



# Health Workforce 2025

## Medical Specialties Volume 3

**November 2012**

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## Foreword

Volume 3 of Health Workforce 2025 (HW 2025) provides Australia's first major, long-term national projections for doctors at the medical specialty level, presenting the best available planning information on our future medical workforce.

This work provides further evidence of the need for essential, coordinated, long-term reforms by government, professional groups and the higher education and training sectors – so a sustainable health workforce that meets the healthcare needs of all Australians can be delivered. These reforms need to target training, immigration and workforce reform.

HW 2025 Volume 3 confirms the supply of medical specialists is increasing. The total medical specialty workforce is moving towards a balance of supply and demand by 2025 relative to the current state. This is largely the result of significant recent investments by the Commonwealth, state and territory governments. Despite this increase in supply, significant inequity in service access – to specialties and in geographical regions – is likely to persist. Imbalances within the medical specialty workforces that need to be addressed are:

- geographic maldistribution of the total medical workforce, also present for general practice and a number of other medical specialties, particularly psychiatry, obstetrics and gynaecology and surgery. This does not only refer to shortages in rural and regional areas, it also includes major metropolitan centres;
- maldistribution across medical specialties, with specialties most likely to be in undersupply including obstetrics and gynaecology, ophthalmology, anatomical pathology, psychiatry, diagnostic radiology, and radiation oncology; and
- imbalances between generalists, specialists and sub-specialists. The specialties most affected include general practice, general medicine and general surgery.

This report provides important messages for large scale reform efforts.

1. **Reform is essential to ensure a sustainable, affordable medical workforce into the future.** Service and workforce reforms are shown to significantly impact projected workforce requirements. This report provides a number of real-world examples of successful reforms which, if widely implemented, could deliver efficiencies impacting on the future requirement for medical specialists.
2. **Many barriers exist to successful implementation of service and workforce reforms.** This includes regulatory frameworks, industrial agreements, funding arrangements and institutional and professional cultures. Overcoming these barriers calls for coordination across governments, sectors and service providers.
3. **The medical workforce is currently reliant on international medical graduates (IMGs).** This is likely to continue to 2025. This reliance is not evenly distributed amongst specialties, reflecting domestic undersupply, trainee preferences and geographic maldistribution.

Specialties most reliant on IMGs include general practice, obstetrics and gynaecology, ophthalmology, psychiatry and radiology.

4. **From HW 2025 Volume 1, we know there is expected to be more junior doctors seeking specialist training positions than are needed to meet projected growth in expressed demand** for specialist services. Domestic medical graduates almost doubled between 2000 and 2010 (from 1,195 to 2,259)<sup>1</sup>, while the number of vocational trainees more than doubled between 2001 and 2011 (from approximately 6,200 to 15,500). In some specialties, for example, adult medicine and paediatrics, increases exceeded 200 percent<sup>2</sup>. These growth rates are likely to continue for the next few years, yet immigration is being used to fill service gaps in our public hospital system. An opportunity exists to harvest this growth in local graduates and trainees to reduce our reliance on immigration to fill service gaps. This will mean a targeted program replacing unaccredited (service) registrar posts (filled extensively by IMGs) with accredited training posts filled by local graduates (including former international medical students).
5. **The medical training pathway is poorly coordinated.** There is no tangible mechanism to coordinate the training efforts of state and territory health systems (collectively responsible for funding virtually all specialty training, excluding general practice) or to align those efforts to national workforce needs (numbers, distribution and generalist: specialist mix). This is contributing to:
  - maldistribution between specialties;
  - lengthening of time taken to produce independently practising specialists; and
  - lost opportunities to better target geographical distribution and promote a better balance of generalist: specialist: sub-specialist training.

The Commonwealth's vocational medical training responsibilities are confined to general practice and to its Specialist Training Program (STP). The STP funds specialist training post establishment beyond traditional public hospital settings, and loadings are also available to encourage rural specialist training posts. While better organised and targeted at a national level, the Commonwealth programs lack the requisite level of coordination and alignment with state and territory approaches to best leverage the collective tax payer funded training investments of both levels of government. Rectifying these shortcomings is essential to achieving the long-term workforce outcomes required.

In order to produce a medical workforce that sustainably and efficiently meets the needs of the community, action is needed now to:

- address barriers to reform;
- address identified imbalances in the workforce; and

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<sup>1</sup> Medical Training Review Panel Fifteenth Report

<sup>2</sup> Ibid

- create a mechanism to coordinate the medical training pathways.

Three levers exist that can be used to address the identified workforce imbalances of geographic distribution, across specialties and between generalists, specialists and sub-specialists. These are training, funding and bonding, which require:

1. Linkage of training funding, policy and programs to desired outcomes. For example, geographic outcomes can be better supported at all levels of the training system from professional entry to vocational training, and funding for training positions can be better directed towards specialties in need, geographic regions in need, and the expansion of generalist pathways.
2. Provision of a more coherent, targeted and effective system of program and funding support to attract and retain the medical workforce in regional, rural and under-served urban areas. This should involve providing incentives (financial) to those specialties in need, and disincentives to those in balance or oversupply.
3. Strengthening the current system of geographic bonding that is applied at the professional entry level and for IMGs. For example, providing support for expansions in intern and vocational training capacity with links to a return of service obligation at the geographic and specialty levels. Bonding can also be used to better target future intakes of Commonwealth supported medical students – again at the geographic and specialty levels.

It is likely a combination of these three levers will be required to effect the workforce changes required. Government, as the principal funder of medical training, needs to use its policy and funding levers to achieve the desired number, type and distribution of specialists and general practitioners.

To progress reform, a clear set of actions is required. These actions require national coordination and involve governments, professional bodies, colleges, regulatory bodies, the higher education system and training providers. These actions are:

- establishment of a National Medical Training Advisory Network (NMTAN) to provide a mechanism to advise on improved coordination of medical training, to ensure stronger links with the health needs of the community, emerging models of care and address the current imbalances in the workforce. As part of this the NMTAN would consider the implications for the medical workforce of patterns of disease and multidisciplinary approaches with potential for sector based workforce reforms;
- adoption of national consistency in the minimum efficient pathway for clinical training at professional entry and postgraduate levels. This can include establishing maximum training durations that will attract publicly funded support. For vocational training, this will be based on existing College requirements and will take into account practical constraints on achieving shorter training time such as individual/ personal/ family support and system capacity;

- development of rolling National Training Plans or strategies to improve alignment between changing health system workforce requirements, the higher education and training sectors activities, and broader workforce distribution programs. This seeks to formalise and systematise the current ad-hoc approach to managing the health and higher education interface;
- analyse state and territory health workforce industrial arrangements (government and non-government employers) to identify barriers and enablers to workforce reform, This will assist Ministers to understand where there may be opportunities for reform, and how these could be maximised;
- analyse relevant Commonwealth, state and territory legislation to identify barriers and enablers to the flexible use of the workforce, distribution, profession specific demarcation and restrictions on health professionals working to their full scope of practice;
- review of the goal of national self-sufficiency in the supply of health professionals to inform the development of a program of nationally coordinated effort to manage the achievement of self-sufficiency in concert with geographical distribution, training and workforce reform efforts; and
- focus on national implementation of targeted workforce reform once reform models are developed.

HW 2025 identifies the issues and opportunities to build a medical workforce that is able to sustainably service the health needs of the Australian community. Next steps involve seeking national agreement on the actions identified, progressing outcomes through collaboration and consultation, and implementing the results across the health and higher education sectors.

## Table of contents

Executive Summary .....	7
1 Introduction .....	19
2 HWA's assessment of the medical specialty workforces .....	21
3 Analysis of the medical specialty workforce results .....	38
4 Potential impacts of service and workforce reforms .....	39
5 Potential impacts of changes to immigration .....	49
6 Imbalances in the medical specialty workforce .....	53
7 The need for a coordinated training pathway .....	59
8 Responding to HW 2025 Volume 3 findings .....	63
9 Detailed results for each medical specialty .....	65
10 Anaesthesia .....	68
11 Dermatology .....	77
12 Emergency medicine .....	87
13 General practice .....	97
14 Intensive care .....	119
15 Obstetrics and gynaecology .....	129
16 Ophthalmology .....	139
17 Pathology .....	148
18 Physicians – adult .....	176
19 Physicians – paediatrics and child health .....	261
20 Psychiatry .....	272
21 Diagnostic radiology and radiation oncology .....	281
22 Surgery .....	299
23 Addiction medicine .....	350



24	Medical administration.....	354
25	Occupational and environmental medicine .....	363
26	Pain medicine .....	367
27	Palliative medicine .....	371
28	Public health medicine .....	375
29	Rehabilitation medicine .....	379
30	Sexual health medicine.....	383
31	Sports and exercise medicine.....	387
	Glossary .....	390
	Appendix 1 – Medical specialty mapping procedure .....	392
	Appendix 2 – Demand methodology.....	394
	Appendix 3 – Demand rates by medical specialty .....	398
	Appendix 4 – Supply methodology.....	401
	Appendix 5 – The use of productivity as a measure of service and workforce reform .....	413



## Executive Summary

Health Workforce 2025 (HW 2025) provides Australia's first major, long-term national projections for the health workforce. HW 2025 Volumes 1 and 2 dealt with doctors, nurses and midwives. HW 2025 Volume 3 examines individual medical specialties in Australia and is the final volume in this series.

### Key findings

- The supply of medical specialists is increasing, with the total medical specialty workforce moving towards a balance of supply and demand by 2025 relative to the current state.
- Despite the projected overall position of balance, imbalances within the medical specialty workforces currently exist and are projected to continue. This needs to be addressed, specifically:
  - geographic maldistribution of the total medical workforce, also present for general practice and a number of other medical specialties. This includes shortages in regional and rural areas and potential oversupply in metropolitan areas;
  - maldistribution across medical specialties; and
  - imbalances between generalists, specialists and sub-specialists.
- Reform is essential to ensure a sustainable, affordable medical workforce into the future, with service and workforce reforms shown to significantly impact projected workforce requirements.
- Parts of the medical workforce are reliant on international medical graduates (IMGs) and this is likely to continue to 2025. This reliance reflects domestic undersupply, trainee preferences and geographic maldistribution.
- The medical training pathway is poorly coordinated, with no tangible mechanism to coordinate the training efforts of the Commonwealth, state and territory health systems.
- This poor coordination of the medical training pathway is contributing to:
  - maldistribution between specialties;
  - lengthening of time taken to produce independently practising specialists;
  - lost opportunities to better target geographical distribution and promote a better balance of generalist, specialist and sub-specialist training;
  - uncertainty for medical graduates in knowing which specialty to choose for their career pathway; and
  - some level of wastage in training specialists in fields that may not match community needs.

- Three levers exist to address workforce imbalances – training, funding and bonding.
- In order to produce a medical workforce that sustainably and efficiently meets the needs of the community, action is needed now to address barriers to reform, identified imbalances in the workforce and to create a mechanism to coordinate the training pathways for medical practitioners.

## HWA's assessment of the medical specialty workforces

HW 2025 Volume 3 confirms the supply of medical specialists is increasing, with the total medical specialty workforce moving towards a balance of supply and demand by 2025 relative to the current state.

Table 1 provides a summary of each medical specialty, showing the existing workforce position and net workforce projection results in 2025 under a number of planning scenarios.

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession, and an analysis of current vacancies and waiting times (where relevant and available). Analysis of the existing workforce position indicates a number of specialties are currently perceived to be in shortage. This is shown as red in Table 1, and means expressed service demand exceeds the existing workforce, ongoing vacancies exist and/or there are extended waiting times. Specialties perceived to be in shortage include:

- General practice
- General medicine
- Medical oncology
- Psychiatry, and
- Radiation oncology.

Other specialties are shown as orange, indicating there are some perceived difficulties in filling positions, particularly in ex-urban regions; or green, indicating no current perceived shortages.

Workforce projections were developed under the following planning scenarios:

- **comparison scenario** – a no change scenario in which current policy settings remain fixed into the future.
- **service and workforce reform scenario** – the demand for a specialty is reduced through reforms involving changed skill mix, technological change or other reforms, at a rate of approximately 1.4 percentage points per annum.
- **registrar work value scenario** – the work contribution of senior registrars is included to indicate the relative reliance of different specialties on this workforce.
- **medium self-sufficiency scenario** – immigration is reduced by 50 percent by 2025 to show the relative reliance of specialties on IMGs.

- **capped working hours scenario** – is designed to show the impact of a reduction in working hours to 50 hours maximum per week.

Table 1 shows the net difference between projected workforce supply and expressed demand in 2025 under each planning scenario. Where the difference is positive, workforce supply increased relative to expressed demand; where negative, expressed demand increased relative to workforce supply. Workforce supply in 2009 is also shown to indicate the magnitude of the movement under each scenario.

The workforce projections should be interpreted relative to the existing workforce position assessment. Where workforce supply increases relative to demand (that is, the net difference between projected workforce supply and expressed demand in 2025 is positive), this does not necessarily imply a workforce will be in oversupply in 2025, particularly where the existing workforce position assessment is red or orange.

The workforce projections show the following specialties to be in shortage<sup>3</sup> in 2025 compared with their current position, if recent trends in supply and demand continue:

- Obstetrics and gynaecology
- Ophthalmology
- Anatomical pathology
- Psychiatry
- Diagnostic radiology, and
- Radiation oncology.

Psychiatry and radiation oncology are particularly at risk because of their existing workforce position (perceived shortage), with the projections indicating this will worsen by 2025.

The following specialties were perceived to currently be in adequate supply, and are projected to move towards oversupply by 2025 if recent trends in supply and demand continue:

- Cardiology
- Gastroenterology and hepatology
- Neurology, and
- Surgical specialties.

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<sup>3</sup> Defined as the difference between supply and demand as a percentage of total workforce supply in 2025 being greater than -5 percent.

**Table 1: Medical specialty results – net workforce movement (headcount), 2025**

			Net workforce movement in 2025				
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario	Registrar work value scenario	Medium self-sufficiency scenario	Capped working hours scenario
Anaesthesia		3,476	130	861	316	-71	85
Dermatology		420	-31	43	-10	-45	-44
Emergency medicine		1,134	-40	221	163	-138	-80
General practice		26,389	57	6,590	888	-3,831	8
Intensive care		517	35	184	155	9	-96
Obstetrics and gynaecology		1,562	-142	221	-70	-302	-265
Ophthalmology		843	-162	28	-136	-204	-180
Anatomical pathology		728	-182	9	-166	-232	-190
Other (clinical) pathology <sup>(a)</sup>		400	-34	73	-2	-84	-50
Cardiology		790	232	400	289	n.a.	134
Endocrinology		442	29	152	58	n.a.	5
Gastroenterology and hepatology		683	110	257	146	n.a.	31
General medicine		818	137	393	204	n.a.	61
Geriatric medicine		397	13	102	49	n.a.	-7
Medical oncology		363	82	184	126	n.a.	39
Nephrology		369	-18	68	10	n.a.	-44

			Net workforce movement in 2025				
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario	Registrar work value scenario	Medium self-sufficiency scenario	Capped working hours scenario
Neurology		411	43	133	69	n.a.	17
Paediatrics and child health		1,296	39	379	338	-91	-80
Psychiatry		2,981	-452	321	-374	-784	-498
Radiology		1,478	-366	2	-287	-540	-389
Radiation oncology		245	-57	25	-30	-65	-91
General surgery		1,181	519	829	532	430	296
Orthopaedic surgery		1,168	148	444	176	90	7
Otolaryngology		442	180	229	192	156	151
Plastic surgery		306	70	104	81	59	51
Other surgery <sup>(b)</sup>		866	179	384	196	111	24

n.a. not applicable. Immigration data was not separately identified for physician sub-specialties so the medium self-sufficiency scenario was not generated.

(a) Comprised of chemical pathology, microbiology, haematology, immunology, oral pathology and genetics.

(b) Comprised of cardiothoracic surgery, neurosurgery, paediatric surgery, urology and vascular surgery. The existing workforce position assessment for paediatric surgery was orange, ratings for all other surgery specialties were green.

## Potential impact of service and workforce reforms

Reform is essential to ensure a sustainable, affordable medical workforce into the future, with the workforce projections demonstrating service and workforce reforms significantly impact workforce requirements.

Service and workforce reforms encompass changing models of care, adjustments to skill mix, health professionals working to their full or expanded scope of practice, and technology changes (such as telehealth). Service and workforce reforms are also not constrained within specialties, they can be pursued across the medical specialty workforce. This may see new roles emerge, such as acute medicine specialists working across the current functions of existing specialty workforces. Such roles may positively affect the balance between generalist roles and specialist roles.

This report provides a number of real-world examples of successful reforms which, if widely implemented, could deliver efficiencies in future requirements for medical specialists, including:

- collaborative care and integrated teams in ophthalmology and optometry for diabetes and glaucoma care achieving efficiency gains and reducing waiting times for new patients;
- orthopaedic triage clinics, led by advanced practitioner physiotherapists, providing patients with timely access to a high quality and efficient orthopaedic outpatient service;
- video consultations in psychiatry providing services to rural and remote regions; and
- complex diabetes care moving into the general practice environment, achieving efficiency gains through reduced consultant specialist time, improved access and outcomes.

Existing well developed service and workforce reforms must be recognised, supported and action taken to extend such reforms into the broader health system. This is particularly the case for those specialties that have significant prospects for the implementation of service and workforce redesign models (evidenced through the service and workforce reform scenario results).

Despite the demonstrated effect of service and workforce reform, many barriers exist to successful implementation, including regulatory frameworks, industrial agreements, funding arrangements and institutional and professional cultures. Overcoming these barriers requires a coordinated approach by governments, service providers, regulatory bodies, education providers and the profession. The National Health Workforce Innovation and Reform Strategic Framework for Action (2011-2015) provides this framework, and is a national call for action for reform across the health and higher education sectors.

## Potential impact of immigration

Australia's medical workforce is currently reliant on IMGs, which is likely to continue to 2025. This reliance is not evenly distributed amongst specialties, reflecting domestic undersupply, trainee preferences and geographic maldistribution. Medical specialties most reliant on IMGs include general practice, obstetrics and gynaecology, psychiatry and radiology.

In contrast to the domestic-trained medical specialty workforce, changes in immigration can rapidly impact the supply of health professionals. Any move towards self-sufficiency can therefore significantly and immediately impact the supply of medical practitioners, particularly for those specialties with a current high reliance on IMGs (listed above).

While immigration remains the most flexible means of meeting short-term supply gaps, it is time to reconsider our policies, especially considering the increasing number of domestic medical graduates from Australian medical schools. Between 2000 and 2010 the number of domestic medical graduates increased from 1,195 to 2,259, and increases are expected to continue.<sup>4</sup> A consequence of this is that the number of doctors seeking vocational training places is projected to exceed available places based on projected growth in expressed demand for services.<sup>5</sup>

This increase in graduates provides an opportunity to effect change now – to increase levels of self-sufficiency while simultaneously providing training capacity for them. This would be achieved by converting service posts currently occupied by IMGs into pre-vocational and vocational training places for medical graduates.

It is not possible to rely on this change occurring without specific policy decisions and governance mechanisms – it would require significant change across the health system, including in the employment practices of individual hospitals and medical service providers such as general practices.

Given the ongoing reliance on IMGs in the medical system, it is also timely to consider the support and supervision requirements of different groups of IMGs. Research indicates international students trained in Australian medical schools are able to integrate into the Australian health system with similar success to their domestic colleagues. This means while Australia remains reliant on IMGs, this group is likely to provide the best outcomes and require less supervision and support than IMGs who gain their qualifications overseas.

The consequences of any change to immigration approaches are disproportionately felt in geographic and economically disadvantaged areas and in some specialties. A joined up approach across health, immigration, training and regional development is therefore essential in managing any shift towards self-sufficiency.

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<sup>4</sup> Medical Training Review Panel Fifteenth Report

<sup>5</sup> Health Workforce Australia 2012: Health Workforce 2025 – Doctors, Nurses and Midwives – Volume 1



## Identified imbalances in the medical specialty workforce

Despite the total medical specialty workforce projected to move towards balance by 2025 (relative to the current state), imbalances within the medical specialty workforces exist and are projected to continue, specifically:

- geographic maldistribution of the total medical workforce, also present for general practice and a number of other medical specialties;
- maldistribution across medical specialties; and
- imbalances between generalists, specialists and sub-specialists.

## Geographic maldistribution of the medical workforce

HW 2025 Volume 1 highlighted the geographic distribution of the medical workforce was of significant concern, and consultation on Volume 3 confirmed this view. Under current policy settings, the future projected growth of medical graduates is unlikely to make significant inroads into relative geographic equity. While maldistribution usually refers to potential shortages in rural and regional areas, it also includes potential oversupply in major metropolitan centres.

