropolitan and rural location by specialty

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10. Interregional specialist to population ratio methodology

To enable a comparison of SPR across and between rural and metropolitan locations in WA, an interregional comparison model was developed by MWB. SPR is calculated by dividing the estimated population by the number of specialists and expressing the result as a rate per 100,000 of population (or alternatively as one specialist per population).

Data sources

The following data sources for rural and metropolitan population and the number of specialists by location were utilised to calculate WA interregional Specialist to Population Ratios (SPRs).

- The Australian Statistical Geography Standard (ASGS) Volume 1 – Western Australia Maps, July 2011 published by the ABS (map regions)
- Corresponding population data from the ABS – ERP by WA Rural Health Region and metropolitan population divisions with projections to 2025. See Table 17 below.

Table 17: ERP by division with projections to 2025

<table>
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<tr>
<th>Region</th>
<th>2011 ERP</th>
<th>2015 Projected</th>
<th>2016 Projected</th>
<th>2021 Projected</th>
<th>2025 Projected</th>
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<tbody>
<tr>
<td>Pilbara</td>
<td>61,777</td>
<td>68,990</td>
<td>70,920</td>
<td>81,430</td>
<td>90,930</td>
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<td>Kimberley</td>
<td>36,791</td>
<td>41,090</td>
<td>42,240</td>
<td>48,490</td>
<td>54,160</td>
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<tr>
<td>Midwest</td>
<td>64,985</td>
<td>72,570</td>
<td>74,610</td>
<td>85,650</td>
<td>95,660</td>
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<tr>
<td>Goldfields</td>
<td>59,425</td>
<td>66,370</td>
<td>68,220</td>
<td>78,320</td>
<td>87,470</td>
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<td>Wheatbelt</td>
<td>76,177</td>
<td>85,070</td>
<td>87,460</td>
<td>100,400</td>
<td>112,130</td>
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<td>Great Southern</td>
<td>57,237</td>
<td>63,920</td>
<td>65,710</td>
<td>75,440</td>
<td>84,250</td>
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<td>182,540</td>
<td>187,650</td>
<td>215,430</td>
<td>240,600</td>
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<td>Regional and Remote Total</td>
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<td>580,560</td>
<td>596,810</td>
<td>685,180</td>
<td>765,200</td>
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<td>187,590</td>
<td>192,840</td>
<td>221,400</td>
<td>247,260</td>
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<td>259,520</td>
<td>266,790</td>
<td>306,290</td>
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<td>573,030</td>
<td>589,080</td>
<td>676,300</td>
<td>755,290</td>
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<td>417,630</td>
<td>429,290</td>
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<td>1,950,080</td>
<td>2,004,680</td>
<td>2,301,500</td>
<td>2,570,300</td>
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<td>1,048,730</td>
<td>1,204,000</td>
<td>1,344,620</td>
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<td>1,056,330</td>
<td>1,212,740</td>
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<td>97,630</td>
<td>100,370</td>
<td>115,230</td>
<td>128,690</td>
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<td>2,701,860</td>
<td>3,101,910</td>
<td>3,464,180</td>
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</table>

Note: Validated SWCP 2015 medical workforce data
**Data considerations**

WA Department of Planning use the same map regions, both rural and metropolitan with minor adjustment of boundaries. For rural regions, which are essentially the rural health regions of WA, there is a near perfect match of boundaries, or boundaries have been slightly changed where there are no or few residents. The main rural boundary differences are the:

- Eastern metropolitan boundary and the western Wheatbelt boundary which has no impact on resident population estimates
- Mandurah region, southern and eastern border (South Metropolitan Health Region), which does have an impact on resident population estimates. For the purposes of this report, the Mandurah region has been estimated (using both the national boundary and the state boundary) as an entirely separate region (with data not included in aggregated rural data).

The metropolitan region has five subregions which are not used by WA Health and do not correspond to any defined WA Health subregion, but they are used in the SWCP to identify and highlight distributional inequity of health services within the metropolitan region and hospital–population displacement. More information on the metropolitan subregions is below:

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Details</th>
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</thead>
</table>
| **Perth Inner**    | - North of the Swan River. Includes the Perth City and Cottesloe-Claremont Statistical Divisions.  
                      - Smallest resident population (187,590).  
                      - Contains most of the major metropolitan hospitals (public and private) and the University of WA.                                         |
| **Perth North West**| - Coastal area of the northern metropolitan region (one quarter by area).  
                           - Largest resident population 573,030.  
                           - Includes Osborne Park Hospital, Joondalup Private Hospital and the main Edith Cowan University Campus.                                  |
| **Perth North East**| - Remainder of the north metropolitan region.  
                           - Resident population 259,520.  
                           - Includes Swan Districts Hospital (for SWCP 2015) and the newly open Midland Public – Private Hospital (for future SWCP analysis).       |
| **Perth South West**| - Excludes Mandurah Statistical Division for the purposes of SWCP.  
                             - Coastal area of the southern metropolitan region (one quarter by area).  
                             - Resident population 417,630.  
                             - Includes Fremantle Hospital, Fiona Stanley Hospital, Rockingham Hospital, Hollywood Private Hospital and Murdoch University. |
| **Perth South East**| - Remainder of the southern metropolitan region.  
                             - Resident population 512,330.  
                             - Includes South Perth Hospital, Bentley Hospital, Armadale-Kelmscott Hospital and Curtin University.                                      |
| **Mandurah**       | - Fastest growing population region in WA.  
                             - Resident population 97,630.  
                             - Includes Peel Health Campus and is part of SMHS.                                                                                       |
11. Metropolitan interregional specialist to population ratios

Interregional metropolitan SPRs are important in identifying distributional inequity across WA’s metropolitan locations. Analysis is provided for the metropolitan population divisions (subregions) of Perth (Perth Inner, Perth North East (NE), Perth North West (NW), Perth South East (SE) and Perth South West (SW)) and Mandurah. Information on the methodology is in appendix 10.

Table 18 provides the principal place of practice of WA specialists as identified by the SWCP

Table 19 provides the SPRs for Perth’s metropolitan sub-regions, Perth, Mandurah and WA for comparative purposes.

Figure 3 provides a graphic representation of metropolitan interregional SPRs by specialty.

Table 18: Metropolitan specialist principal place of practice 2015

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<th>Perth NW</th>
<th>Perth SE</th>
<th>Perth SW</th>
<th>Perth total</th>
<th>Mandurah</th>
<th>Metrototal</th>
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Figure 391: Metropolitan crude specialist to population ratios by specialty

### 2015 Crude Specialist to Population Ratio: Metropolitan WA
**Addiction Medicine**

- **Metropolitan Region: Greater Perth**

### 2015 Crude Specialist to Population Ratio: Metropolitan WA
**Anaesthesia**

- **Metropolitan Region: Greater Perth**

### 2015 Crude Specialist to Population Ratio: Metropolitan WA
**Cardiology**

- **Metropolitan Region: Greater Perth**
2015 Crude Specialist to Population Ratio: Metropolitan WA

Medical Administration

Consultants per 100,000 Population

Metropolitan Region: Greater Perth

2015 Crude Specialist to Population Ratio: Metropolitan WA

Medical Imaging

Consultants per 100,000 Population

Metropolitan Region: Greater Perth

2015 Crude Specialist to Population Ratio: Metropolitan WA

Medical Oncology

Consultants per 100,000 Population

Metropolitan Region: Greater Perth
2015 Crude Specialist to Population Ratio: Metropolitan WA
Pathology - Microbiology

Consultants per 100,000 Population

Metropolitan Region: Greater Perth

2015 Crude Specialist to Population Ratio: Metropolitan WA
Plastic and Reconstructive Surgery

Consultants per 100,000 Population

Metropolitan Region: Greater Perth

2015 Crude Specialist to Population Ratio: Metropolitan WA
Psychiatry

Consultants per 100,000 Population

Metropolitan Region: Greater Perth
12. Rural interregional specialist to population ratios

Interregional rural SPRs are important in identifying distributional inequity across WA’s rural locations. Analysis is provided for the rural regions which are essentially the rural health regions of WA. Only specialties with headcount of one or more are included. Methodology is in appendix 10.

Table 20 provides the principal place of practice of WA specialists as identified by the SWCP

Table 21 provides the SPRs for WA’s rural regions for comparative purposes.

Figure 392 provides a graphic representation of WA’s rural interregional SPRs by specialty.

Table 20: Rural specialist principal place of practice 2015

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<tr>
<th>Specialty</th>
<th>Kimberley</th>
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## Table 21: Rural specialist to population ratios 2015

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Figure 392: Rural crude specialist to population ratios by specialty
Procedural GP’s

2015 Crude Specialist to Population Ratio: Regional and Remote WA
Procedural GP: Anaesthesia

2015 Crude Specialist to Population Ratio: Regional and Remote WA
Procedural GP: Obstetrics

2015 Crude Specialist to Population Ratio: Regional and Remote WA
Procedural GP: Surgery
13. Specialist headcount trend analysis between 2013-2015

A separate analysis of the two year period between SWCP 2013 and SWCP 2015 was undertaken to identify changes in medical specialist headcount in WA and trends over the interim period. It is important to note:

- Figures have been adjusted to remove double counting of personnel and maintain consistency of aggregate counts and differences in classification between SWCP reporting periods. The figures are not comparable to the supply headcount figures found elsewhere in this document, or the private and public sector employment distribution figures, which are based on estimates and utilise a different methodology.
- General practice has been excluded from the analysis.