Maldistribution is particularly evident in the general practitioner workforce because of their role in primary and preventative health care provision, and their need to be closely aligned to where people live. However, other specialties also have issues with geographic maldistribution. Services in regional and rural areas have been adversely affected by increasing sub-specialisation across specialty groups, combined with decreased confidence and willingness within specialties to provide services to population subsets (such as children).

While it is not possible or sustainable to provide every specialty service in every local community, improving the geographic distribution of the medical workforce is a key component of improving access to health services and health outcomes for regional and rural Australians, and should be a national priority for the health system.

## Maldistribution across specialties

The analysis of the existing workforce position and workforce projections demonstrate imbalances exist across medical specialties. For example, the existing workforce position assessment suggests specialties including cardiology, intensive care, gastroenterology, orthopaedic surgery, otolaryngology and plastic surgery have sufficient current workforces to meet demand, while general practice, general medicine, psychiatry, medical oncology and radiation oncology do not. This imbalance is also exacerbated across the projection period for some specialties.

Such imbalances can have a direct cost to the health system. This is because where workforce supply exceeds demand, supplier-induced demand can often exist. This is where a service supplier (for example, a doctor) can encourage the consumer to demand more services (such as follow-up visits) than may have otherwise been required if the workforce were in shortage.

There is no national coordinating mechanism linking vocational training availability for each specialty with the workforce needs of the community. Consequently, supply of each specialty group is driven by factors not directly related to the community's requirement for health services, including:

- trainee career preferences;
- the service requirements for trainees, that is, the reliance on trainees rather than specialists to provide services within parts of the health system; and
- the remuneration opportunities of different specialties.

Consultation revealed this is leading to a number of problems within the hospital and community sectors over and above the identified workforce imbalances between medical specialties. For example:

- mismatches between the service requirements for trainees and the requirement for specialists. This results in some specialties such as intensive care and neonatology being heavily reliant on IMGs to fulfil the service requirements of the units in which they work; and
- shortages in predominantly community-based specialties such as ophthalmology and dermatology, due to the lack of funded training positions in the public sector.

Until there is better coordination and matching of vocational training positions to health system requirements, these imbalances will continue and likely worsen with the increasing supply of graduates from Australian medical schools.

## Balancing generalists and specialists

Consultation for Volume 3 identified consistent concerns about the decline of medical practitioners with generalist skills and the growing imbalance between the generalist workforce and the specialist and sub-specialist workforces.

The term generalist refers to the primary care GP workforce, the rural generalist workforce (a subset of the GP workforce) and generalist specialists, specifically general physicians, general surgeons and general pathologists.

This imbalance has implications for:

- cost of health care;
- fragmentation of care for the increasing number of individuals with chronic and complex care needs;
- quality of care if there is a loss of a coordinating medical practitioner;
- health outcomes of the broader community; and
- sustainability of services in rural and regional areas.

Action, through a combination of training, funding and health service reform, is required to get this balance right.

## The need for a coordinated medical training pathway

Imbalances across the medical specialty workforces are a reflection of the poor coordination of the medical training pathway. Numerous bodies are involved in the funding and delivery of training, including: the Commonwealth, state and territory governments; professional colleges; universities; the Australian Medical Council; the private hospital and community sectors; General Practice Education and Training; and regional training providers. These bodies have no tangible mechanism of coordination. In addition to the maldistribution across specialties, this lack of coordination is also contributing to:

- the lengthening of time taken to produce independently practising specialists; and
- lost opportunities to better target geographical distribution.

There is a clear and urgent need for better national organisation of the medical specialty training pipeline, to balance the local training and service requirements of jurisdictions and employers with the training of doctors as a national health system resource. Health Ministers have now approved the establishment of a National Medical Training Advisory Network in the HWA 2012-13 Work Plan. This will provide a mechanism to:

- better target the regional distribution of doctors through identifying enhanced regional and rural training opportunities;
- rebalance the generalist: specialist: sub-specialist workforce in line with agreed national workforce requirements;
- achieve gains in national self-sufficiency through identification and management of opportunities to translate unaccredited training places filled by IMGs with the current surge in locally trained doctors;
- better manage the training requirements of the IMG workforce; and
- provide advice on implementation policy and program measures to achieve target distribution (geographic, sector and specialist mix), such as return of service obligations, provider number restrictions and incentives.

## Responding to HW 2025 Volume 3 findings

Three levers exist that can be used to address the identified workforce imbalances of geographic distribution, across specialties and between generalists, specialists and sub-specialists. These are training, funding and bonding, which require:

1. Linkage of training funding, policy and programs to desired outcomes. For example, geographic outcomes can be better supported at all levels of the training system from professional entry to vocational training, and funding for training positions can be better

directed towards specialties in need, geographic regions in need and the expansion of generalist pathways.

2. Provision of a more coherent, targeted and effective system of program and funding support to attract and retain the medical workforce in regional, rural and under-served urban areas. This should involve providing incentives (financial) to those specialties in need, and disincentives to those in balance or oversupply.
3. Strengthening the current system of geographic bonding that is applied at the professional entry level and for IMGs. For example, providing support for expansions in intern and vocational training capacity with links to a return of service obligation at the geographic and specialty levels. Bonding can also be used to better target future intakes of Commonwealth supported medical students – again at the geographic and specialty levels.

It is likely a combination of these three levers will be required to effect the workforce changes required. Government, as the principal funder of medical training, needs to use its policy and funding levers to achieve the desired number, type and distribution of doctors.

Reform is also essential in ensuring a sustainable, affordable medical workforce into the future. Service and workforce reforms are shown to significantly impact projected workforce requirements. Governments, sectors and service providers need to work together to overcome the barriers to successful service and workforce reform implementation.

## Next steps and actions required

To progress reform, a clear set of actions is required. These actions require national coordination and involve governments, professional bodies, colleges, regulatory bodies, the higher education system and training providers. These actions are:

- establishment of a National Medical Training Advisory Network (NMTAN) to provide a mechanism to advise on improved coordination of medical training, to ensure stronger links with the health needs of the community, emerging models of care and address the current imbalances in the workforce. As part of this the NMTAN would consider the implications for the medical workforce of patterns of disease and multidisciplinary approaches with potential for sector based workforce reforms;
- adoption of national consistency in the minimum efficient pathway for clinical training at professional entry and postgraduate levels. This can include establishing maximum training durations that will attract publicly funded support. For vocational training, this will be based on existing College requirements and will take into account practical constraints on achieving shorter training time such as individual/ personal/ family support and system capacity;
- development of rolling National Training Plans or strategies to improve alignment between changing health system workforce requirements, the higher education and training sectors activities, and broader workforce distribution programs. This seeks to formalise and

systematise the current ad-hoc approach to managing the health and higher education interface;

- analyse state and territory health workforce industrial arrangements (government and non-government employers) to identify barriers and enablers to workforce reform, This will assist Ministers to understand where there may be opportunities for reform, and how these could be maximised;
- analyse relevant Commonwealth, state and territory legislation to identify barriers and enablers to the flexible use of the workforce, distribution, profession specific demarcation and restrictions on health professionals working to their full scope of practice;
- review of the goal of national self-sufficiency in the supply of health professionals to inform the development of a program of nationally coordinated effort to manage the achievement of self-sufficiency in concert with geographical distribution, training and workforce reform efforts; and
- focus on national implementation of targeted workforce reform once reform models are developed.

HW 2025 identifies the issues and the opportunities to build a medical workforce that is able to sustainably service the health needs of the Australian community. Next steps involve seeking national agreement on the actions identified, progressing outcomes through collaboration and consultation and implementing the results across the health and higher education sectors.

## 1 Introduction

Recognising the importance of national planning for a sustainable health workforce, the Australian Health Ministers (through the Standing Council on Health (SCoH)) commissioned the Health Workforce 2025 (HW 2025) Report in November 2010. In April 2012, Health Workforce Australia (HWA) published the first two volumes of HW 2025:

- HW 2025 Volume 1 – presented the findings of a supply and demand analysis of doctors, nurses and midwives in Australia.
- HW 2025 Volume 2 – presented detailed workforce supply and demand projections for registered and enrolled nurses by area of practice, as well as projections by state and territory for doctors and nurses.

At their meeting on 27 April 2012, Health Ministers agreed that the Australian Health Ministers' Advisory Council, supported by HWA, would identify priority strategies in the main policy areas raised in the volumes, of: innovation and reform; immigration; training capacity and efficiency; and workforce distribution. These strategies are due to be presented to SCoH in November 2012.

This report is the third and final volume of HW 2025 – Doctors, Nurses and Midwives. While HW 2025 Volumes 1 and 2 examined doctors as an aggregate workforce, HW 2025 Volume 3 examines individual medical specialties. This provides a significant next step in the improvement of health workforce planning in Australia, and further establishes a common framework for national discussion on future workforce and training policy and reforms.

To ensure the relevance and reliability of the information presented in this publication, extensive consultation was conducted. This was to obtain feedback on the data and assumptions underpinning the workforce projections, as well as to obtain information on considerations for future workforce requirements that may influence the interpretation of the projections.

Due to the size of some of the workforces and data limitations, supply and demand projections were not able to be conducted for all medical specialties. For those medical specialties where workforce projections were not generated, an existing workforce profile is presented using available information.

HW 2025 Volume 3 can be divided into three main parts:

- **Part 1** – comprised of chapters 1 to 7, encompassing the introduction, summary and analysis of results;
- **Part 2** – details HWA's responses to HW 2025 Volume 3 findings (in chapter 8); and
- **Part 3** – comprised of chapters 9 to 31, explains the methodology underpinning HW 2025 Volume 3 and provides detailed results for each medical specialty.

It should be noted this report presents the first iteration of medical specialty workforce supply and demand projections. There is an ongoing process to improve forecast estimates through the

identification and improvement of shortcomings in available data and current methodology through engagement with stakeholders.



## 2 HWA's assessment of the medical specialty workforces

In HW 2025 Volume 3, HWA's assessment of the medical specialty workforces comprised four components:

1. **An assessment of the existing workforce position of the medical specialties.** Common feedback during the development of HW 2025 Volumes 1 and 2 was that the current state of the workforce was unknown, that is, whether the workforce was in balance or not at the beginning of the workforce projections. In response to this feedback, HWA conducted an assessment of the existing workforce position of each medical specialty for HW 2025 Volume 3. This chapter begins by providing information on how the existing workforce position was measured.
2. **Scenario modelling** – to demonstrate the impact of potential policy options on future workforce supply and demand. This chapter provides a description of the supply and demand methodology, along with a description of each of the alternative planning scenarios for which workforce projections were generated, as well as a summary of results. This summary of results brings together the existing workforce position assessment and the net workforce projection results in 2025 under each planning scenario for the medical specialties.
3. **A set of four indicators – collectively called the workforce dynamics indicator** – introduced to highlight aspects of the current workforce that may be of concern into the future. This chapter presents information on the workforce dynamics indicator and provides a summary of the indicator assessments for the medical specialties.
4. **Consultation with stakeholders** – to obtain feedback on considerations of future requirements that may impact future workforce supply and demand. This is particularly important as the workforce projections are based on projecting historical trends into the future, while events occurring currently or that are anticipated to occur, are not captured in the projections. These considerations therefore provide a real world context for the interpretation of the results.

Information about each of these components, along with a summary of the findings for each is presented in this chapter.

### Existing workforce position

#### Existing workforce position assessment

During the development of HW 2025 Volume 3, HWA consulted with stakeholders and used vacancy rate and waiting time data (where available) to make an assessment of the existing workforce position for each medical specialty – that is, an assessment of whether the workforce is perceived to be in balance or not.

HW 2025 Volume 3 separates the national medical workforce into medical specialties. By examining medical specialties, a clearer picture on the position of each workforce is shown. However this approach increases the importance of understanding the existing workforce position, that is, if the workforce is in balance (with workforce supply matching demand for services) or not. This is because understanding this position greatly affects the interpretation of the workforce projection results.

Ideally, quantitative evidence should be used to determine whether a workforce is in balance or not at a point in time. However, there is a lack of such evidence. Therefore, to provide an understanding of the existing workforce position for each specialty, an assessment was conducted using a range of partial measures. These measures were:

- assessment by key stakeholders;
- waiting times; and
- vacancy rates.

Each of these measures is discussed below.

#### Assessment by key stakeholders

During consultation, HWA spoke with employers, jurisdictions and medical colleges to obtain their assessment of the existing workforce position of the medical specialties. These views are incorporated within the existing workforce position assessment.

#### Waiting times

Elective surgery waiting lists enable hospitals and clinicians to manage demand for surgery based on clinical need and the availability of appropriate facilities and professionals. Elective surgery waiting times report how long it takes from first registering on the waiting list to receiving surgery. They are a commonly reported hospital performance indicator and are a measure of access to elective surgery – not specifically a measure of workforce imbalance. It is for this primary reason that waiting times can only be used as a partial measure to demonstrate existing workforce position. Factors aside from workforce availability that influence waiting times and affect its use as an indicator include:

- the length of time someone has to wait for surgery, as this influences the likelihood they join a waiting list;
- demand for emergency surgery;
- demand for elective surgery can increase as advances in technology improve the range, safety and effectiveness of procedures that can be offered;
- there is no consistent criterion used to decide whether a patient is referred for elective surgery or not; and
- the measure often relates to public elective surgery only.

Also overarching the above factors is the influence of budget. Budget constraints influence supply by limiting the availability of staff and impacting on the scheduling and allocation of theatre capacity – which impacts waiting times.

Elective surgery waiting times can only be used as an indicator for the surgical workforce. Information on waiting time for first consultation can also be a partial indicator for specialties primarily provided by private practitioners, for example dermatology. A longer waiting time for an appointment may indicate a workforce imbalance, however similar cautions (as outlined with elective surgery waiting times) apply in directly equating a waiting time to a workforce shortage.

### Vacancy rates

Vacancy rates and duration of vacancies are often used to assess potential workforce imbalances. Vacancies can imply there is an insufficient sized workforce as there are not enough people to fill positions available. However there are a range of cautions to note with using vacancy rates as a measure of workforce shortage:

- vacancies occur as part of normal operations due to turnover and lags in filling positions;
- there is no single level of vacancy rate considered to reflect a workforce shortage;
- vacancies can occur for reasons other than shortage, for example: the vacancy could be in an unattractive location; an employer may choose not to fill a vacancy for reasons such as budget constraints; or, applicants for a position may not have sufficient experience the employer is looking for; and
- vacancy rates may also understate workforce shortage, for example positions may not be advertised if they are not expected to be filled.

The sector in which this measure is being applied also determines its usefulness. In the public health sector, positions are salaried so vacancy rates can be an appropriate indicator. However in the private sector, services are often delivered by private practitioners so there may be minimal identified vacancies. Other indicators such as waiting times for a first appointment may be more appropriate for the private sector.

For the reasons above, vacancy rates can also only used as a partial indicator – they should not solely be considered as a measure of workforce shortage.

A number of other partial indicators can also be used to provide a picture of the existing workforce position, including overtime rates, salaries and predicted employment growth. However for HW 2025 Volume 3, the three measures described above were focused on.

### Existing workforce position assessment scale

Using available information from the three measures outlined above, the following scale was used to assess the existing workforce position of each medical specialty. It is important to note these assessments were made at the macro (or whole-of-workforce) level, not at a sector or regional

level. Factors such as budget will have a major impact on whether a specialty assessed as GREEN at the macro level actually translates into ready access to that specialty in the public sector.

	<b>No current perceived shortage</b> - that is, sufficient workforce for existing expressed service demand, minimal number of vacancies, no difficulty filling positions, and short waiting times.
	<b>Some level of expressed demand exceeding available workforce</b> - either through maldistribution or insufficient workforce numbers, some vacancies exist, with difficulty in filling positions
	<b>Perceived current shortage</b> - that is, expressed service demand in excess of existing workforce, ongoing vacancies exist, difficult/unable to fill positions, and extended waiting times

## HWA's workforce projections

### HW 2025 medical specialty workforce projection results

Of the scenarios modelled, the service and workforce reform scenario had the greatest workforce impact relative to the comparison scenario for almost all medical specialty workforces – this is consistent with the results of HW 2025 Volumes 1 and 2.

The registrar work value scenario also resulted in a positive movement relative to the comparison scenario for all medical specialties. The extent of the movement varied according to specialty, reflecting the number of advanced trainees relative to specialists.

The medium self-sufficiency scenario and capped working hours scenarios both impact on workforce supply, with the magnitude of the impact of each scenario reflecting a specialties' reliance on immigration or reliance on specialists working more than 50 hours per week.

## Workforce planning methodology and scenarios modelled

Workforce projections are developed to enable workforce planning – ensuring the right people with the right skills are in the right place at the right time. Workforce projections require two components – predicting future demand for the workforce, and predicting future workforce supply.

Demand projections in HW 2025 employ the utilisation method – which measures expressed demand, and is based on service utilisation patterns as they currently exist for five year age and gender cohorts.

Supply projections use a dynamic stock and flow model, which involves identifying the size and activity of the current workforce (stock) and sources of inflows and outflows from the stock (from people ageing and from external factors such as immigration and retirement).

Using the methods above it is possible to project the relationship of supply and demand in future periods. Further detail on workforce demand and supply methodology is covered in Appendices 2 to 4.

### HW 2025 planning scenarios

Four scenarios were modelled in HW 2025 Volume 3:

1. Service and workforce reform – to show the impact of an improvement in workforce productivity and the lowering of demand for the health workforce
2. Registrar work value – to show the impact of assigning a work value to registrars in the last years of their advanced training (as they are not included in the workforce stock for the medical specialty projections)
3. Medium self-sufficiency – to show the impact of reducing the current reliance on overseas workers in the medical workforce, and
4. Capped working hours – to show the impact of a reduction in doctors' working hours.

The impact of these scenarios is measured by comparing their workforce projection results with the comparison scenario – a technical construct where current trends are assumed to continue into the future.

HW 2025 uses scenario modelling to demonstrate the impact of potential policy options on future workforce supply and demand. These 'alternative futures' are modelled and measured by varying input parameters. The general method used is to present a comparison scenario, where current trends are assumed to continue into the future, and use this to compare with a range of alternative scenarios. The alternative scenarios are generated by altering parameters in the model, with the flow through effect to the future workforce measured through the impact relative to the comparison scenario.

The comparison scenario is a technical construct for modelling purposes, generated to enable the evaluation of the impact planning scenarios may have on the medical specialty workforces. It is not a prediction of the future. It should be interpreted as a 'do nothing' scenario, and assumes known policy settings are applied up to a future point, after which they are held constant (for example, immigration levels) as their future levels cannot be predicted. This allows an assessment of the effects of other changes which may impact the workforce.

The scenarios presented in this volume are outlined below. It is important to note the scenarios are not predictions of what will happen over the period to 2025 – each provides an estimate of a likely outcome given the set of conditions upon which it is based.

- **Service and workforce reform.** This scenario shows the general impact of a range of interventions that together, would improve workforce productivity (producing the same output with fewer inputs, or producing more with the same inputs) and lower the demand for the health workforce. Such interventions could include changes in models of care or

service delivery, workforce reforms including adjustments to skill mix, health professionals working to their full or expanded scope of practice, increased use of assistants, the application of technology, such as eHealth or telehealth, or the effects of preventative health measures. This scenario was modelled by lowering expressed demand by small annual amounts, such that there was a five percent reduction by 2025, in combination with a one percent reduction in expressed demand below the comparison estimate (to a minimum of one percent) – in total a reduction of 1.38 percent per annum. This scenario is a combination of the productivity and low demand scenarios provided in Volume 1.

- **Registrar work value.** Registrars (or specialists-in-training) are not included in the workforce stock for the medical specialty projections (refer Appendix 4). This was because there was no agreement upon what work value should be assigned to registrars. Consultation indicated stakeholder concern with this approach, so this scenario was introduced to address the concern. In this scenario, registrars are assigned a work value of 50 percent (unless otherwise specified) to a consultant in their last two years of training (refer Glossary). It should be noted this value was assigned for modelling purposes only, and is not necessarily a reflection of the real world work value of registrars.
- **Medium self-sufficiency – immigration scenario.** This scenario illustrates the impact of moving away from the current reliance on overseas workers in the medical workforce. While two levels of self-sufficiency (medium and high) were presented in HW 2025 Volumes 1 and 2, only the medium self-sufficiency scenario is presented for the medical specialties. To achieve medium self-sufficiency, the inflow of overseas entrants into the workforce (international graduates, and permanent and temporary migrants) was progressively reduced to 50 percent of their respective base levels by 2025.
- **Capped working hours.** This scenario demonstrates the effects of a reduction in doctors' working hours. A number of workshops raised the issue of a current reliance in the health system on long working hours for doctors. The effect of this variable was assessed by capping the total number of hours worked by the total medical workforce at 50 hours per week. This was then converted to a headcount equivalent to show the reduction in medical workforce supply implied by this change.

## Summary of results

Table 2.1 provides the summary results for each medical specialty, showing the existing workforce position assessment and the net workforce projection result in 2025 under each planning scenario.

### Existing workforce position assessment by specialty

Analysis of the existing workforce position indicates most medical specialties are perceived to have some level of expressed demand exceeding available workforce (either through maldistribution or insufficient workforce numbers), that is, they were rated orange. A number of specialties were assessed as currently in shortage, (expressed service demand exceeds the existing workforce, ongoing vacancies exist and/or there are extended waiting times). Specialties perceived to be in shortage are shown in red in Table 2.1, and include:

- General practice
- General medicine
- Medical oncology
- Psychiatry, and
- Radiation oncology.

Intensive care, some of the physician sub-specialties and all the surgical sub-specialties were assessed as having no perceived workforce shortage (green in Table 2.1)

### Scenario results

The medical specialty workforce projection results in Table 2.1 show the net difference between projected workforce supply and expressed demand in 2025. Where the difference is positive, workforce supply increased relative to expressed demand; where negative, expressed demand increased relative to workforce supply. Workforce supply in 2009 is also shown to indicate the magnitude of the movement under each scenario. The workforce projection results should be interpreted relative to the existing workforce position assessment. Where workforce supply increases relative to demand, this does not necessarily imply a workforce will be in oversupply in 2025, particularly where the existing workforce position assessment is red or orange.

It should be noted that given their workforce size, GPs are impacted the most by each scenario in terms of absolute numbers. The discussion of results below focuses on percentage impacts, to remove the effect of the size of the GP workforce.

### Service and workforce reform scenario

For all medical specialties, the service and workforce reform scenario (which incorporates a combination of reducing demand and increasing workforce productivity) resulted in:

- a positive movement relative to the comparison scenario; and



- the largest movement of all the scenarios. That is, this scenario had the greatest workforce impact relative to the comparison scenario of all scenarios modelled.

Common feedback from consultation was demand for services is expected to increase from factors including the ageing population and increasing prevalence and complexity of disease. The results of this scenario demonstrate that service and workforce reform could be an effective strategy in managing future increasing demand.

#### **Example of service and workforce reform – integrated care between ophthalmology and optometry**

In Victoria, the Workforce Innovation Grant Program supported the Royal Victorian Eye and Ear Hospital (RVEEH) and Australian College of Optometry (ACO) in working together to design models of eye health provision for integrated care between ophthalmology and optometry. The project implemented a pilot clinic to assess 1,000 patients referred by GPs to RVEEH via the ACO, where there was no clear need for the RVEEH, only medical or surgical intervention. With clear pre-diagnostic work up, patients were able to bypass the general eye clinic and be streamed directly into sub-specialty clinics such as glaucoma and medical retina. This inter-professional project aimed to improve patient care and access to clinical eye care, reduce waiting times for new appointments and improve utilisation of the workforce. Evaluation is currently underway.

#### [Registrar work value scenario](#)

The registrar work value scenario also resulted in a positive movement relative to the comparison scenario for all medical specialties. The extent of the movement varied across specialties, with particular impacts on:

- emergency medicine;
- intensive care; and
- paediatrics and child health.

The impact on these workforces demonstrates the high number of advanced trainees relative to specialists. This is consistent with feedback which highlighted a reliance on registrars for service delivery in emergency medicine and intensive care.

#### [Medium self-sufficiency scenario](#)

The medium self-sufficiency scenario affects workforce supply by reducing immigration inflows. The impact of this scenario varied by medical specialty, demonstrating some workforces are more reliant on immigration. This is reflective of domestic undersupply, trainee preferences and geographic maldistribution. Medical specialties that showed particular reliance on immigration were:

- general practice;
- obstetrics and gynaecology;
- ophthalmology;

- psychiatry; and
- radiology.

#### Capped working hours scenario

The capped working hours scenario shows the impact of a reduction in doctors' working hours to 50 hours maximum per week. The intensive care workforce was impacted the most by this scenario, reflecting the nature of the working arrangements within this specialty. Consultation highlighted rostering practices are changing to incorporate safe working hour principles – this scenario demonstrates the potential impact a change in working hours may have on this workforce.

**Table 2.1: Medical specialty results – net workforce movement (headcount), 2025**

			Net workforce movement in 2025				
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario	Registrar work value scenario	Medium self-sufficiency scenario	Capped working hours scenario
Anaesthesia		3,476	130	861	316	-71	85
Dermatology		420	-31	43	-10	-45	-44
Emergency medicine		1,134	-40	221	163	-138	-80
General practice		26,389	57	6,590	888	-3,831	8
Intensive care		517	35	184	155	9	-96
Obstetrics and gynaecology		1,562	-142	221	-70	-302	-265
Ophthalmology		843	-162	28	-136	-204	-180
Anatomical pathology		728	-182	9	-166	-232	-190
Other (clinical) pathology <sup>(a)</sup>		400	-34	73	-2	-84	-50
Cardiology		790	232	400	289	n.a.	134
Endocrinology		442	29	152	58	n.a.	5
Gastroenterology and hepatology		683	110	257	146	n.a.	31
General medicine		818	137	393	204	n.a.	61
Geriatric medicine		397	13	102	49	n.a.	-7
Medical oncology		363	82	184	126	n.a.	39
Nephrology		369	-18	68	10	n.a.	-44

			Net workforce movement in 2025				
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario	Registrar work value scenario	Medium self-sufficiency scenario	Capped working hours scenario
Neurology		411	43	133	69	n.a.	17
Paediatrics and child health		1,296	39	379	338	-91	-80
Psychiatry		2,981	-452	321	-374	-784	-498
Radiology		1,478	-366	2	-287	-540	-389
Radiation oncology		245	-57	25	-30	-65	-91
General surgery		1,181	519	829	532	430	296
Orthopaedic surgery		1,168	148	444	176	90	7
Otolaryngology		442	180	229	192	156	151
Plastic surgery		306	70	104	81	59	51
Other surgery <sup>(b)</sup>		866	179	384	196	111	24

n.a. not applicable. Immigration data was not separately identified for physician sub-specialties so the medium self-sufficiency scenario was not generated.

(a) Comprised of chemical pathology, microbiology, haematology, immunology, oral pathology and genetics.

(b) Comprised of cardiothoracic surgery, neurosurgery, paediatric surgery, urology and vascular surgery. The existing workforce position assessment for paediatric surgery was orange, ratings for all other surgery specialties were green.

## Workforce dynamics indicator

A set of four indicators – collectively called the workforce dynamics indicator – were assessed to highlight aspects of the current workforce that may be of concern into the future. These indicators are:

1. average age;
2. replacement rate;
3. dependence on specialist international medical graduates; and
4. duration of training

The workforce dynamics indicator is used to highlight aspects of the current workforce that may be of concern into the future. The workforce dynamics indicator was adapted from Health Workforce New Zealand's (HWNZ) medical discipline vulnerability ranking method<sup>6</sup>, where a traffic light approach is used to score workforces against the selected indicators.

HWA selected the following indicators for scoring.

- **Average age** – workforces with a higher average age are more susceptible to higher exit rates (through retirement).
- **Replacement rate** – this item calculated the ratio of new fellows to workforce exits in a given year. This indicates whether the number currently completing training is sufficient to replace those presently leaving the workforce. Note: this is an indicator for workforce dynamics assessment purposes only and is not intended to guide training numbers for the future.
- **Dependence on specialist international medical graduates (SIMGs)** – workforces with high percentages of SIMGs are of greater concern due to their dependence on a less reliable supply stream (for example, changes in immigration policy may impact on supply). For the medical specialties there is limited information on the stock of SIMGs so a proxy indicator was developed. This calculated the number of migrants (temporary and permanent) as a percentage of all inflows into the specialty, that is, new fellows plus migrants.
- **Duration of training program** – the greater the duration of training, the longer it takes to train a replacement workforce. For the medical specialties, training time for this indicator included both basic and advanced training, where such a distinction is made.

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<sup>6</sup> Prioritisation of Medical Disciplines for Funding by Health Workforce New Zealand. <[www.rnzcgp.org.nz](http://www.rnzcgp.org.nz)> Accessed 3 May 2012

## Indicator range boundaries

The range boundaries for most indicators were selected as an extension of the HWNZ ranking method. In this initial development of the workforce dynamics indicator, the ranges for each indicator were set to be relatively equal, rather than being established using a statistical base.

The workforce dynamics assessment conducted for the medical specialties is based on data calculated in the model for all indicators except duration of training. As such, the assessment was only conducted for those medical specialties that had workforce projections generated.

It should also be noted this is a first iteration of the workforce dynamics indicator within HWA. The indicators used are basic measures only – ideally as data availability improves, more sophisticated measures can be developed. Table 2.2 summarises the indicators and their score ranges.

**Table 2.2: Workforce dynamics indicators**

	Minimal concern				Significant concern
	1	2	3	4	5
Average age of existing workforce	<45	45-49	50-54	55-59	60+
Replacement rate: Ratio of new fellows to workforce exits (annual)	130+%	110-<130%	90% - 110%	70% < 90%	<70%
Dependence on SIMGs (migrant inflows as a percentage of all specialty inflows)	<12%	12-24%	25-37%	37-49%	50+%
Duration of training program (years)	<4	4	5	6	7+

The development and use of the HWA workforce dynamics indicator also highlights the need for the National Statistical Resource currently under development by HWA, and the general improvement needed in the availability, quality and comparability of data for monitoring and reporting<sup>7</sup>.

## Workforce dynamics indicator by specialty

Table 2.3 shows the workforce dynamics indicator results for each medical specialty. The assessment results (except for duration of training program) are based on data calculated in the **comparison scenario**.

<sup>7</sup> Diallo K, Zurn P, Gupta N, Dal Poz M. Monitoring and evaluation of human resources for health: an international perspective. *Human Resources for Health* 2003; 1: 3. <[www.human-resources-health-health.com/content/1/1/3](http://www.human-resources-health-health.com/content/1/1/3)> Accessed 11 May 2012.

Most specialty workforces had an average age between 45 and 54 years, with emergency medicine and intensive care having an average age of less than 45. This reflects the relative newness of those specialties.

The replacement rate indicator demonstrates that for most specialties, the number of new fellows is projected to exceed the number of workforce exits in 2012. This reflects the substantial increases in vocational trainees in recent years (refer Chapter 7).

Where assessed, at least one-quarter to one-half of workforce inflows were SIMGs for most medical specialties. Notable exceptions to this were: general practice, psychiatry and radiology, where more than half of all inflows were SIMGs; and intensive care and radiation oncology, where less than 12 percent of all inflows were SIMGs.

The duration of training for medical specialties was most commonly either five or six years.

**Table 2.3: Workforce dynamics indicators by medical specialty, 2012**

Medical specialty	Average age	Replacement rate	Dependence on SIMGs	Duration of training
Anaesthesia				
Dermatology				
Emergency medicine				
General practice				
Intensive care				
Obstetrics and gynaecology				
Ophthalmology				
Anatomical pathology			n.a.	
Other (clinical) pathology <sup>(a)</sup>			n.a.	
Cardiology			n.a.	
Endocrinology			n.a.	
Gastroenterology and hepatology			n.a.	
General medicine			n.a.	
Geriatric medicine			n.a.	



Medical specialty	Average age	Replacement rate	Dependence on SIMGs	Duration of training
Medical oncology			n.a.	
Nephrology			n.a.	
Neurology			n.a.	
Paediatrics and child health				
Psychiatry				
Radiology				
Radiation oncology				
General surgery				
Orthopaedic surgery				
Otolaryngology				
Plastic surgery				
Other surgery <sup>(b)</sup>				

n.a. not assessed

(a) Comprised of chemical pathology, microbiology, haematology, immunology, oral pathology and genetics

(b) Comprised of cardiothoracic surgery, neurosurgery, paediatric surgery, urology and vascular surgery.

## Consultation

HWA used extensive consultation mechanisms to ensure the relevance of the projections developed for the medical specialty supply and expressed demand modelling. This included consultation with the Commonwealth Department of Health and Ageing, each state and territory health department, the medical colleges, and other key stakeholders. There were three main purposes to the consultation, to:

1. Discuss the data sources, assumptions and limitations used in the specialty modelling;
2. Show the results of the model; and
3. Obtain feedback on considerations of future requirements that may impact future workforce supply and demand. As the workforce projections are based on projecting historical trends into the future, events occurring currently, or anticipated to occur, are not captured. These considerations therefore provide a real world context for the interpretation

of the results. Future workforce projections can be adapted as more is known about any such considerations.

## Common considerations for future workforce

For each medical specialty, a number of considerations were raised and are included in the relevant chapter. While many were unique to each specialty, some themes were consistent across specialties.

### Themes common to jurisdictions

The consistent themes across jurisdictions were:

- maldistribution of the specialty workforces exists, with ongoing problems for access to services in regional and remote areas;
- fewer specialists (outside of the paediatric specialties) are willing to treat children, placing additional burden on acute children's facilities and regional areas;
- greater planning is required between colleges and jurisdictions on accredited training positions;
- increasing sub-specialisation is impacting affordability and service provision in the public sector; and
- funding impacts supply differently in the public and private sectors – increased funding in the public sector tends to cause reduced working hours, while increased funding in the private sector tends to increase throughput.

### Themes common to medical colleges

The consistent themes across medical colleges were:

- greater incidence of specialties increasing trainee rotation requirements without considering the impact on other colleges requirements;
- likely reductions in average hours worked due to new fellows working fewer hours than previous generations, and the increasing workforce participation of females (who historically working fewer hours than males);
- training capacity limitations due to the limited availability of training places in the private sector and clinical supervision capacity (although it was also commonly noted the specialty training program has expanded training capacity);
- geographical maldistribution of some specialty workforces exists; and
- telehealth measures, the continuation of funding through the Medical Specialist Outreach Program and the support of the states and territories are critical in addressing the challenges of improving access in rural areas.



### 3 Analysis of the medical specialty workforce results

The medical specialty workforce projection results, along with feedback from consultation, highlighted four key areas of discussion for the medical specialty workforces:

1. The potential impact of service and workforce reform on future workforce requirements;
2. The potential impact of immigration on future workforce requirements;
3. Imbalances within the medical specialty workforces which are projected to continue; and
4. The need for a co-ordinated medical training pathway.

The following chapters discuss each of these areas.

## 4 Potential impacts of service and workforce reforms

Reform is essential to ensure a sustainable, affordable medical workforce into the future, with the workforce projections demonstrating service and workforce reforms significantly impact workforce requirements.

Service and workforce reforms encompass changing models of care, adjustments to skill mix, health professionals working to their full or expanded scope of practice, and technology changes (such as eHealth or telehealth). Service and workforce reforms are also not constrained within specialties, they can be pursued across the medical specialty workforce. This may see new roles emerge, such as acute medicine specialists working across the current functions of existing specialty workforces. Such roles may positively affect the balance between generalist roles and specialist roles.

At the medical specialty level, it is increasingly difficult to distinguish workforce issues from issues of service delivery and models of care – changes in these factors can have immediate and direct impacts on specialty workforces.

Recognition of existing well-developed service and workforce reforms must be supported and action taken to extend such reforms into the broader health system. This is particularly the case for those specialties that have significant prospects for the implementation of service and workforce redesign models, as demonstrated through the service and workforce reform scenario results (Table 4.1).

**Table 4.1: Service and workforce reform scenario, net workforce movement by medical specialty, headcount, 2025**

Medical specialty	Existing workforce position	2009 workforce supply	Net workforce movement in 2025	
			Comparison scenario	Service & workforce reform scenario
Anaesthesia		3,476	130	861
Dermatology		420	-31	43
Emergency medicine		1,134	-40	221
General practice		26,389	57	6,590
Intensive care		517	35	184
Obstetrics and gynaecology		1,562	-142	221
Ophthalmology		843	-162	28
Anatomical pathology		728	-182	9
Other (clinical) pathology <sup>(a)</sup>		400	-34	73
Cardiology		790	232	400
Endocrinology		442	29	152
Gastroenterology and hepatology		683	110	257
General medicine		818	137	393
Geriatric medicine		397	13	102
Medical oncology		363	82	184
Nephrology		369	-18	68
Neurology		411	43	133
Paediatrics and child health		1,296	39	379
Psychiatry		2,981	-452	321

			Net workforce movement in 2025	
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario
Radiology		1,478	-366	2
Radiation oncology		245	-57	25
General surgery		1,181	519	829
Orthopaedic surgery		1,168	148	444
Otolaryngology		442	180	229
Plastic surgery		306	70	104
Other surgery <sup>(b)</sup>		866	179	384

(a) Comprised of chemical pathology, microbiology, haematology, immunology, oral pathology and genetics.

(b) Comprised of cardiothoracic surgery, neurosurgery, paediatric surgery, urology and vascular surgery. The existing workforce position assessment for paediatric surgery was orange, ratings for all other surgery specialties were green.



## Examples of successful service and workforce reform

During consultation, examples of successful reforms were identified. A selection is highlighted to show the impact such reforms can have on the health workforce and on patient outcomes.

### Ophthalmology and optometry – efficiency gains through collaborative care

The Royal Australian and New Zealand College of Ophthalmologists provided the following scenarios demonstrating efficiencies created by adopting an integrated care team approach.

#### **Workforce problem:**

New-to-follow up (N:F) patient ratios for chronic ophthalmic diseases typically require a great time commitment from ophthalmologists. For example, current N:F estimates for glaucoma and diabetic retinopathy are 1:21 and 1:16 respectively – much greater than the N:F ratio for conditions like cataract, estimated at around 1:2. This places substantial consulting pressure on ophthalmologists, resulting in long waiting times for new patients.

Enhancing and fostering collaborative patient care by eye care professionals was identified as one way in which this could be addressed.

#### **The service or workforce reform: glaucoma case management example**

The patient is examined initially by the ophthalmologist, who confirms the diagnoses and decides the most appropriate disease management plan. Follow-up and review of patients is then conducted by optometrists within the practice, which typically includes annual computerised perimetry on patients with stable disease, or more frequently for more problematic cases.

Optometrists also conduct optic disc photography every couple of years and optical coherence tomography (OCT) as needed.

When patients require altered drug treatment, the optometrist makes the necessary changes to medications after consultation with the ophthalmologist. If there are any concerns, the optometrist refers the patient back to the ophthalmologist for further examination and treatment.

#### **The service or workforce reform – diabetes case management**

As for glaucoma, the ophthalmologist conducts the initial patient examination, with most routine follow-up being undertaken by the practice optometrists.

Patients with controlled diabetes and diabetic eye disease are seen for follow-up every two years, while those with uncontrolled changes in vision, progression of retinopathy or changes on OCT return for follow-up at least annually. If the optometrist notices any changes requiring intervention, the patient is referred back to an ophthalmologist.

#### **Benefits achieved through service and workforce reform:**

The optometric collaboration described above reduces waiting times for new patients through a reduction in the ophthalmologist's N:F ratios, with ophthalmologist's able to focus on the diagnosis

and medical aspects of treatment. More patient treatments are enabled while routine follow-up patient care is facilitated through optometrists within the practice.

The benefit to the patient is accessible, high quality eye care and timely follow-up, thereby reducing the risk of adverse consequences of chronic blinding diseases.

### SA Health – state wide stroke clinical service models

#### **Workforce problem:**

SA Health developed a state-wide stroke plan, with the model of care:

- identifying best clinical practice guidelines;
- being patient focused;
- identifying key interventions on the patient journey; and
- enabling an aligned workforce plan.

In developing the plan, benchmark modelling was conducted on a no change basis, which highlighted the existing workforce would need to increase its profile to deliver the model of care developed.

#### **The service or workforce reform:**

By overlaying a patient journey approach to the clinical service plan, SA Health was able to identify opportunities to redesign existing resources, rather than require new resources. This saw the key activities in the plan analysed and mapped to identify the necessary skill sets or competencies required to deliver patient care. By focussing on the competencies required to deliver the model of care to meet the needs of the patient, opportunities to change the workforce skill mix and optimise clinical scope of practice were identified.

### WA – Physiotherapist-led orthopaedic triage clinic

#### **Workforce problem:**

Demand for the Orthopaedic Outpatient Elective Clinic at Perth's Sir Charles Gairdner Hospital (SCGH) is extremely high. In 2009 more than 1,000 new patients were waiting for an appointment and the average wait time approached two years, with some waiting more than eight years. New strategies were required to assist SCGH meet its strategic priorities and statewide key performance waitlist targets.

#### **The service or workforce reform:**

The Orthopaedic and Physiotherapy Departments formed a partnership which saw the establishment of the Orthopaedic Triage Clinic (OTC). This aimed to provide patients with timely access to a high quality and efficient orthopaedic outpatient service. The OTC is led by advanced practitioner physiotherapists who work in collaboration with surgeons and assess new patients

direct from the surgeons' waitlists. This frees up the surgeons' consultation time, enabling them to use their specialised skills in other areas whilst simultaneously increasing outpatient throughput.