Table 22: Changes in specialist headcount by specialty between SWCP 2013 and SWCP 2015

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<th>Loss by type</th>
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Note:

Numbers in parentheses under ‘Loss by type’, ‘Other’ are specialists that were identified as changing their principal specialty of practice between 2013 and 2015 and were therefore a loss to the specific specialty workforce but not to the WA workforce.
### 14. WA supply estimates 2015, 2021 and 2025

Table 23: Combined public and private sector specialist supply estimates for 2015 and projections for 2021 and 2025

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Notes: Neonatal and perinatal medicine has been double reported but not double counted.
15. WA specialist demand, shortfall and risk assessment estimates 2015, 2021 and 2025

Table 24: Combined public and private sector specialist demand, shortfall and risk shortfall estimates for 2015 and projections for 2021 and 2025

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Notes
1. General practice and oral and maxillofacial surgery have been estimated using the specialist to population ratio.
2. Neonatal and perinatal medicine has been double reported but not double counted.
16. WA specialist demand, supply and shortfall estimates 2015, 2021 and 2025

Table 25: Combined public and private sector specialist demand, supply and shortfall estimates for 2015 and projections for 2021 and 2025

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## 17. Public sector specialist supply estimates 2015, 2021 and 2025

Table 26. Public sector specialist supply estimates for 2015 and projections for 2021 and 2025

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#### Table 27. Public sector specialist demand, shortfall and risk assessment estimates/projections for 2015, 2021 and 2025

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## 22. MDWC presenters and topics

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<td>23 October 2013</td>
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| 27 November 2013 | Clinical A/prof Richard Riley, presented on the “Asia Pacific Simulation Conference”  
                             Dr Colleen Bradford from WA General Practice Education and Training presented on GP trainees.  
                             Dr James Anderson, JMO representative, presented an update on key issues for JMOs.          |
| 19 February 2014 | Ms Cheryl Grigsby, Manager International Workforce Supply Bureau                                                                                  |
| 26 March 2014    | Mr Mark Slattery, Director Health Networks Branch, presented on the Endocrinology workforce                                                          |
| 21 May 2014      | Mr Michael Warner, General Surgeon and the Chair of the WA Board in General Surgery, Royal Australasian College of Surgeons                           |
| 30 July 2014     | Dr William Macdonald, Representative, Royal Australian and New Zealand College of Radiologists  
                             Dr Tim Bates, General Physician, Clinical Lead, Generalist Medical Workforce and Chair, Internal Medicine Training Scheme WA |
| 24 September 2014| Dr Jay Bruce, ANZCA WA Education Officer and Specialist Anaesthetist Fremantle Hospital  
                             Dr Allan Quigley, Director Clinical Services Next Step/Drug and Alcohol Office               |
| 26 November 2014 | Clin. A/Prof. Christopher Heath, Head of Infectious Diseases, Senior Infectious Diseases Physician & Clinical Microbiologist, RPH/PathWest Lab Medicine  
                             Dr Dale Hamilton, Representative of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists |
| 04 February 2015 | Dr Josephine Richards and Dr Andrea Ang, RANZCO workforce representatives WA  
                             Dr Patrick Cheah, HoD Rheumatology SCGH and Professor Johannes Nossent, Winthrop Professor UWA and Foundation Chair in Rheumatology |
| 18 March 2015    | Dr Ernest Tan, Chairperson WA Faculty Australasian College of Dermatologists                                                                       |
| 20 May 2015      | A/Professor Lewis Marshall, Chair of the Education Committee, Australasian Chapter of Sexual Health, Royal Australasian College of Physicians          |
| 29 July 2015     | Mr Stephen Rodrigues, WA Regional Chair, Board of Otolaryngology Head and Neck Surgery, Royal Australasian College of Surgeons  
                             Ms Angela Kelly, Assistant Director General, Purchasing and System Performance                |
| 30 September 2015| Ms Belinda Bailey, Chief Executive Officer, Rural Health West  
                             Dr Mark Salmon, Executive Director Medical Services, Child and Adolescent Health Service    |
| 18 November 2015 | Dr Jack Goldblatt, Head of Department Genetic Services of Western Australia (GSWA), and Ms Anne Hawkins, Manager Clinical Service GSWA  
                             A/Prof David Mountain, Chair WA Faculty, Australasian College for Emergency Medicine         |
| 01 January 2016  | Dr Soniya Nanda-Paul, Chief Dental Officer, Department of Health, and Dr David Whyatt, Senior Research Fellow General Practice, University of Western Australia |
| 25 May 2016      | Dr Jenny Deague, WA Board Member Cardiac Society of Australia and New Zealand, Director of Cardiology Joondalup Health Campus                      |