The clinic was originally implemented as a three-month pilot study but due to its success in meeting key performance indicators (patient satisfaction, reduction of wait times and establishing inter-professional teams) it has been operating for more than three years. The longevity of the clinic's existence points to the sustainability of the initiative.

### Queensland – Multidisciplinary management of diabetes

#### **Workforce problem**

The traditional consultant specialist model of care for complex diabetes patients at Princess Alexandra Hospital in Brisbane was under pressure, with long waiting times to access care. With the prevalence of diabetes anticipated to grow, and the consequent flow-on demand for health services, new workforce models were required to improve access to services.

#### **The service or workforce reform**

The Inala Chronic Disease Management Service – a specialist diabetes service – was established to improve the efficiency and effectiveness of care for patients with type 2 diabetes, referred by their GP to a specialist diabetes outpatient clinic.<sup>8</sup> The model provides a diabetic clinic service within the general practice environment. Care is provided by a multidisciplinary team, consisting of an endocrinologist, advanced skills GPs, diabetes nurse educators and allied health personnel (a dietician, podiatrist and psychologist).

This model demonstrated:

- improved access to services (evidenced by decreased waiting times);
- an increased efficiency in the use of consultant endocrinologist time, allowing them to attend 2-3 times the number of patients per clinic;
- improved glycaemic control at 12 months; and
- lower attendance costs (despite higher numbers of attendances)<sup>9</sup>.

This service has also positively impacted teaching and training in complex diabetes management for GPs, registrars and nurse practitioners.

As a result of the success of this model, it is now being considered for other areas including maternity care, refugee health and the management of Hepatitis B.

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<sup>8</sup> Askew, Jackson, Ware, Russell, Protocol and baseline data from the Inala Chronic Disease Management Service evaluation study: a health services intervention study for diabetes care, *BMC Health Services Research* 2010, 10:134

<sup>9</sup> Jackson, Brown, Askew, Russell, GPs with special interests - Impacting on complex diabetes care, *Australian Family Physician*, Vol 39, No. 12, December 2010

## Australian Capital Territory – Health Directorate Walk-in Centre

### Workforce problem

The ACT has experienced a GP shortage, significantly impacting the ability of patients to access primary care health services. Innovative models of care were required to improve access to primary care.

### The service or workforce reform

The Health Directorate Walk-in Centre is a nurse-led centre, staffed by nurse practitioners and advanced practice nurses. The centre was developed as an alternative to attending an emergency department or GP, and aimed to:

- fulfil an unmet health care need in the community
- better meet projected demand for health care services
- develop innovative strategies to recruit and retain a professional multidisciplinary workforce, and
- relieve pressure on the public hospital system.

It is located beside the emergency department at Canberra Hospital, is open 16 hours a day, seven days a week, and provides free treatment for patients with minor illnesses or injuries. The Walk-in Centre has clearly defined roles of what services can and cannot be provided:

#### Can provide:

- treatment of cuts, sprains and abrasions
- advice and treatment for common illnesses
- sick certificates
- information about other health care services available

#### Cannot provide:

- ongoing care and routine blood tests
- referrals to medical specialists
- prescriptions
- medical certificates or worker's compensation forms

An independent review<sup>10</sup> of the Health Directorate Walk-in Centre found it had good capacity for achieving its objectives in relation to: the physical facilities and equipment; the use of protocols as a risk management strategy; the quality of care provided and a general perception of improving access to primary care. It also found the achievement of objectives were diminished due to: the restricted capacity of nurses to make clinical decisions by having to confirm to protocols; and, inadequate software and referral systems.

<sup>10</sup> Independent evaluation of the nurse-led ACT Health Walk-in Centre, Australian Primary Health Care Research Institute, The Australian National University, 2011

## The United Kingdom – extended scope of practice of radiographers

### **Workforce problem:**

There was an increasing demand for radiology services in an environment of a shortage of radiologists. With the demand for services expected to continue to increase, there was a need to look at skill mix and radiographer role development.

### **The service or workforce reform**

In 2003, the UK Department of Health produced a report describing the national Radiography Services Skills Mix project<sup>11</sup>. As a result of this project, it is now common in the UK National Health Service for postgraduate-trained radiographers to deliver a range of services that were previously delivered by radiologists.<sup>12</sup> This includes radiographers being educated and credentialed to report on musculoskeletal, chest and abdominal plain x-rays, as well as reporting on other imaging modalities and performing various other extended clinical roles.<sup>13</sup>

Benefits have been claimed in terms of reduced patient waiting times, freeing up of radiologists for other duties, cost-effectiveness, and greater potential for recruitment and retention of radiographers, with higher levels of job satisfaction.<sup>14</sup>

## Psychiatry – the use of telepsychiatry

In psychiatry, there is a role for video consultations in improving access to services, particularly in providing services to rural and remote regions. Telepsychiatry can be used clinically for assessment and treatment, is effective for case conferencing and consultation-liaison work and can be incorporated into a range of service delivery models.<sup>15</sup> Experience is demonstrating that when used in association with visiting and/or resident psychiatrists, telepsychiatry can support and enhance services and promote the recruitment and retention of health care professionals in rural and remote regions.

There is a body of evidence supporting the satisfaction practitioners derive from this form of care, along with the positive acceptance of patients and consumer groups.

In May 2012, the Royal Australian and New Zealand College of Psychiatrists, with support from the Department of Health and Ageing, commenced a 12 month project to promote telehealth in psychiatry and to collect data on how telehealth resources are used.

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<sup>11</sup> Department of Health. Radiography Skills Mix, A report of the four-tier service delivery model. June 2003.

<sup>12</sup> Smith T N, Baird M. Radiographers' role in radiological reporting: a model to support future demand. Med J Aust 2007; 186 (12): 629-631.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> The Royal Australian and New Zealand College of Psychiatrists, Position Statement No. 44.

## Australian maternity care – service reform

Australian maternity care is structured into three levels: primary, secondary and tertiary. The level of care indicates whether the woman is seeing the right carer depending on her clinical needs.

In 2008, the Primary Maternity Services Framework<sup>16</sup> was released, in which Australia's health ministers committed to extending and enhancing primary care maternity service models.

Primary care maternity models aim to offer continuity of care for women, provided by a midwife or GP obstetrician in collaboration with specialists to refer to or consult with as required. Primary care is the preferred approach to providing pregnancy and birthing services to women with uncomplicated pregnancies, recognising pregnancy and childbirth are normal processes. However the approach also recognises quick response to complications and emergencies may be required, as well as referral to the next level of care.

Continuity of care describes a situation where a woman is cared for by a group of professionals who share common ways of working and a common philosophy. Many models of care also aim for continuity of carer, where the same health professional or professionals provide care throughout a woman's contact with maternity services, including pregnancy, birth and the post-birth period.

Such models are being progressively implemented across Australia.

## Barriers to workforce reform

Despite the demonstrated impacts of service and workforce reform on the future health workforce, the potential barriers to implementation of reform that exist are considerable, and include:

- policy;
- regulatory frameworks;
- industrial agreements;
- funding arrangements; and
- institutional and professional cultures, organisational structures, and social dynamics.

While the barriers outlined above apply across industries and sectors wishing to implement reform, another specific barrier prevalent in health workforce planning is the use of benchmarks or ratios. During consultation, a number of colleges referenced the use of benchmarks or ratios for their own workforce planning purposes. This method compares a workforce-to-population ratio (benchmark) in particular regions or health care systems with the ratios in the locality of interest, and assumes the benchmark being used is optimal for providing effective health care. In an environment looking to encourage reform, the use of benchmarks has significant drawbacks. Aside from assuming the benchmark figure is optimal (when it may not be), the benchmark approach focuses on achieving

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<sup>16</sup> Australian Health Ministers' Advisory Council 2008. Primary Maternity Services in Australia – a Framework for Implementation

a set number of specialists per population through training or immigration, at the expense of other strategies that may be more effective in building a sustainable health workforce.

Overcoming the barriers outlined above cannot be achieved by governments, sectors or service providers working in isolation, but requires a coordinated effort across all bodies. The National Health Workforce Innovation and Reform Strategic Framework for Action (2011-2015) provides this framework, and is a national call for action for reform across the health and higher education sectors.



## 5 Potential impacts of changes to immigration

Australia's medical workforce is currently reliant on international medical graduates. This is demonstrated by a recent study<sup>17</sup> which argued that if self-sufficiency (of which there is not an agreed definition) was to be based on meeting health workforce requirements from domestic training, Australia would fall short of this and continue to be an active recruiter in the international market.

The self-sufficiency scenarios in HW 2025 demonstrate this reliance. A key finding of HW 2025 Volume 1, which examined the medical workforce in total, was that 'measures to improve self-sufficiency in the supply of doctors ...will require concurrent additional effort in both training and workforce reform, with the greater proportional impact being felt in the supply of doctors...'. By separating the medical workforce into medical specialties, HW 2025 Volume 3 demonstrates which specialties are highly reliant on IMGs and would be disproportionately affected by any move to self-sufficiency.

Table 5.1 provides the results of the medium self-sufficiency scenario for the medical specialties. It shows specialties including general practice, obstetrics and gynaecology, anaesthesia, paediatrics and child health, psychiatry and emergency medicine are substantially affected by any moves to reduce immigration.

This uneven distribution of reliance on IMGs across medical specialties reflects a combination of:

- domestic undersupply – insufficient domestic graduates being trained in the specialty;
- trainee preferences – the specialty may not be attractive to future specialists, for reasons including remuneration, prestige and service delivery requirements such as on-call hours; and
- geographic maldistribution – the use of IMGs to fill positions in regional and remote areas unable to attract domestic specialists, which is particularly the case for general practice.

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<sup>17</sup> Buchan J, Naccarella L, Brooks P, 2011, 'Is health workforce sustainability in Australian and New Zealand a realistic policy goal?', *Australian Health Review*, vol 35, pp.152-155.

**Table 5.1: Medium self-sufficiency scenario, net workforce movement by medical specialty, headcount, 2025**

Medical specialty	Existing workforce position	2009 workforce supply	Net workforce movement	
			Comparison scenario	Medium self-sufficiency scenario
Anaesthesia		3,476	130	-71
Dermatology		420	-31	-45
Emergency medicine		1,134	-40	-138
General practice		26,389	57	-3,831
Intensive care		517	35	9
Obstetrics and gynaecology		1,562	-142	-302
Ophthalmology		843	-162	-204
Anatomical pathology		728	-182	-232
Other (clinical) pathology <sup>(a)</sup>		400	-34	-84
Cardiology		790	232	n.a.
Endocrinology		442	29	n.a.
Gastroenterology and hepatology		683	110	n.a.
General medicine		818	137	n.a.
Geriatric medicine		397	13	n.a.
Medical oncology		363	82	n.a.
Nephrology		369	-18	n.a.
Neurology		411	43	n.a.
Paediatrics and child health		1,296	39	-91
Psychiatry		2,981	-452	-784
Radiology		1,478	-366	-540

Medical specialty	Existing workforce position	2009 workforce supply	Net workforce movement	
			Comparison scenario	Medium self-sufficiency scenario
Radiation oncology		245	-57	-65
General surgery		1,181	519	430
Orthopaedic surgery		1,168	148	90
Otolaryngology		442	180	156
Plastic surgery		306	70	59
Other surgery <sup>(b)</sup>		866	179	111

n.a. not applicable. Immigration data was not separately available for the physician sub-specialties so the medium self-sufficiency scenario was not generated.

(a) Comprised of chemical pathology, microbiology, haematology, immunology, oral pathology and genetics.

(b) Comprised of cardiothoracic surgery, neurosurgery, paediatric surgery, urology and vascular surgery. The existing workforce position assessment for paediatric surgery was orange, ratings for all other surgery specialties were green.

As highlighted in HW 2025 Volume 1, any move towards self-sufficiency requires concurrent additional effort in both training and workforce reform. Changes in these areas can require significant lead time, while changes in immigration can rapidly impact the supply of health professionals. Any move towards self-sufficiency therefore requires planning to ensure short-term supply gaps for workforce are not created or exacerbated.

However the increasing number of medical graduates from Australian medical schools presents an opportunity to increase levels of self-sufficiency. Domestic medical graduates increased from 1,195 in 2000 to 2,259 in 2010, and increases are expected to continue.<sup>18</sup> A consequence of this increase is the number of doctors seeking vocational training places is projected to exceed available places based on the projected growth in expressed demand for services.<sup>19</sup> By converting service posts currently occupied by IMGs into pre-vocational and vocational training places for medical graduates, increasing levels of self-sufficiency may be attained while simultaneously providing training capacity for the increasing number of medical graduates.

Any such move would require significant change across the health system, including in the employment practices of individual hospitals and medical service providers such as general

<sup>18</sup> Medical Training Review Panel Fifteenth Report

<sup>19</sup> Health Workforce Australia 2012: Health Workforce 2025 – Doctors, Nurses and Midwives – Volume 1

practices. Such change could not occur without specific policy decisions and governance mechanisms.

Given the ongoing reliance on IMGs in the medical system, it is also timely to consider the support and supervision requirements of different groups of IMGs. Research indicates international students trained in Australian medical schools are able to integrate into the Australian health system with similar success as their domestic colleagues. This means while Australia remains reliant on IMGs, this group is likely to provide the best outcomes and require less supervision and support than IMGs who gain their qualifications overseas.

The consequences of any change to immigration approaches are disproportionately felt in geographic and economic disadvantaged areas and in some specialties. A joined up approach across health, immigration, training and regional development is therefore essential in managing any shift towards self-sufficiency.

## 6 Imbalances in the medical specialty workforce

Despite the projections showing the supply of medical specialists is increasing and is moving towards balance by 2025 (relative to the current state), imbalances within the medical specialty workforces exist and are projected to continue, specifically:

1. geographic maldistribution of the total medical workforce, also present for general practice and a number of other medical specialties;
2. maldistribution across medical specialties; and
3. imbalances between generalists, specialists and sub-specialists.

### Geographic maldistribution

The key finding in HW 2025 Volume 1 in relation to geographic distribution was:

‘Geographical distribution of doctors remains a matter of significant concern, with the future projected growth in graduates unlikely to make significant inroads into relative geographical equity under current policy settings. Agreement on desired distribution of the workforce coupled with enhanced policy measures to achieve this distribution is urgently required to ensure the current opportunity arising from significant growth in graduates is not foregone.’

HW 2025 Volume 1 examined the geographic distribution of the medical workforce, with the findings from Volume 1 summarised below.

- **Factors influencing workforce distribution** – a range of factors influence where doctors practise, including family, social and professional ties, lifestyle preferences and market forces.<sup>20</sup> Service location is complex and should not simply be based on population catchment, other dimensions including the ability to recruit, economic and social considerations, infrastructure availability and support is critical in determining placement of services.
- **The current distribution of doctors** – data on the geographical distribution of the medical workforce showed the ratio of doctors was markedly lower in regional, rural and remote areas of Australia than in major cities. It also noted there is no current national agreement on the optimum number of health professionals (including doctors) needed to service particular communities, and showed the number and density of doctors in regional, rural and remote areas had increased over time.
- **Health outcomes and access to health services** – data showed people living in regional, rural and remote areas exhibit higher rates of morbidity and mortality; higher risk factor rates; and lower access to health care and resources. Hospitalisation rates for potentially

<sup>20</sup> Australian Medical Workforce Advisory Committee (1998) Sustainable Specialist Services: A Compendium of Requirements. AMWAC Report 1998.7, Sydney.

preventable conditions in regional and remote areas was also consistently higher than major cities. While this is broadly consistent with the declining level of local access to medical professionals, it could also reflect differing service models where hospitals can have a role in providing primary health care services in regional and remote communities.

- **Current policy levers affecting distribution** – an extensive number of policies, programs and measures exist to encourage doctors to work in rural and remote areas. With the exception of restrictions on access to Medicare provider numbers for some categories of overseas trained doctors and return of service obligations associated with graduating doctors on bonded scholarships, these measures are almost exclusively voluntary, and incentive or training based.
- **Alternative methodologies for providing health workforce projections** – a population needs based approach to workforce planning for Australia is not evident to date, with Canadian work undertaken by the Ministry of Health and Long Term Care in Ontario being used to illustrate such an approach. A modelling exercise was also conducted to illustrate the distributional impact of changes to medical practitioner density across the remoteness regions in Australia during the planning period to 2025.

Since the release of HW 2025 Volume 1 in April 2012, additional geographic analysis has been conducted for the current GP workforce (refer Chapter 13). This indicated that while the number of GPs is increasing, maldistribution is still an issue. Key findings include:

- major cities have a higher population ratio of GPs per capita (with 124 per 100,000 population) compared with 106 in inner regional, 99 in outer regional and 118 in remote areas.
- a higher proportion of GP services are delivered by overseas-qualified GPs in outer regional (55 percent) and remote (51 percent) areas.
- GPs in major cities have an older average age (50) compared with the rest of Australia, where the average age declined to 44 in very remote areas.
- there has been a significant decline in GP proceduralists as a proportion of the total GP workforce in regional, rural and remote areas, from 24 percent in 2002 to 12 percent 2011.

Geographic maldistribution was also widely acknowledged during consultation across other specialties. A common theme arising was that increasing sub-specialisation, combined with decreased confidence and willingness of specialties to provide services to population subsets (such as children), is impacting services in regional and rural areas. While maldistribution usually refers to shortages in rural and regional areas, it also includes potential oversupply in major metropolitan centres.

Issues affecting sustainability of practice in regional and rural areas were also highlighted, and some specialties indicated it is access to specialist services that is important, not necessarily physical proximity. For some specialties, access is increasingly possible through workforce reform

and technological improvements, where higher acuity cases can be locally managed even with the physical absence of a medical specialist.

## Maldistribution across medical specialties

Chapter 2 contained the analysis of the existing workforce position for each medical specialty (determined from expert opinion from jurisdictions, private employers and the profession, and an analysis of current vacancies and waiting times where relevant and available). This analysis demonstrated imbalances across medical specialties exist. For example, specialties including cardiology, intensive care, gastroenterology, orthopaedic surgery, otolaryngology and plastic and reconstructive surgery are perceived to have sufficient current workforces to meet demand; while general practice, general medicine, psychiatry, medical oncology and radiation oncology do not.

The medical specialty projections demonstrate a projected imbalance across the specialties in 2025, with the workforce projection results for a number of medical specialties moving negatively away from the projection starting point. These specialties are dermatology, emergency medicine, obstetrics and gynaecology, ophthalmology, other physicians, anatomical pathology, other pathology, psychiatry, radiation oncology and radiology.

Imbalances across medical specialties can have a direct cost to the health system. This is because supplier induced demand can often exist where workforce supply exceeds demand. This is where a service supplier (for example, a doctor) can encourage the consumer to demand more services (such as follow-up visits) than may have otherwise been required if the workforce were in shortage.

## Imbalances between generalists, specialists and sub-specialists

During consultation for HW 2025 Volume 3, concerns were consistently raised about the decline of medical practitioners with generalist skills and the consequent potential implications for:

- cost of health care;
- fragmentation of care for the increasing number of individuals with chronic and complex care needs;
- quality of care if there is a loss of a coordinating medical practitioner;
- health outcomes of the broader community; and
- sustainability of services in rural and regional areas.

The role of the generalist in the Australian health workforce has been the subject of significant discussion in recent years, in particular in relation to services in rural and remote areas, with the need for a rural generalist workforce for equitable access to health services has been supported by a range of inquiries, reviews and research<sup>21</sup>.

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<sup>21</sup> Improving Maternity Services in Australia: The Report of the Maternity Services Review; the Australian Primary Health Care Research Institute study: The Expanding Role of the Rural Generalist in Australia - A Systematic



## What is a generalist?

A recent publication in the United Kingdom outlined the views of the Royal College of General Practitioners on medical generalism<sup>22</sup>. These views are consistent with many observations made about the characteristics of a generalist practitioner, and include:

- seeing the person as a whole and in the context of his or her family and wider social environment;
- using this perspective as part of one's clinical method and therapeutic approach to all clinical encounters; and
- being able to deal with undifferentiated illness and the widest range of patients and conditions.

In the context of general practice, additional views included:

- taking continuity of responsibility for people's care across many disease episodes and over time; and
- coordinating care as needed across organisations within and between health and social care.

Generalist scope of practice focuses across multiple conditions and multiple organ systems. Generalists manage problems that may be acute, chronic or at the preventative level. This is in contrast to specialists, who focus on singular organ systems or diseases. Traditionally, the term generalist described the primary care general practitioner workforce. However in Australia, the term is also used to describe:

- rural generalists – who are a subset of the GP workforce; and
- generalist specialists, for example general physicians, general surgeons and general pathologists.

## Generalist workforce trends

There is a need for both generalists and specialists in the medical workforce. The question is whether the balance between the two is correct. There has been an increasing trend towards sub-specialisation within medical specialties, in concert with a declining proportion of generalists. Table 6.1 shows the common generalist streams in the Australian medical workforce – general medicine, general surgery, general pathology and primary care practitioners (mostly comprised of GPs). While the number of practitioners increased in all (except general pathology) over the period 1999 to 2009, their proportion of the total clinical workforce fell, in particular for primary care practitioners. The general pathology workforce more than halved over the same period.

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Review; and the WA Country Health review: Engaging Rural Doctors. AMA Position Statement: Regional/Rural Workforce Initiatives – 2012. Accessed 18 July 2012 at <http://ama.com.au/node/7681>

<sup>22</sup> Medical Generalism - Why expertise in whole person medicine matters, Royal College of General Practitioners, June 2012.

**Table 6.1: Employed generalist medical specialists and practitioners, 1999 and 2009**

	1999		2009	
	Number	% of total clinicians	Number	% of total clinicians
General medicine <sup>(a)</sup>	534	1.2	692	1.0
General surgery <sup>(a)</sup>	1,037	2.3	1,116	1.7
General pathology <sup>(a)</sup>	121	0.3	55	0.1
Primary care practitioner <sup>(b)</sup>	20,616	44.8	25,707	38.0
<b>Total clinicians</b>	<b>45,999</b>	<b>-</b>	<b>67,613</b>	<b>-</b>

(a) Specialists who spent most of their time as clinicians only

(b) Practitioners who spent most of their time as clinicians only.

Source: AIHW Medical Labour Force Survey 1999 and 2009

As well as highlighting concerns with the decline in generalists, consultation also raised the issue of whether:

- it is feasible to reverse the decline in the generalist specialist workforce, or
- it is more practical and sustainable to build the size and skills of the GP workforce, including the development of special skills that can help bridge the gap between GPs and secondary, specialist led hospital based care.

To build the number of generalists in Australia's health workforce, both governments and professional bodies have employed a number of measures, including:

- increasing the number of GP training places from 600 to 1,200 a year
- providing specialty training places targeted towards regional training locations and generalist positions
- developing the rural generalist model to build the procedural generalist workforce, and
- developing vocational training pathways that provide a generalist and sub-specialist qualification.

### What do the HW 2025 Volume 3 results show about generalists?

For general practice, general medicine and general surgery, workforce supply increases relative to demand in the projections if recent trends in supply and demand were to continue (Table 6.2). However the net size of the movement is minimal for general practice relative to total workforce supply in 2009. This shows there was no real change in the GP workforce under the comparison scenario.

**Table 6.2: Selected medical specialty results – net workforce movement in headcount, 2025**

			Net workforce movement in 2025				
Medical specialty	Existing workforce position	2009 workforce supply	Comparison scenario	Service & workforce reform scenario	Registrar work value scenario	Medium self-sufficiency scenario	Capped working hours scenario
General practice		26,389	57	6,590	888	-3,831	8
General medicine		818	137	393	204	n.a.	61
General surgery		1,181	519	829	532	431	297

n.a. not applicable. Immigration data was not separately identified for physician sub-specialties so the medium self-sufficiency scenario was not generated.

## 7 The need for a coordinated training pathway

Imbalances across the medical specialty workforces are a reflection of the poor coordination of the medical training pathway. Numerous bodies are involved in the funding and delivery of training, including: the Commonwealth, state and territory governments; professional colleges; universities; the Australian Medical Council; the private hospital and community sectors; General Practice Education and Training; and regional training providers. These bodies have no tangible mechanism of coordination.

Recent trends in vocational training reflect this lack of coordination. Table 7.1 demonstrates the recent significant increases in vocational trainees, which have more than doubled from approximately 6,200 in 2001 to 15,500 in 2011. Substantial differences exist in trainee increases across medical specialties, for example, advanced training places in both adult medicine and paediatrics more than tripled, while advanced places in pathology and anaesthesia increased by less than 50 percent.

**Table 7.1: Number of vocational training positions/trainees by medical specialty, selected years**

Medical specialty	Trainee type	2001	2006	2011	Growth 2001 to 2011
Addiction medicine	Advanced	..	..	13	..
Adult medicine	Basic <sup>(a)</sup>	585	809	1,951	234%
	Advanced	440	690	1,469	234%
Anaesthesia	Basic	..	318	617	..
	Advanced	452	477	566	25%
Anaesthesia - Pain medicine	Advanced	..	36	58	..
Dermatology	Basic & Advanced	55	64	98	78%
Emergency medicine	Basic	165	292	785	376%
- ACEM	Advanced	498	486	1,057	112%
- RACP	Advanced	..	..	33	..
General practice <sup>(b)</sup>		1,525	2,003	3,095	103%

Medical specialty	Trainee type	2001	2006	2011	Growth 2001 to 2011
Intensive care	Basic	..	..	152	..
	Advanced	142	180	312	120%
Medical administration	Advanced	95	84	86	-9%
Obstetrics and Gynaecology	Elective Training	312	325	473	52%
Occupational and Environmental medicine	Advanced	46	74	80	74%
Ophthalmology	Basic	..	52	53	..
	Advanced	100	50	(c)86	-14%
Paediatrics	Basic	199	173	530	166%
	Advanced	147	284	640	335%
Palliative medicine	Advanced	..	..	71	..
Pathology	Advanced	224	194	314	40%
Pathology and RACP (jointly)	Advanced	..	107	173	..
Psychiatry	Basic	..	602	661	..
	Advanced	..	178	(d)368	..
Public health medicine	Advanced	52	80	(e)72	38%
Radiation oncology	Advanced	58	57	137	136%
Diagnostic radiology	Advanced	195	288	366	88%
Rehabilitation medicine	Advanced	77	125	162	110%
Sexual health medicine	Advanced	..	..	7	..
Sport and exercise medicine	Advanced	..	..	27	..

Medical specialty	Trainee type	2001	2006	2011	Growth 2001 to 2011
Surgery <sup>(f)</sup>	Basic	225	557	..	..
	Advanced	590	732	<sup>(g)</sup> 966	64%
<b>Total basic trainees</b>		<b>1,174</b>	<b>2,803</b>	<sup>(h)</sup> <b>5,264</b>	<b>348%</b>
<b>Total advanced trainees</b>		<b>5,008</b>	<b>6,514</b>	<sup>(h)</sup> <b>10,214</b>	<b>104%</b>
<b>Total trainees</b>		<b>6,182</b>	<b>9,317</b>	<b>15,478</b>	<b>150%</b>

.. data not available

(a) Does not include trainees based overseas.

(b) AGPT trainees.

(c) Includes 6 trainees who are completing their final year of training overseas.

(d) Includes 170 fellows undertaking sub-specialty training.

(e) Only 52 of the 72 enrolled were actively training at the time of the data extraction.

(f) RACS introduced an integrated training program (SET) from 2007, which does not differentiate between basic and advanced surgical trainees. The basic surgical training program took no new additions from 2007, with those in basic training transitioning into the SET program between 2007 to 2010.

(g) Total number of surgical trainees is 1,167, including 966 Australian, 180 New Zealand and 21 overseas.

(h) Dermatology, General Practice and Obstetrics and Gynaecology figures for basic & advanced trainees have been combined

Source: Medical Training Review Panel Fifteenth Report

These differences in trainee increases were not planned with a view to balancing workforce requirements. It was driven by two factors – funding and trainee preference.

- **Funding** – vocational training (outside of general practice) is primarily funded through registrar positions in the public sector, that is, through state and territory governments. This means service requirements of the public hospital system significantly influence the number of trainees in each specialty, which can lead to service requirements for trainees exceeding the requirement for consultant specialists (consultant led rather than consultant delivered service models). It also means workforce requirements of the community and private hospital sectors can be overlooked. For example, in dermatology there is limited public hospital inpatient work and a public outpatient model that has moved to the private sector in many hospital systems. This has led to few funded training positions for dermatology in public hospitals (noting the Specialist Training Program, Commonwealth funding for vocational training in non-traditional settings including the private sector and regional areas, is positively affecting this).
- **Trainee preferences** – until recently, Australia was in a position where there were fewer Australian trained medical graduates than available training places. This resulted in choice in specialty careers, with less popular specialty areas becoming more reliant on SIMGs to fill

the service gaps. With the doubling of medical graduates in recent years, less choice will be available and trainee preferences will be less influential on specialty distribution.

Consultation indicated other trends are emerging in vocational training. These included:

- changes to the characteristics of vocational training programs – with total training times appearing to be increasing independent of the official length of training requirements. Suggested reasons for this included increasing part-time training, and trainees choosing not to become independent consultant specialists immediately following completion of formal training requirements, instead undertaking 'fellowship' years;
- increased competition for the more popular specialties, which may increase the informal requirements for entry. For example, doctors obtaining a PhD to gain entry to a training program, not because it is a formal requirement, but because the pool of potential trainees is undertaking higher degrees to get ahead of the next candidate;
- impediments to training progression with some positions not having secure funding streams; some smaller specialties requiring cross-jurisdictional training; and limitations in the availability of training places limiting the ability of trainees to complete essential training rotations that may be outside their specialty field.

To address the imbalances in the medical specialty workforces, there is a clear and urgent need for better national organisation of the training pathway, to balance the local training and service requirements of jurisdictions and employers with the training of doctors as a national health system resource. Health Ministers have now approved the establishment of a National Medical Training Advisory Network in the HWA 2012-13 Work Plan. This will provide a mechanism to:

- better target the regional distribution of doctors through identifying enhanced regional and rural training opportunities;
- rebalance the generalist: specialist: sub-specialist workforce in line with agreed national workforce requirements;
- achieve gains in national self-sufficiency through identification and management of opportunities to translate unaccredited training places filled by IMGs with the current surge in locally trained doctors;
- better manage the training requirements of the IMG workforce; and
- provide advice on implementation policy and program measures to achieve target distribution (geographic, sector and specialist mix), such as return of service obligations, provider number restrictions and incentives.



## 8 Responding to HW 2025 Volume 3 findings

Three levers exist that can be used to address the identified workforce imbalances of geographic distribution, across specialties and between generalists, specialists and sub-specialists. These are training, funding and bonding, which require:

1. **Linkage of training funding, policy and programs to desired outcomes.** For example, geographic outcomes can be better supported at all levels of the training system from professional entry to vocational training, and funding for training positions can be better directed towards specialties in need, geographic regions in need and the expansion of generalist pathways.
2. **Provision of a more coherent, targeted and effective system of program and funding support** to attract and retain the medical workforce in regional, rural and under-served urban areas. This should involve providing incentives (financial) to those specialties in need, and disincentives to those in balance or oversupply.
3. **Strengthening the current system of geographic bonding that is applied at the professional entry level and for IMGs.** For example, providing support for expansions in intern and vocational training capacity with links to a return of service obligation at the geographic and specialty levels. Bonding can also be used to better target future intakes of Commonwealth supported medical students – again at the geographic and specialty levels.

It is likely a combination of these three levers will be required to effect the workforce changes required. Government, as the principal funder of medical training, needs to use its policy and funding levers to achieve the desired number, type and distribution of doctors.

Reform is also essential in ensuring a sustainable, affordable medical workforce into the future. Service and workforce reforms are shown to significantly impact projected workforce requirements. Governments, sectors and service providers need to work together to overcome the barriers to successful service and workforce reform implementation.

### Next steps and actions required

To progress reform, a clear set of actions is required. These actions require national coordination and involve governments, professional bodies, colleges, regulatory bodies, the higher education system and training providers. These actions are:

- establishment of a National Medical Training Advisory Network (NMTAN) to provide a mechanism to advise on improved coordination of medical training, to ensure stronger links with the health needs of the community, emerging models of care and address the current imbalances in the workforce. As part of this the NMTAN would consider the implications for the medical workforce of patterns of disease and multidisciplinary approaches with potential for sector based workforce reforms;

- adoption of national consistency in the minimum efficient pathway for clinical training at professional entry and postgraduate levels. This can include establishing maximum training durations that will attract publicly funded support. For vocational training, this will be based on existing College requirements and will take into account practical constraints on achieving shorter training time such as individual/ personal/ family support and system capacity;
- development of rolling National Training Plans or strategies to improve alignment between changing health system workforce requirements, the higher education and training sectors activities, and broader workforce distribution programs. This seeks to formalise and systematise the current ad-hoc approach to managing the health and higher education interface;
- analyse state and territory health workforce industrial arrangements (government and non-government employers) to identify barriers and enablers to workforce reform, This will assist Ministers to understand where there may be opportunities for reform, and how these could be maximised;
- analyse relevant Commonwealth, state and territory legislation to identify barriers and enablers to the flexible use of the workforce, distribution, profession specific demarcation and restrictions on health professionals working to their full scope of practice;
- review of the goal of national self-sufficiency in the supply of health professionals to inform the development of a program of nationally coordinated effort to manage the achievement of self-sufficiency in concert with geographical distribution, training and workforce reform efforts; and
- focus on national implementation of targeted workforce reform once reform models are developed.

HW 2025 identifies the issues and the opportunities to build a medical workforce that is able to sustainably service the health needs of the Australian community. Next steps involve seeking national agreement on the actions identified, progressing outcomes through collaboration and consultation and implementing the results across the health and higher education sectors.

## 9 Detailed results for each medical specialty

Chapters 10 to 31 present information on each of the medical specialties. Most chapters contain:

- an overview of the medical specialty and its training program;
- a summary of stakeholders views on future workforce considerations;
- HWA's assessment of the workforce, including the existing workforce position assessment, the workforce dynamics indicator and the workforce projection results; and
- a summary of data used in the modelling.

For some medical specialties, HWA's assessment was not conducted due to data limitations. These specialties were:

- addiction medicine;
- medical administration;
- occupational and environmental medicine;
- pain medicine;
- palliative medicine
- public health medicine
- physician sub-specialities with less than 400 fellows
- rehabilitation medicine;
- sexual health medicine; and
- sports and exercise medicine.

For these medical specialties, information is presented on the training program, considerations for future workforce requirements, and on the number of new fellows and trainees where available.

### Interpretation of results

The workforce projection results should be interpreted in the context of the existing workforce position assessment (refer Chapter 2). It is also important to note the relevance and reliability of the workforce projections rely on the assumptions about future conditions and the data used in the calculations. Workforce projections become less accurate as the period of time over which they apply increases. This is due to many factors, including: error in projection methodologies; changes in service delivery that impact on the relationship between the type and number of services provided (such as technological change); changes in data; and, assumptions used in the projections.

The workforce projections are therefore not predictions of what will happen over the period to 2025 – each provides an estimate of a likely outcome given the set of conditions upon which it is based.

## Presentation of workforce projection results

All results are presented in terms of headcount. It should be noted that underlying the headcount result is a full-time equivalent (FTE) measure that represents the current and projected reported hours of work of each age cohort in the relevant workforce. **For this reason, there may be some instances where rounded results presented in tables do not precisely sum.**

The modelling results are presented in two formats – the first is a summary table with the supply and demand projections for each scenario as at 2018 and 2025 (Table 9.1).

**Table 9.1: Example – summary table of results**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	4,041	4,175	<b>-134</b>	4,699	5,151	<b>-452</b>
Service and workforce reform	4,041	3,770	<b>271</b>	4,699	4,378	<b>321</b>
Registrar work value	4,120	4,175	<b>-55</b>	4,777	5,151	<b>-374</b>
Medium self-sufficiency	3,925	4,175	<b>-250</b>	4,367	5,151	<b>-784</b>
Capped working hours	4,005	4,175	<b>-170</b>	4,653	5,151	<b>-498</b>

The second format is a detailed table for each scenario (see Table 9.2 for an example). In this table the initial relevant medical specialist workforce supply is provided, along with the workforce inflows (of new fellows, permanent and temporary migration) and the exit rate for selected years across the projection period.

The existing workforce position assessment (see Chapter 2) is shown in the detailed table at the beginning of the projection period. The workforce projection results should be interpreted relative to the existing workforce position assessment. Where workforce supply increases relative to demand (that is, the net difference between projected workforce supply and expressed demand in 2025 is positive), this does not necessarily imply a workforce will be in oversupply in 2025, particularly where the existing workforce position assessment is red or orange.

**Table 9.2 Example – detailed table of results**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>3,969</b>	<b>4,836</b>	<b>5,460</b>
<i>New fellows</i>	197	199	168	168
<i>Permanent migration</i>	38	40	40	40
<i>Temporary migration</i>	60	60	60	60
<i>Exits (%)</i>	2.14%	1.73%	1.85%	2.53%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,822</b>	<b>4,504</b>	<b>5,330</b>
<b>Positive/negative movement</b>		<b>147</b>	<b>332</b>	<b>130</b>

## 10 Anaesthesia

### What is an anaesthetist?

Anaesthetists are specialist medical practitioners who practice across the public and private health sectors. Their main role is to provide general anaesthesia, sedation, regional (or local) anaesthesia and perioperative care (care before, during or after surgery) for patients having surgical and other procedures. Anaesthetists administer medications by injection or by inhalation to produce a state of unconsciousness, or numbness in a particular area of the body, that eliminates all sensations, including the feeling of pain and other unpleasant sensations. This allows medical and surgical procedures to be conducted without causing undue distress and discomfort.<sup>23</sup>

Anaesthetists may also undertake work in the fields of pain management and intensive care (two fields with their own defined specialty workforce), as well as resuscitation and the retrieval and transport of critically ill patients.

### How are they trained?<sup>24</sup>

The Australian and New Zealand College of Anaesthetists (ANZCA) is responsible for the education, training and continuing professional development of anaesthetists in Australia and New Zealand. The ANZCA-approved training sequence encompasses an initial two-year prevocational medical education and training period, and a five-year period of ANZCA-approved training. The five-year ANZCA-approved training consists of two years basic training and three years advanced training.

A revised curriculum is being implemented by ANZCA from 2013. This will comprise four training periods: introductory, basic, advanced and provisional fellowship training. There will continue to be primary and final examinations. The revised curriculum is not expected to lengthen the overall training time.

The training program provides for part-time training and there is a provision for interrupted training.

Admission to fellowship is available to trainees who have successfully completed five years of training, passed their examinations, and completed all other training requirements.

### What is the assessment for international graduates?<sup>25</sup>

SIMGs whose overseas training is assessed as substantially comparable will normally be required to spend 12 months full-time equivalent in clinical anaesthesia posts in Australia and/or New Zealand. These posts must be approved in advance by ANZCA. During their posting, SIMGs will be required to undergo a period of clinical practice assessment and a workplace based assessment.

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<sup>23</sup> <http://www.anzca.edu.au/patients/anaesthetist>

<sup>24</sup> Information on training program sourced from the Medical Training Review Panel Fifteenth Report.

<sup>25</sup> <http://www.anzca.edu.au/trainees/resources/regulations/regulation-list/regulation-23.html>

Those whose training is assessed as partially comparable will normally be required to spend 12 to 24 months in clinical anaesthesia posts in Australia and/or New Zealand. Again, these posts must have been approved in advance by ANZCA. During their posting, the SIMG will be required to undergo a period of clinical practice assessment and pass the SIMG examination or final examination.

## What issues have stakeholders identified for the anaesthesia workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Generally it was agreed there is sufficient anaesthesia trainees to meet service demands. The distribution of the anaesthesia workforce was the primary concern, specifically:

- there are problems recruiting specialists to regional areas; and
- regional areas are often reliant on private sector specialists and SIMGs.

A secondary concern was in relation to paediatric anaesthesia, with declining numbers of anaesthetists providing anaesthetic services to children. This is impacting service delivery in hospitals not dedicated to children, for example, regional hospitals.

### What were the medical college views?

Consultation with ANZCA highlighted a number of considerations that may influence the interpretation of the workforce projections. In terms of potential impacts on future supply, factors highlighted were:

- a trend for earlier retirement;
- expanded training capacity through greater availability of private sector training places (supported through the specialty training program); and
- a revised training curriculum commencing in 2013. Although not expected to significantly increase the duration of training, ANZCA advised the new curriculum may extend the time it takes pre-vocational doctors to enter the training program, by limiting the first part examination to those on 'accredited' training places.

In terms of demand, ANZCA highlighted an expected increase in demand for anaesthetists as a result of:

- growth in demand for services, especially in out-of-operating theatre locations; and
- increased teaching and training commitments leading to greater requirements for clinical support time.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The anaesthesia existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the Medical Training Review Panel (MTRP) Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For anaesthesia, all indicators progress to the next rating over the projection period – average age increases, ratio of new fellows to workforce exits reduces (but is still at a rate where new fellows exceed exits) and dependence on SIMGs increases.

Consultation highlighted two areas that may influence the assessment results – a trend towards earlier retirement and changes in the training curriculum. Earlier retirements may have a greater impact on the percentage of new fellows to exits than currently projected. Changes to the training curriculum may increase training time – again potentially affecting the percentage of new fellows



to exits, and dependence on SIMGs (because if the number of new fellows is less than projected, reliance on SIMGs may increase).

**Table 10.1: Anaesthesia – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 10.2 presents the workforce projection scenario results for anaesthesia. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The comparison scenario indicates minimal growth in the anaesthesia workforce relative to demand by 2025. The service and workforce reform scenario results in the largest positive movement relative to the comparison scenario. Consultation highlighted an anticipated increasing demand for services – this scenario demonstrates reform could be used to assist in meeting that demand.

This result is reversed in the medium self-sufficiency scenario, with a negative movement relative to the comparison scenario. This reflects the relative high reliance on SIMGs within this specialty. Given the existing workforce position assessment (of some difficulty in filling positions), and the workforce dynamics indicator suggesting dependence on SIMGs increases across the projection period, any move to self-sufficiency may disproportionately affect the anaesthesia workforce.

**Table 10.2: Anaesthesia, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	4,836	4,505	<b>331</b>	5,460	5,330	<b>130</b>
Service and workforce reform	4,836	4,092	<b>744</b>	5,460	4,599	<b>861</b>
Registrar work value	5,026	4,505	<b>521</b>	5,646	5,330	<b>316</b>

Medium self-sufficiency	4,763	4,505	<b>258</b>	5,259	5,330	<b>-71</b>
Capped working hours	4,796	4,505	<b>291</b>	5,415	5,330	<b>85</b>

**Table 10.3: Anaesthesia, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>3,969</b>	<b>4,836</b>	<b>5,460</b>
New fellows	197	199	168	168
Permanent migration	38	40	40	40
Temporary migration	60	60	60	60
Exits (%)	2.14%	1.73%	1.85%	2.53%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,821</b>	<b>4,505</b>	<b>5,330</b>
<b>Positive/negative movement</b>		<b>148</b>	<b>331</b>	<b>130</b>

**Table 10.4: Anaesthesia, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>3,969</b>	<b>4,836</b>	<b>5,460</b>
New fellows	197	199	168	168
Permanent migration	38	40	40	40
Temporary migration	60	60	60	60
Exits (%)	2.14%	1.73%	1.85%	2.53%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,683</b>	<b>4,092</b>	<b>4,599</b>
<b>Positive/negative movement</b>		<b>286</b>	<b>744</b>	<b>861</b>

**Table 10.5: Anaesthesia, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>4,185</b>	<b>5,026</b>	<b>5,646</b>
New fellows	197	199	168	168
Permanent migration	38	40	40	40
Temporary migration	60	60	60	60
Exits (%)	2.14%	1.73%	1.85%	2.53%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,822</b>	<b>4,505</b>	<b>5,330</b>
<b>Positive/negative movement</b>		<b>363</b>	<b>521</b>	<b>316</b>

**Table 10.6: Anaesthesia, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>3,955</b>	<b>4,763</b>	<b>5,259</b>
<i>New fellows</i>	197	199	168	168
<i>Permanent migration</i>	38	36	29	20
<i>Temporary migration</i>	60	54	43	30
<i>Exits (%)</i>	2.14%	1.73%	1.88%	2.62%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,822</b>	<b>4,505</b>	<b>5,330</b>
<b>Positive/negative movement</b>		<b>133</b>	<b>258</b>	<b>-71</b>

**Table 10.7: Anaesthesia, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>3,476</b>	<b>3,935</b>	<b>4,796</b>	<b>5,415</b>
<i>New fellows</i>	197	199	168	168
<i>Permanent migration</i>	38	40	40	40
<i>Temporary migration</i>	60	60	60	60
<i>Exits (%)</i>	2.14%	1.73%	1.85%	2.53%
<b>Expressed demand</b>	<b>3,476</b>	<b>3,822</b>	<b>4,505</b>	<b>5,330</b>
<b>Positive/negative movement</b>		<b>113</b>	<b>291</b>	<b>85</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the anaesthesia workforce supply and demand estimates.

### Workforce stock

The base anaesthesia workforce was developed from the 2009 Australian Institute of Health and Welfare (AIHW) medical labour force survey, where a survey respondent identified anaesthesia as their main field of specialty. In 2009, there were 3,476 active anaesthetists in Australia. Within this:

- anaesthetists had an average age of 48 years;
- they worked an average of 43 hours per week; and
- approximately one-quarter were aged 55 years and over.

**Table 10.8: Anaesthesia workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	83	38.7	92	46.3	175
35-39	211	39.3	406	45.9	617
40-44	216	38.7	500	47.9	716
45-49	137	38.6	441	45.2	578
50-54	114	42.3	387	49.3	501
55-59	71	36.4	292	45.6	363
60-64	50	31.6	288	41.4	338
65-69	22	29.0	113	34.8	135
70-74	16	20.4	31	34.7	47
75+	2	17.1	4	41.6	6
<b>Total</b>	<b>922</b>	<b>38.1</b>	<b>2,554</b>	<b>45.5</b>	<b>3,476</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for anaesthesia is estimated to grow at 3.1 percent per annum. This was calculated based on the growth in activity of relevant Medicare items over the period from 2005 to 2009.

Please note, anaesthetic services provided by GP proceduralists are not incorporated in the demand data. If there is a change in the proportion of anaesthetic services provided by anaesthetists and GP proceduralists, then demand for anaesthesia specialists will change.

## Workforce inflows

### New fellows

Over the period 2005 to 2010, the number of anaesthesia new fellows varied, from a low of 135 in 2006 to a high of 243 in 2010 (Table 10.9).

The number of new fellows in 2009 (197) formed the basis for new fellow inflows in the workforce supply projections.

**Table 10.9: Anaesthesia new fellows<sup>(a)</sup>, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
New fellows	198	135	150	234	197	243

(a) Includes specialist international medical graduates.

Source: Medical Training Review Panel Fifteenth Report

### Immigration

Table 10.10 shows the number of anaesthesia SIMG new fellows from 2009 to 2011. Permanent migration for many of the medical specialties was based on 2010 SIMG new fellow data available in the MTRP Fifteenth report. However, ANZCA advice was that 2010 SIMG new fellows for anaesthesia were significantly higher than other years, as highlighted in Table 10.10. Consequently, the 2011 figure of 40 SIMG new fellows was used in the modelling as a better reflection of the inflow of SIMGs into the anaesthesia workforce. This was then held constant across the projection period.

Department of Immigration and Citizenship (DIAC) data was used for temporary migration, with 60 temporary migrants in the anaesthesia workforce (held constant across the projection period).

**Table 10.10: Number of specialist international medical graduate anaesthesia new fellows**

	2009	2010	2011
Specialist international medical graduates	38	62	40

Source: Medical Training Review Panel Fifteenth Report and ANZCA data

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the model. Training data was used in this to calculate transition rates – rates which show the percentage of trainees completing each specialty training program in the prescribed time.

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 10.11), and data supplied by ANZCA (Table 10.12), which provided information on the number of trainees by training year.

**Table 10.11: Anaesthesia advanced vocational training positions/trainees, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	159	214	193
<b>Advanced total</b>	<b>485</b>	<b>612</b>	<b>566</b>

Source: Medical Training Review Panel Fifteenth Report.

**Table 10.12: Anaesthesia active number of full-time advanced trainees, 2010 and 2011**

Training year	2010	2011
Advanced year 1	215	177
Advanced year 2	179	200
Advanced year 3	97	123
Provisional fellows	88	85
<b>Total</b>	<b>579</b>	<b>585</b>

Source: ANZCA data provided to HWA

In addition to full-time advanced trainees, ANZCA also advised they have the following part-time advanced trainees in 2011:

- 3 x advanced year 1
- 7 x advanced year 2
- 8 x advanced year 3, and
- 8 x provisional fellows.

## 11 Dermatology

### What is a dermatologist?

A dermatologist is a qualified medical specialist who has obtained postgraduate qualifications to specialise in the diagnosis, treatment and prevention of skin disease and skin cancers. Dermatologists treat patients of all ages, with Australian dermatologists spending much of their time treating diseases caused by exposure to the sun. These include skin cancers such as basal cell carcinoma, squamous cell carcinoma and malignant melanoma.<sup>26</sup>

### How are they trained?<sup>27</sup>

The Australasian College of Dermatologists (ACD) is the medical college responsible for the training and professional development of dermatologists. Trainees must complete a four to five year vocational training program of defined clinical and educational experience in all aspects of dermatology, including dermatological medicine and procedural dermatology.

The ACD-approved training consists of two defined stages.

- i. Basic training (years 1 and 2) – this is of two years duration, and must be completed satisfactorily before the trainee can move to the next stage.
- ii. Advanced training (years 3, 4 and 5) – of two or three years duration. Trainees are eligible to apply to sit the fellowship examinations in year 4. Trainees who do not satisfy all requirements of the training program in year 4 must complete an additional year of supervised training.

To be eligible for the training program, doctors must have completed at least two years (PGY1 and PGY2) acceptable training in a teaching hospital or equivalent.

### What is the assessment for international graduates?<sup>28</sup>

A SIMG whose training is assessed as partially comparable will be required to complete a specified period of additional training and/or assessments. There are two options available for those assessed as requiring additional training:

- i. The applicant may apply for a college-advertised SIMG upskilling position; or
- ii. The applicant may apply for selection into an accredited training position in the ACD's training program.

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<sup>26</sup> <http://www.dermcoll.asn.au/public/default.asp>

<sup>27</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

<sup>28</sup> [http://www.img-application.com/downloads/IMG\\_specialist\\_recognition\\_pathway\\_Feb2012.pdf](http://www.img-application.com/downloads/IMG_specialist_recognition_pathway_Feb2012.pdf)

A SIMG whose training is assessed as substantially comparable is eligible for specialist recognition as a dermatologist in Australia, and will be recommended to complete 12 months participation in the ACD's Professional Development Program and be mentored by a college fellow. At the end of the 12 months, the mentor will submit a report to the ACD Board of Directors on the suitability of the individual for election to college fellowship.

## What issues have stakeholders identified for the dermatology workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

For dermatology, the jurisdictions highlighted the shift that has occurred to private practice (led by some states) has resulted in a predominately private sector led service. This has caused some issues as there are long waiting times to see a dermatologist.

The increasing sub-specialisation within dermatology was also highlighted as an issue. An example was cited where a patient referred to a dermatologist was not seen, as the practice only saw people with skin cancers.

### What were the medical college views?

Consultation with the ACD highlighted the following factors that may influence the future dermatology workforce.

- A likely increase in the number of females in the dermatology workforce and the consequent impact on average hours worked.
- A trend for increasing sub-specialisation within dermatology.
- Reduced numbers of public hospital outpatient clinics in dermatology, leading to a shift from public to private practice.
- Training capacity limitations, with a reliance on limited sectors for training places, and infrastructure limitations in a predominantly private practice environment. It was noted training capacity has increased as a result of specialist training program, which now accounts for 20 percent of training places.



The ACD also highlighted that while there is geographic maldistribution of the dermatology workforce, a number of mechanisms exist to improve this, including:

- college selection processes, with rural origin registrars;
- regional training; and
- service delivery models, such as the Medical Specialist Outreach Program and telehealth.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The dermatology existing workforce position was assessed as **orange**.

### Workforce dynamics indicators

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

All indicators remained at the same rating in both 2012 and 2025 for dermatology (Table 11.1). This suggests the scenario results generated minimal net change in the workforce over the projection period. The replacement rate was rated at the lowest level, indicating the number of new fellows is greater than the number of exits in both 2012 and 2025. Consultation did highlight limitations on future training capacity which may potentially affect this assessment.



**Table 11.1: Dermatology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 11.2 presents the workforce projection scenario results for dermatology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

For dermatology, the comparison scenario results in a small negative movement from the existing workforce position – this indicates changes in workforce supply and demand track closely over the projection period. Items raised that potentially (negatively) affect future workforce supply at a greater rate than projected were: increasing female participation and the likely consequent impact on average hours worked (due to females traditionally working fewer hours than males), and training capacity limitations.

The scenario with the greatest impact on reducing an existing gap between supply and demand is the service and workforce reform scenario, which provides the largest positive movement relative to the comparison scenario. The other scenarios have a minimal impact on the dermatology workforce relative to the comparison scenario.

**Table 11.2: Dermatology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	588	584	<b>4</b>	715	746	<b>-31</b>
Service and workforce reform	588	551	<b>37</b>	715	672	<b>43</b>
Registrar work value	610	584	<b>26</b>	736	746	<b>-10</b>
Medium self-sufficiency	583	584	<b>-1</b>	701	746	<b>-45</b>
Capped working hours	570	584	<b>-14</b>	702	746	<b>-44</b>

**Table 11.3: Dermatology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>420</b>	<b>466</b>	<b>588</b>	<b>715</b>
New fellows	11	23	22	22
Permanent migration	2	3	3	3
Temporary migration	3	3	3	3
Exits (%)	0.86%	1.29%	1.06%	1.01%
<b>Expressed demand</b>	<b>420</b>	<b>476</b>	<b>584</b>	<b>746</b>
<b>Positive/negative movement</b>		<b>-10</b>	<b>4</b>	<b>-31</b>

**Table 11.4: Dermatology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>420</b>	<b>466</b>	<b>588</b>	<b>715</b>
New fellows	11	23	22	22
Permanent migration	2	3	3	3
Temporary migration	3	3	3	3
Exits (%)	0.86%	1.29%	1.06%	1.01%
<b>Expressed demand</b>	<b>420</b>	<b>462</b>	<b>551</b>	<b>672</b>
<b>Positive/negative movement</b>		<b>4</b>	<b>37</b>	<b>43</b>

**Table 11.5: Dermatology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>420</b>	<b>492</b>	<b>610</b>	<b>736</b>
New fellows	11	23	22	22
Permanent migration	2	3	3	3
Temporary migration	3	3	3	3
Exits (%)	0.86%	1.29%	1.06%	1.01%
<b>Expressed demand</b>	<b>420</b>	<b>476</b>	<b>584</b>	<b>746</b>
<b>Positive/negative movement</b>		<b>16</b>	<b>26</b>	<b>-10</b>

**Table 11.6: Dermatology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>420</b>	<b>465</b>	<b>583</b>	<b>701</b>
<i>New fellows</i>	11	23	22	22
<i>Permanent migration</i>	2	3	2	2
<i>Temporary migration</i>	3	3	2	2
<i>Exits (%)</i>	0.86%	1.29%	1.07%	1.03%
<b>Expressed demand</b>	<b>420</b>	<b>476</b>	<b>584</b>	<b>746</b>
<b>Positive/negative movement</b>		<b>-11</b>	<b>-1</b>	<b>-45</b>

**Table 11.7: Dermatology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>420</b>	<b>451</b>	<b>570</b>	<b>702</b>
<i>New fellows</i>	11	23	22	22
<i>Permanent migration</i>	2	3	3	3
<i>Temporary migration</i>	3	3	3	3
<i>Exits (%)</i>	0.86%	1.29%	1.06%	1.01%
<b>Expressed demand</b>	<b>420</b>	<b>476</b>	<b>584</b>	<b>746</b>
<b>Positive/negative movement</b>		<b>-25</b>	<b>-14</b>	<b>-44</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the dermatology workforce supply and demand estimates.

### Workforce stock

The base dermatology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified dermatology as their main field of specialty. In 2009, there were 420 active dermatologists in Australia. Within this:

- dermatologists had an average age of 49 years;
- they worked an average of 43 hours per week; and
- approximately 28 percent were aged 55 years and over.

**Table 11.8: Dermatology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	3	41.5	7	54.9	10
35-39	34	35.2	34	40.9	68
40-44	24	34.8	76	42.5	100
45-49	24	40.3	41	52.8	65
50-54	22	42.6	38	56.0	60
55-59	6	34.4	31	48.4	37
60-64	6	38.2	28	43.1	34
65-69	7	16.6	24	36.4	31
70-74	1	12.5	7	34.5	8
75+	0	-	7	23.4	7
<b>Total</b>	<b>127</b>	<b>36.4</b>	<b>293</b>	<b>45.3</b>	<b>420</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for dermatology is estimated to grow at 4.2 percent per annum. This is based on Medicare utilisation data (2005 to 2009) per 100,000 population (population projections from ABS population series B, ABS Cat No. 3222.0, Population Projections Australia). Due to the lack of data on hospital separations, outpatient and private rooms, an additional two percent was added to the original Medicare utilisation rate. This expressed demand rate is in line with the 1998 Australian Medical Workforce Advisory Committee report *Specialist Dermatology Workforce in Australia*.

As noted above, a limitation for dermatology modelling is the lack of outpatient data. This is because there are a number of different delivery models for outpatient services in the public sector, even within jurisdictions, with only some services being captured through Medicare.

## Workforce inflows

### New fellows

In the modelling, MTRP data is used for the number of new fellows. The number of new fellows in 2009 (11) formed the basis for new fellow inflows in the modelling.

**Table 11.9: Dermatology new fellows<sup>(a)</sup>, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
New fellows	13	14	23	11	11	26

(a) Includes specialist international medical graduates

Source: Medical Training Review Panel Fifteenth Report

### Immigration

DIAC data showed two permanent migrants entered the dermatology workforce in 2009. Data from the MTRP Fifteenth Report showed there were three permanent migrants in 2010 (found substantially comparable), and the (rounded) average of the two sources was held constant as permanent migration over the projection period.

DIAC data showed three temporary migrants in the dermatology workforce, which was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 11.10), and data supplied by the ACD (Table 11.11), which provided information on the number of trainees by training year.

**Table 11.10: Dermatology advanced vocational training positions/trainees, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	16	18	28
<b>Advanced total</b>	<b>39</b>	<b>45</b>	<b>54</b>

Source: Medical Training Review Panel Fifteenth Report

**Table 11.11: Dermatology active number of advanced full-time trainees, 2010 and 2011**

Training year	2010	2011
Advanced year 1	18	20
Advanced year 2	15	16
Advanced year 3	4	3
Interrupted	4	3
<b>Total</b>	<b>41</b>	<b>42</b>

Source: ACD data

The ACD also advised there was one part-time trainee in advanced year 2 in 2011.



## 12 Emergency medicine

### What is an emergency medicine physician?

Emergency medicine is a field of practice based on the knowledge and skills required for the prevention, diagnosis and management of acute and urgent aspects of illness and injury affecting patients of all age groups. It covers a full spectrum of physical and behavioural disorders. It also includes understanding the development of pre-hospital and in-hospital emergency medical systems, and the skills necessary for this development.<sup>29</sup>

### How are they trained?<sup>30</sup>

The Australian College for Emergency Medicine (ACEM) is an incorporated educational institution whose prime objective is the training and examination of specialist emergency physicians for Australia and New Zealand. ACEM requires that trainees have:

- completed their PGY1 and PGY2 years (referred to as 'basic training');
- undertaken a further 12 months of provisional training in emergency medicine; and
- completed an additional minimum four years of advanced training.

The basic and provisional training programs are open to any registered medical practitioner. To proceed to advanced training, trainees must have successfully completed provisional training.

There are limits on the time a trainee can take to complete training in emergency medicine. Up to five years may be taken to achieve selection into the advanced training program, and up to ten years may be taken to achieve selection to fellowship. This time period will be reduced if more than two years are spent in provisional training. Part-time work may be considered for accreditation, pro-rata.

### Joint Training Program in Paediatric Emergency Medicine<sup>31</sup>

The Joint Training Program is a partnership between ACEM, the Royal Australian College of Physicians (RACP), the Joint Training Committee (JTC), the trainee and his/her supervisors. Requirements for satisfactory completion of the advanced training program are specified by the colleges and the JTC.

Trainees are eligible to apply for admission as a fellow of the relevant college (ACEM or RACP) upon satisfactory completion of the advanced training program. Trainees seeking dual ACEM/RACP fellowship must successfully complete further training to be eligible to apply for admission as a fellow of the relevant college.

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<sup>29</sup> International Federation for Emergency Medicine, 1991

<sup>30</sup> Information sourced from the Medical Training Review Panel Fifteenth Report and [www.acem.org.au](http://www.acem.org.au)

<sup>31</sup> Information from <http://www.racp.edu.au/training/paed2003/advanced/vocational/emergency.htm>

## What is the assessment for international graduates?<sup>32</sup>

Upon receipt of an application from the AMC, the ACEM will first assess if the SIMG is suitable for interview. For those found suitable for interview, outcomes may include one or more of the following:

- a period of advanced training with in-training assessment;
- a period of supervised practice in an accredited major referral emergency department staffed by three or more emergency medicine fellows;
- satisfactory completion of a research paper ;
- satisfactory completion of the fellowship examination; and
- offer of election to fellowship without further requirements.

## What issues have stakeholders identified for the emergency medicine workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Distribution issues and training accreditation were highlighted as the primary concerns with the emergency medicine workforce. For distribution, most emergency physicians are located in major metropolitan areas. Models of care increasingly require emergency departments to have some FACEM cover and this is creating workforce issues in regional areas.

In relation to training accreditation, accreditation standards are seen as a barrier to reform. Other training issues noted were the increasing competition for 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.

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<sup>32</sup> <http://www.acem.org.au/education.aspx?docId=51>

### What were the medical college views?

ACEM provided a range of considerations that may impact the emergency medicine workforce projections. Factors raised that may potentially influence future supply were:

- any change to the current service delivery model, that is, any move away from the reliance on registrars to provide 24 hour service in emergency departments (such as a move to consultant delivered rather than consultant led care);
- an increasing number of non-clinical roles (including research and teaching) impacting availability for clinical service provision;
- training capacity limitations, particularly
  - limitations in expanding training both geographically and into the private sector, due to supervision availability and number of presentations; and for the private sector, financial models;
  - competition for training posts – both outside the emergency department, for example emergency physicians requiring training places in anaesthetics; and within the emergency department (as trainees from other specialties require emergency department training posts); and
  - high levels of SIMGs with supervision requirements in the emergency department workforce.
- overcrowding in emergency departments – this can impact the hours an emergency physician consultant makes themselves available for clinical service provision, and a reduction in overcrowding would potentially increase consultant supply;
- high attrition rates within the training pathway; and
- an increasing average time taken to complete advanced training.

Factors raised that could potentially influence supply or demand for emergency physicians were:

- changed workforce mix in emergency departments, as emergency medicine specialists are gradually covering major regional centres (previously covered by non-emergency specialists);
- new models of service delivery such as the introduction of the 'four hour rule'; and
- improved provision of services through telehealth, for example an increased ability to provide remote advice and support to regional and rural health professionals providing emergency services.

## What other considerations may influence emergency medicine workforce projections?

Other issues raised that impact current workforce projection results were:

- the short history of the profession means there is not yet a 'steady state' on which confidently base demand; and
- a view that patients with increasing complexity are presenting to emergency departments, potentially impacting on treatment time required (and appearing as a fall in productivity).

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The emergency medicine existing workforce position was assessed as **orange**.

### Workforce dynamics indicators

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For emergency medicine, the assessment results show substantial change between 2012 and 2025. In 2012, both the average age and replacement rate were at the lowest rating, with both moving to a medium rating in 2025. The low average age rating in 2012 is a reflection of the fact that emergency medicine is a relatively new specialty. The low rating for the replacement rate reflects the increase in new fellows to 2009, and again, the newness of the specialty.

However, across the projection period the number of new fellows per annum reduces substantially (by approximately 40 percent). This is from a combination of high attrition rates in emergency medicine (highlighted in consultation) and the college reducing trainee intakes in recent years. This is the driving factor behind the change in the assessment ratings, including the dependence on SIMGs – as new fellows reduce the reliance on SIMGs in the workforce is projected to increase.

**Table 12.1: Emergency medicine – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 12.2 presents the workforce projection scenario results for emergency medicine. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

In the comparison scenario, there is a small negative movement away from the existing workforce position by 2025, that is, growth in expressed demand exceeds growth in supply. The service and workforce reform scenario has the greatest impact on reducing an existing gap between supply and demand. Reforms mentioned during consultation related to improved service provision, for example through telehealth and the expansion of emergency medicine specialists into major regional centres, rather than reforms specifically to improve productivity.

During consultation, the existing reliance on registrars in service provision was also highlighted, and this is reflected in the registrar work value scenario. This scenario resulted in the second largest positive movement relative to the comparison scenario.

**Table 12.2: Emergency medicine, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,742	1,639	<b>103</b>	2,001	2,041	<b>-40</b>
Service and workforce reform	1,742	1,500	<b>242</b>	2,001	1,780	<b>221</b>
Registrar work value	1,964	1,639	<b>325</b>	2,204	2,041	<b>163</b>
Medium self-sufficiency	1,706	1,639	<b>67</b>	1,903	2,041	<b>-138</b>
Capped working hours	1,705	1,639	<b>66</b>	1,961	2,041	<b>-80</b>

**Table 12.3: Emergency medicine, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,134</b>	<b>1,377</b>	<b>1,742</b>	<b>2,001</b>
New fellows	82	93	53	48
Permanent migration	20	20	20	20
Temporary migration	27	27	27	27
Exits (%)	1.11%	0.86%	1.51%	2.42%
<b>Expressed demand</b>	<b>1,134</b>	<b>1,307</b>	<b>1,639</b>	<b>2,041</b>
<b>Positive/negative movement</b>		<b>70</b>	<b>103</b>	<b>-40</b>

**Table 12.4: Emergency medicine, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,134</b>	<b>1,377</b>	<b>1,742</b>	<b>2,001</b>
New fellows	82	93	53	48
Permanent migration	20	20	20	20
Temporary migration	27	27	27	27
Exits (%)	1.11%	0.86%	1.51%	2.42%
<b>Expressed demand</b>	<b>1,134</b>	<b>1,263</b>	<b>1,500</b>	<b>1,780</b>
<b>Positive/negative movement</b>		<b>114</b>	<b>242</b>	<b>221</b>

**Table 12.5: Emergency medicine, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,134</b>	<b>1,559</b>	<b>1,964</b>	<b>2,204</b>
New fellows	82	93	53	48
Permanent migration	20	20	20	20
Temporary migration	27	27	27	27
Exits (%)	1.11%	0.86%	1.51%	2.42%
<b>Expressed demand</b>	<b>1,134</b>	<b>1,307</b>	<b>1,639</b>	<b>2,041</b>
<b>Positive/negative movement</b>		<b>252</b>	<b>325</b>	<b>163</b>

**Table 12.6: Emergency medicine, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,134</b>	<b>1,371</b>	<b>1,706</b>	<b>1,903</b>
New fellows	82	93	53	48
Permanent migration	20	18	14	10
Temporary migration	27	24	19	14
Exits (%)	1.11%	0.87%	1.54%	2.54%
<b>Expressed demand</b>	<b>1,134</b>	<b>1,307</b>	<b>1,639</b>	<b>2,041</b>
<b>Positive/negative movement</b>		<b>64</b>	<b>67</b>	<b>-138</b>

**Table 12.7: Emergency medicine, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,134</b>	<b>1,354</b>	<b>1,705</b>	<b>1,961</b>
New fellows	82	93	53	48
Permanent migration	20	20	20	20
Temporary migration	27	27	27	27
Exits (%)	1.11%	0.86%	1.51%	2.42%
<b>Expressed demand</b>	<b>1,134</b>	<b>1,307</b>	<b>1,639</b>	<b>2,041</b>
<b>Positive/negative movement</b>		<b>47</b>	<b>66</b>	<b>-80</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the emergency medicine physician workforce supply and demand estimates.

### Workforce stock

The base emergency medicine workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified emergency medicine as their main field of specialty. In 2009, there were 1,134 active emergency medicine physicians in Australia. Within this:

- emergency physicians had an average age of 45 years;
- they worked an average of 46 hours per week; and
- fewer than 10 percent were aged 55 years and over.

**Table 12.8: Emergency medicine workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	47	38.5	30	43.3	77
35-39	114	34.6	198	45.6	312
40-44	64	41.5	248	44.1	312
45-49	63	46.4	180	45.2	243
50-54	16	38.4	105	48.9	121
55-59	7	47.9	29	45.8	36
60-64	1	41.9	23	42.1	24
65-69	0	-	4	46.5	4
70-74	0	-	3	9.9	3
75+	0	-	2	33.4	2
<b>Total</b>	<b>312</b>	<b>39.5</b>	<b>822</b>	<b>45.2</b>	<b>1,134</b>

Source: 2009 AIHW Medical Labour Force Survey



## Expressed workforce demand

Expressed demand for the emergency medicine workforce is estimated to grow at 5.4 percent per annum. This is based on a combination of utilisation data and Medicare data. Utilisation data was calculated using emergency department presentations per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Utilisation data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

## Workforce inflows

### New fellows

Over the period 2005 to 2010, the number of emergency medicine new fellows generally increased, rising from 58 in 2005 to 77 in 2010 (with a peak of 95 in 2008) (Table 12.9).

The number of new fellows in 2009 (82) formed the basis for new fellow inflows in the workforce supply projections.

**Table 12.9: Emergency medicine new fellows<sup>(a)</sup>, 2009 and 2010**

	2005	2006	2007	2008	2009	2010
New fellows	58	78	69	95	82	77

(a) Includes specialist international medical graduates

Source: Medical Training Review Panel Fifteenth Report

## Immigration

Emergency medicine is a medical specialty separately identified in DIAC data. However the DIAC data is substantially different to the specialist migration figures contained in the MTRP Fifteenth Report (particularly when compared with the differences between DIAC and MTRP data for other medical specialties). Part of this difference is likely to be caused by the distinction between migrants working in an emergency role (for example, in area of need positions) versus those with recognised specialist qualifications. There are also timing issues around the assessment and granting of a fellowship to SIMGs. Consequently, a weighted average of DIAC and MTRP data was used for emergency medicine immigration. This led to 20 permanent migrants and 27 temporary migrants for emergency medicine, with both held constant across the projection period.

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 12.10), and data supplied by the ACEM (Table 12.11), which provided information on the number of trainees by training year.

Trainees in the joint training program in paediatric emergency medicine are included in the 2011 figure.

**Table 12.10: Emergency medicine advanced vocational training positions/trainees, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1 <sup>(a)</sup>	305	282	ACEM 262 RACP 15
<b>Advanced total<sup>(a)</sup></b>	<b>811</b>	<b>881</b>	<b>ACEM 1,057 RACP 33</b>

(a) International medical graduates included in trainee numbers.

Source: Medical Training Review Panel Fifteenth Report

**Table 12.11: Emergency medicine, active number of trainees<sup>(a)</sup> by year of training, 2011**

Training Year	Domestic trainees
Advanced year 1	258
Advanced year 2	270
Advanced year 3	206
Advanced year 4	176
<b>Total</b>	<b>910</b>

<sup>(a)</sup>There are an additional 102 time complete trainees not included in the data above.

Source: ACEM data

## 13 General practice

### What is a general practitioner?

General practitioners (GPs) are medical specialists who provide primary medical care – meaning person-centred, continuing, comprehensive and coordinated whole person health care – to individuals and families in their communities. GPs are usually the first medical specialist a person sees for health care in Australia.

GPs can also perform a range of roles beyond community primary care, particularly in rural and remote areas. Such roles include: hospital medical officers; retrieval medicine; medical administration; procedural services such as anaesthetics or obstetrics; and special interest work in areas such as skin cancer medicine, substance misuse, palliative care or sexual and reproductive health.

### How are GPs trained?

The GP specialty qualification is gained by attaining fellowship from either the Royal Australian College of General Practitioners (FRACGP) or the Australian College of Rural and Remote Medicine (FACRRM). Multiple pathways exist to achieve either fellowship.

- **The Australian General Practice Training (AGPT) program.** This is the most common pathway to fellowship. Registrars train towards FACRRM, FRACGP or both, via an accredited regional training provider. The time required to complete the AGPT ranges between three and four years, depending on the pathway and choice of fellowship. Only permanent Australian residents can enter the AGPT.
- **The Australian College of Rural and Remote Medicine (ACCRM) independent pathway.** This is for experienced medical practitioners already working in general practice.
- **The Remote Vocational Training Scheme (RVTS).** This training program leads to fellowship in either the FRACGP, FACRRM or both. This scheme provides 22 places annually to doctors already working in remote general practice.

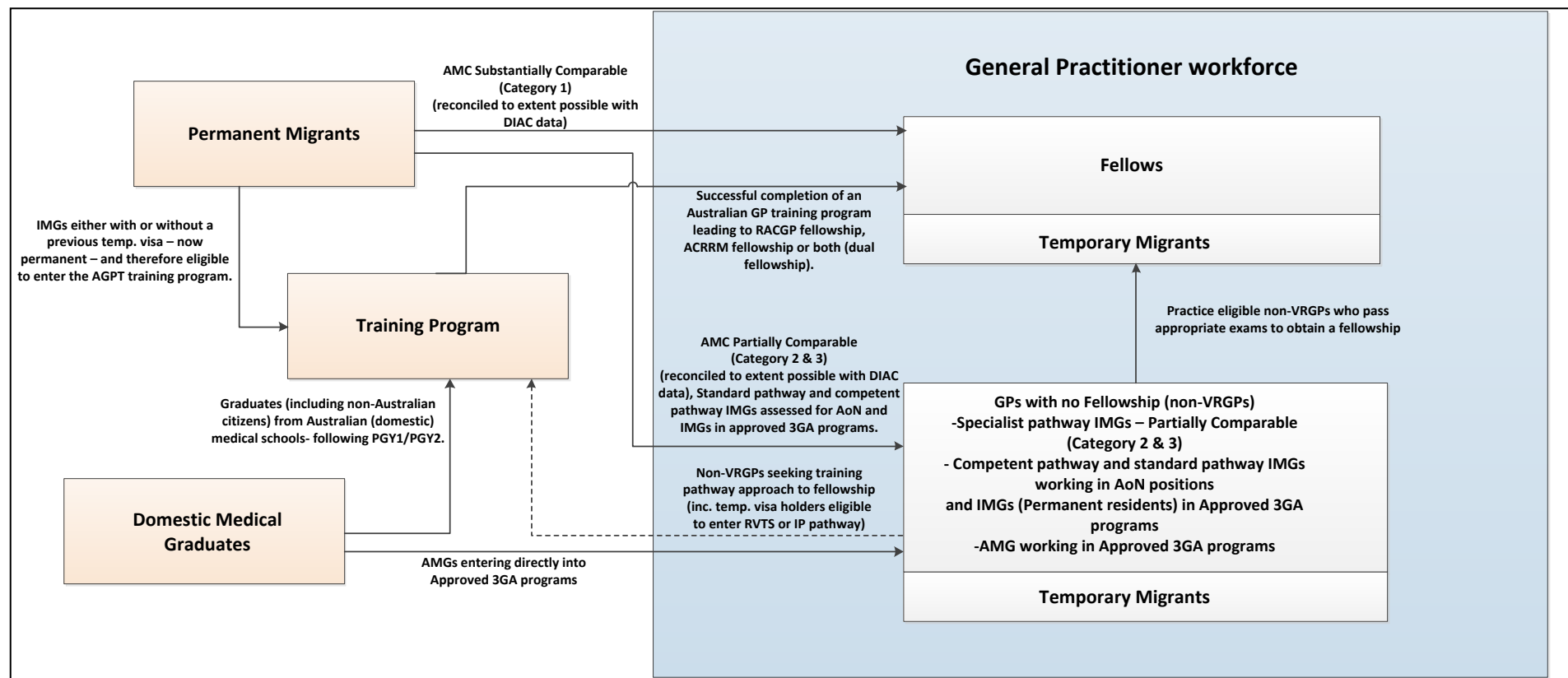
There are also Practice Eligible Pathways for doctors with existing general practice experience which require successful completion of the RACGP examination or a practice based assessment process.

### Other doctors providing GP services

Not all GP services are delivered by specialist GPs (defined as fellows of the RACGP and/or ACCRM and registered with the Medical Board of Australia as a specialist GP). Other doctors that provide GP services in Australia include:

- Trainees on recognised GP training programs, that is, the AGPT, ACCRM independent pathway or RVTS
- International medical graduates on limited registration working in area of need positions, and
- Australian trained medical graduates with general medical registration (that is, not registered as a specialist GP), working in general practice. This includes:
  - doctors working in approved 3GA placements, for example, Approved Medical Deputising Services, Rural Locum Relief Program (RLRP);
  - Non-vocationally registered / non-specialist GPs; and
  - Salaried medical practitioners providing general practice services, for example, District Medical Officers.

The diagram overleaf provides a representation of the current GP workforce (stock) and the pathways for new entrants to the workforce.



## What is the assessment for international graduates?

International medical graduates wanting to work in general practice in Australia may enter as either temporary or permanent migrants through the general skilled migration program.

There are a number of registration pathways that may be pursued including:

- Competent Authority Pathway
- Specialist Pathway
- Standard Pathway

For the specialist pathway, the RACGP and ACRRM assess an overseas-trained doctor's training for comparability to an Australian-trained GP. This can lead directly to fellowship status if the practitioner is considered to be substantially comparable. If partially comparable, a period of supervised practice is undertaken, after which they may be eligible for fellowship.

Practice eligible pathways also exist for overseas-trained doctors with general practice experience. These pathways require successful completion of the RACGP examination or a practice based assessment process.

The AGPT only allows entry to IMGs who are, or will be, permanent residents by the commencement of the training program. GPET intends to commence providing support for IMG's, including those on temporary visas, to achieve fellowship through the regional training provider network in the near future.

For the workforce projections, there is insufficient data available to accurately distinguish between IMGs who migrate to Australia and work as resident medical officers and those who work as GPs.

For the workforce projections, multiple data sets (DIAC, Medicare, GPET and college data) were used to estimate the level of GP migration.

## Considerations for future requirements

### What issues have stakeholders identified for the general practice workforce?

The modelling conducted in HW 2025 is based on observed historical trends. Consideration of future requirements that may impact future workforce supply or demand is therefore important in providing a real world context for interpreting the workforce projections presented. Consultation with the profession and employers was conducted, with the points below summarising the key considerations raised (noting these do not necessarily represent the views of HWA). Future modelling may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

The ongoing maldistribution of the GP workforce and the ongoing high reliance on international medical graduates were the key issues for jurisdictions.

### What were the medical college views?

Consultation highlighted a number of considerations that could potentially influence future supply and demand for the GP workforce. Factors highlighted were:

- the use of GPs (often with special interests) to provide what were previously specialist outpatient services. For example, the GP-led diabetes clinics at the Royal Brisbane Hospital;
- the increasing levels of team-based care, including the introduction of nurse practitioners in primary care settings and the expanding number and roles of practice nurses;
- the implementation of telehealth to: support the delivery of primary health care; provide a link between primary and secondary care; as well as the potential to work at the interface between sectors such as the community and aged care facilities; and
- the fall in average hours worked from increasing female workforce participation and both male and female new fellows working fewer hours than previous generations.

Clinical supervision capacity was also raised a specific issue in relation to the training pathway, with pressures on capacity from:

- growth in the AGPT (to 1,200 first year places per annum by 2014 from 600 first year places in 2007);
- increasing numbers of clinical placements for students in general practice and an expansion in the number of placements in the Prevocational General Practice Placements Program (PGPPP); and
- supervision requirements for IMGs working in general practice with limited registration needs, given the high levels of migration in the GP workforce.

Limitations in GP infrastructure and accommodation availability for trainees were also reported as barriers to expanding training capacity.

The ongoing uneven distribution of the GP workforce and declining GP proceduralist workforce were highlighted as issues. Future considerations in relation to access and distribution of the GP workforce were:

- the increasing scope of practice and extended roles that GPs play in providing medical services in regional and remote areas; and
- the potential of telehealth to improve equity in access to health services, in particular for rural and regional populations, the elderly and for those who are not easily able to access GP services.

### What other considerations may influence GP workforce projections?

In relation to the workforce projections in this report, it was noted that GP proceduralists – those with procedural skills such as obstetrics, anaesthetics or surgical skills – are not modelled separately. This is because of data limitations in being able to:

- accurately identify the existing size and characteristics of the workforce; and
- accurately attribute demand to the proceduralist workforce.

In rural and remote areas it is typical that general practice services may be provided in hospital and other salaried service settings and therefore may be underrepresented in the data.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The general practice existing workforce position was assessed as **red**.

### Workforce dynamics indicators

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For general practice, the assessment results only change between 2012 and 2025 for average age. The critical area for general practice is the dependence on SIMGs. This was rated as an area of significant concern in 2012 and 2025.



**Table 13.1: General practice – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program <sup>(a)</sup>		

(a) Training duration ranges from three to four years.

### What are our projections for the future?

The existing workforce position assessment was that the GP workforce is in shortage. The comparison scenario indicates there will be no change to this position if recent trends in supply and expressed demand continue. The service and workforce reform scenario has the greatest impact on the GP workforce projections. The medium self-sufficiency scenario results highlight the reliance on immigration in the GP workforce.

**Table 13.2: General practice, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	34,148	34,762	<b>-614</b>	40,929	40,872	<b>57</b>
Service and workforce reform	34,148	31,171	<b>2,977</b>	40,929	34,339	<b>6,590</b>
Registrar work value	34,943	34,762	<b>181</b>	41,760	40,872	<b>888</b>
Medium self-sufficiency	32,729	34,762	<b>-2,033</b>	37,041	40,872	<b>-3,831</b>
Capped working hours	34,108	34,762	<b>-654</b>	40,880	40,872	<b>8</b>

**Table 13.3: General practice, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>26,389</b>	<b>28,386</b>	<b>34,148</b>	<b>40,929</b>
New fellows	409	652	1,128	1,128
Permanent migration	780	780	780	780
Temporary migration	1,145	1,145	1,145	1,145
Exits (%)	2.39%	2.11%	2.47%	2.57%
<b>Expressed demand</b>	<b>26,389</b>	<b>29,229</b>	<b>34,762</b>	<b>40,872</b>
<b>Positive/negative movement</b>		<b>-843</b>	<b>-614</b>	<b>57</b>

**Table 13.4: General practice, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>26,389</b>	<b>28,386</b>	<b>34,148</b>	<b>40,929</b>
New fellows	409	652	1,128	1,128
Permanent migration	780	780	780	780
Temporary migration	1,145	1,145	1,145	1,145
Exits (%)	2.39%	2.11%	2.47%	2.57%
<b>Expressed demand</b>	<b>26,389</b>	<b>28,013</b>	<b>31,171</b>	<b>34,339</b>
<b>Positive/negative movement</b>		<b>373</b>	<b>2,977</b>	<b>6,590</b>

**Table 13.5: General practice, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>26,389</b>	<b>29,055</b>	<b>34,943</b>	<b>41,760</b>
New fellows	409	652	1,128	1,128
Permanent migration	780	780	780	780
Temporary migration	1,145	1,145	1,145	1,145
Exits (%)	2.39%	2.11%	2.47%	2.57%
<b>Expressed demand</b>	<b>26,389</b>	<b>29,229</b>	<b>34,762</b>	<b>40,872</b>
<b>Positive/negative movement</b>		<b>-174</b>	<b>181</b>	<b>888</b>

**Table 13.6: General practice, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>26,389</b>	<b>28,132</b>	<b>32,729</b>	<b>37,041</b>
New fellows	409	652	1,128	1,128
Permanent migration	780	707	561	390
Temporary migration	1,145	1,038	823	573
Exits (%)	2.39%	2.13%	2.57%	2.84%
<b>Expressed demand</b>	<b>26,389</b>	<b>29,229</b>	<b>34,762</b>	<b>40,872</b>
<b>Positive/negative movement</b>		<b>-1,097</b>	<b>-2,033</b>	<b>-3,831</b>

**Table 13.7: General practice, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>26,389</b>	<b>28,353</b>	<b>34,108</b>	<b>40,880</b>
New fellows	409	652	1,128	1,128
Permanent migration	780	780	780	780
Temporary migration	1,145	1,145	1,145	1,145
Exits (%)	2.39%	2.11%	2.47%	2.57%
<b>Expressed demand</b>	<b>26,389</b>	<b>29,229</b>	<b>34,762</b>	<b>40,872</b>
<b>Positive/negative movement</b>		<b>-876</b>	<b>-654</b>	<b>8</b>

## What is included in the projections?

The GP workforce is particularly complex to model as a result of:

- significant numbers of doctors working in general practice without a specialist qualification, or not in the training program;
- the substantial portion of the GP workforce that comes through immigration; and
- the diversity of roles filled by the GP workforce.

To account for these factors multiple data sets were required. Data from the MTRP Fifteenth Report, augmented with training program data, DIAC and Medicare data for migration, was used to generate the GP workforce projections.

Consultation also occurred with GPET, RACGP and ACRRM. This assisted in addressing key issues related to modelling the GP workforce, including:

- identifying migration levels and their workforce status;
- separating IMG from Australian medical graduate fellows; and

- measuring the magnitude of inflows from each of the multiple pathways into the GP workforce.

Following consultation and analysis of data available, the inputs described in the following sections were used to generate the GP workforce projections.

## Workforce stock

Table 13.8 describes the GP workforce. Inputs to the workforce projections were based on 2009 data and augmented with 2010, 2011 and 2012 data where available.

**Table 13.8: General practice workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
25-29	587	36	592	40	1,179
30-34	1,568	30	1,356	41	2,924
35-39	1,579	28	1,628	42	3,207
40-44	1,818	29	1,988	43	3,806
45-49	1,757	32	2,397	45	4,154
50-54	1,505	35	2,527	46	4,032
55-59	845	35	2,207	44	3,052
60-64	442	30	1,507	40	1,949
65-69	175	29	851	33	1,026
70-74	82	23	441	29	523
75-79	47	15	312	22	359
80+	23	14	155	22	178
<b>Total</b>	<b>10,428</b>	<b>31</b>	<b>15,961</b>	<b>42</b>	<b>26,389</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for GPs is projected to grow at 3.2 percent per annum. Demand was calculated based on the growth in applicable Medicare items over the three year period from 2006 to 2009.

## Workforce inflows

Inputs for 2013 onwards are based on a pipeline of fellows emerging from the AGPT program and a continuation of migration at current levels.

### New fellows

The inputs that formed the basis for GP new fellows were:

- 409 new fellows emerging from the AGPT in 2009;
- 440 emerging from the AGPT in 2010; and
- From 2011, small annual increases to reach 1,128 as the increases in the AGPT intake take effect.

The total number of AGPT trainees do not pass directly through training. This reflects discontinuations, and those that take longer than the prescribed training time (for example, those that are completing their training part-time).

### Immigration

The workforce projections were based on 780 permanent migrants per annum. This includes those entering via the specialist pathway (predominantly substantially comparable) and a share of competent and standard pathway entrants.

It is not possible to accurately identify the exact number of competent pathway and standard pathway entrants who work as GPs, however the total inflow was reconciled with Medicare data.

Temporary migrants are represented as a pool of GPs who are already in the workforce. This was held constant over the projection period.

### Training

The AGPT training program increases from historical levels in 2009, 2010, 2011 and 2012 (see Table 13.9) to an intake of 1,200 by 2014. The 1,200 is held constant from 2014 onwards.

GPET data on the training program was used to establish internal flow rates and link these to the projected estimate of new fellows emerging from the AGPT program. In lieu of knowing exact individual pathways through training, a statistical transition was calculated between historical data (using GPET and MTRP data) and the forward projections as the training intake increases.

Table 13.9 provides data on the AGPT training program numbers for 2012.

**Table 13.9: Active number of trainees (headcount) by year of training for 2008-2012**

	2008	2009	2010	2011	2012
AMG Y1	411	438	488	560	655
IMG Y1	167	179	199	228	267
<b>Total Y1</b>	<b>578</b>	<b>617</b>	<b>687</b>	<b>788</b>	<b>922</b>
AMG Y2	478	511	569	652	764
IMG Y2	206	220	245	281	329
<b>Total Y2</b>	<b>684</b>	<b>731</b>	<b>814</b>	<b>933</b>	<b>1,093</b>
AMG Y3	433	463	515	591	691
IMG Y3	155	166	185	212	248
<b>Total Y3</b>	<b>588</b>	<b>629</b>	<b>700</b>	<b>803</b>	<b>939</b>
AMG Y4	163	174	194	223	261
IMG Y4	54	58	64	74	86
<b>Total Y4</b>	<b>217</b>	<b>232</b>	<b>258</b>	<b>297</b>	<b>347</b>
AMG Y5	54	58	64	74	86
IMG Y5	24	26	29	33	39
<b>Total Y5</b>	<b>78</b>	<b>84</b>	<b>93</b>	<b>107</b>	<b>125</b>
AMG Y5+	11	12	13	15	18
IMG Y5+	4	4	5	6	6
<b>Total Y5+</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>21</b>	<b>24</b>
<b>TOTAL (all)</b>	<b>2,160</b>	<b>2,309</b>	<b>2,570</b>	<b>2,949</b>	<b>3,450</b>

AMG Australian medical graduate  
IMG International medical graduate

Source: Collated from GPET data for actual 2012FTE provided to HWA – based on FTEs and grossed up to estimate a headcount based on the FTE ratio. MTRP totals for the training program used for years other than 2012.

## GP distribution, workforce characteristics and GP proceduralists

The GP workforce comprises a significant proportion of all medical specialists in Australia. GPs are usually the first medical specialist a person sees for health care in Australia, performing a key role in primary and preventative health care. Because of this, the distribution of the GP workforce and access to their services is particularly important.

As communities become increasingly remote, the ability of GPs to provide specialist services such as obstetrics and gynaecology, or anaesthesia, becomes increasingly important. This is because it is less likely there will be consultant specialist services nearby.

The following sections present:

- an analysis of the geographic distribution of the GP workforce; and
- information on GP proceduralists in Australia.

This should be considered in conjunction with the GP workforce projection results.

## Geographic distribution and workforce characteristics of the GPs

Volume 1 of HW 2025 highlighted the geographic distribution of doctors remains a significant concern, with the future projected growth of graduates unlikely to make significant inroads into relative geographic equity under current policy settings.

The GP workforce makes up the largest proportion of the current medical workforce in Australia. In 2009, there were approximately 26,400 doctors working in general practice, which was approximately one-third of the total medical labour force.<sup>33</sup>

Primary care is a cornerstone of Australia's medical system, in terms of providing efficient high quality health services and good health outcomes for the community. Of all the specialty workforces, general practice is the most integral in providing primary care to the community. While not discounting the significant issues that arise in other specialty workforces due to geographic maldistribution, the GP workforce needs to be closely aligned to where people live.

Given the size of the workforce, and the importance of providing primary care services close to where people live, a geographic analysis of the current GP workforce was conducted.

HW 2025 Volume 1 highlighted the complexities in conducting workforce projections using a national aggregate workforce approach. These complexities are the same when examining medical specialties. This section does not aim to provide workforce projections for different

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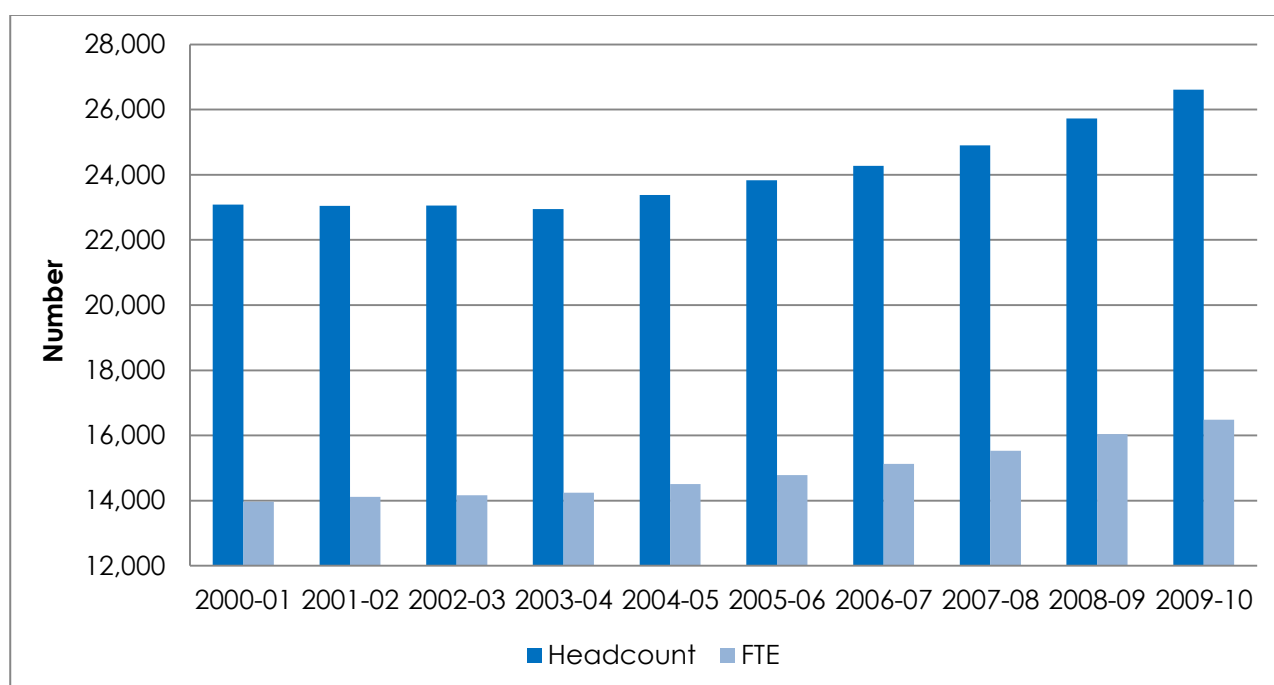
<sup>33</sup> 2009 AIHW Medical Labour Force Survey

geographic areas, or substitute for needs-based planning at the local level. Rather, it aims to highlight current distributional issues.

### Has the GP workforce increased in size?

The GP workforce has increased over the period 2000-01 to 2009-10, in terms of number (headcount) and full-time equivalent (FTE). The number of GPs increased 15 percent, from 23,085 in 2000-01 to 26,613 in 2009-10. FTE increased 18 percent over the same period, from 13,972 to 16,482.

FTE is an alternative measure to headcount. It measures the number of doctors working full-time, and the partial contribution of part-time doctors. FTE does not recognise the additional contributions of those doctors providing above the average number of services.



**Figure 13-1: GP, number and full-time equivalent, 2000-01 to 2009-10**

Source: Medicare, General Practice Workforce Statistics

### Distribution

As highlighted earlier, geographic distribution of the GP workforce is important because of the role GPs play in providing care to the community. One measure of workforce availability is the ratio between the number of GPs and an area's population (noting that there is no internationally or nationally agreed ideal workforce to population ratio). In 2009, Major Cities had the second highest rate of GPs per 100,000 population (124). This rate was substantially higher than most other remoteness areas, with Outer Regional areas having the lowest rate at 99 per 100,000 population (Table 13.10).



Very remote areas had the highest ratio of GPs per 100,000 population (125). However this should be interpreted with caution due to the low actual number of GPs (218) and population in these areas.

**Table 13.10: Number of GPs by Remoteness Area, 2009**

Remoteness Area	Number	Number per 100,000 population
Major Cities (RA1)	18,706	124
Inner Regional (RA2)	4,593	106
Outer Regional (RA3)	2,077	99
Remote (RA4)	387	118
Very Remote (RA5)	218	125
<b>Australia</b>	<b>26,389</b>	<b>120</b>

Source: 2009 AIHW Medical Labour Force Survey

The distribution of primary care clinicians also varied across states and territories, ranging from a low of 103 employed primary care clinicians per 100,000 population in Victoria, to a high of 148 in Tasmania.

**Table 13.11: Employed primary care clinicians<sup>(a)</sup>, full-time equivalent rate per 100,000 population (based on 40-hour week), 2009**

NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust.
110.8	103.3	118.0	120.3	109.5	148.0	145.9	111.3	112.1

(a) The number of medical practitioners in New South Wales, Queensland and Tasmania are underestimates, as the benchmark figures did not include all registered medical practitioners. Data for Victoria, Queensland, Western Australia, Tasmania and the Northern Territory may be affected by large falls in response rates between 2008 and 2009.

Source: 2009 AIHW Medical Labour Force Survey

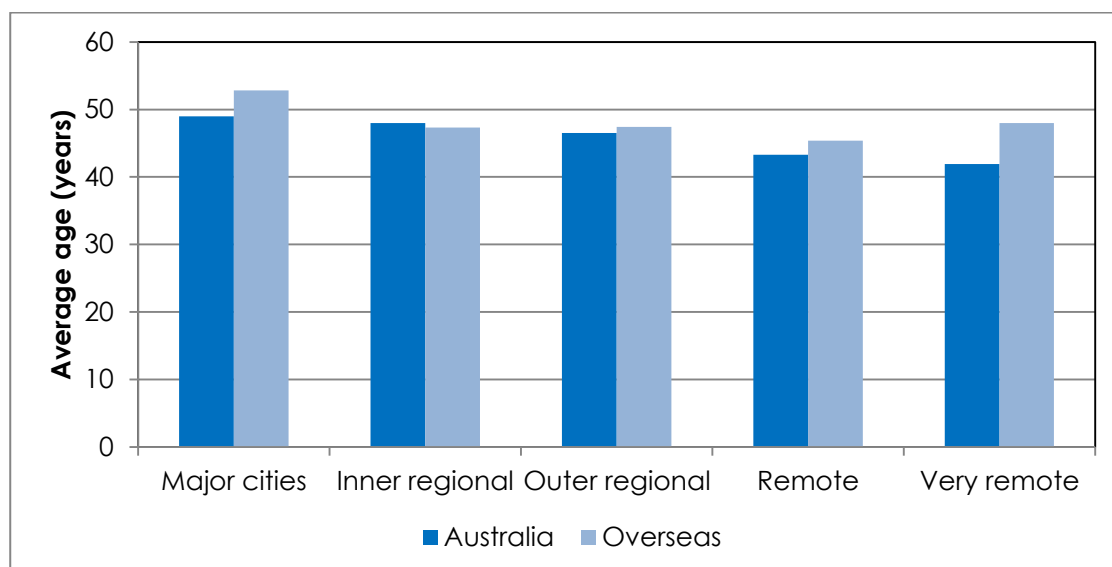
### Average age

In 2009, the average age of GPs in Major Cities was 50.1 years. This was the highest average age across all remoteness areas, with average age then progressively falling (across remoteness areas) to a low of 43.7 in Very Remote.

Overseas-trained GPs' average age (51.1) was higher than Australian-trained GPs (48.6). This pattern was reflected across all remoteness areas except Inner Regional (Figure 16.2).

This finding is contrary to popular belief. It may be due to factors including the movement of the rural GP workforce into metropolitan areas as children reach high school age, or the effect of

policies promoting 50 percent of GP trainee terms being undertaken in Inner Regional to Very Remote areas (RAs 2 to 5).



**Figure 13-2: Average age of GPs, by place of qualification, 2009**

Source: Medicare, General Practice Workforce Statistics

### Qualifications

A substantial number of doctors working in the GP workforce do not have a specialist GP qualification or are not in the training program. While the vocational registration status of a GP does not directly relate to specialist or specialist-in-training status it does correlate.

There are substantial differences in the proportion of doctors working in general practice with and without vocational registration according to remoteness area.

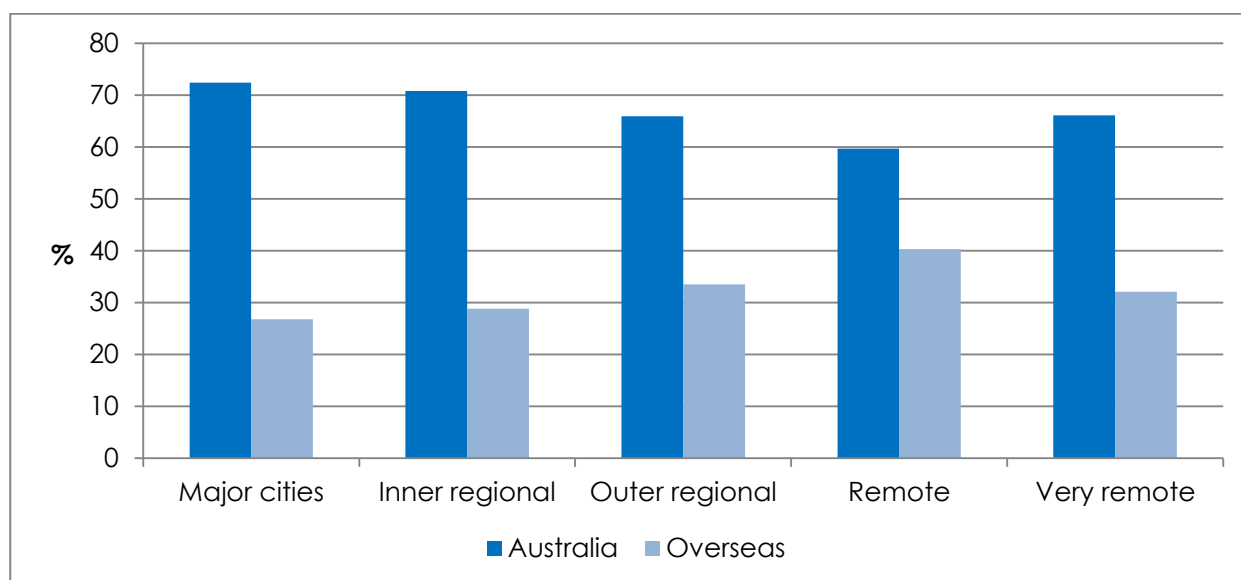
Medicare data showed 11 percent of the GP workforce in Major Cities was not vocationally registered in 2010-11. This compares with approximately 37 percent of the GP workforce being non-vocationally registered in remote and very remote areas. This demonstrates the strong correlation between the high reliance on IMGs and vocational registration (and by proxy, specialist) status.

### International medical graduates

Immigration policy and access to Medicare provider numbers has been one of the most important policy options available to government in influencing geographic distribution of the medical workforce. Limiting private practice to districts of workforce shortage is the most significant policy in this area. This has resulted in an increasing IMG proportion in the regional and rural GP workforce.

In 2009, 28 percent of the GP workforce in Australia obtained their qualification overseas. This was disproportionately higher in Outer Regional (33 percent), Remote (40 percent) and Very Remote (32 percent) areas (Figure 16.3).

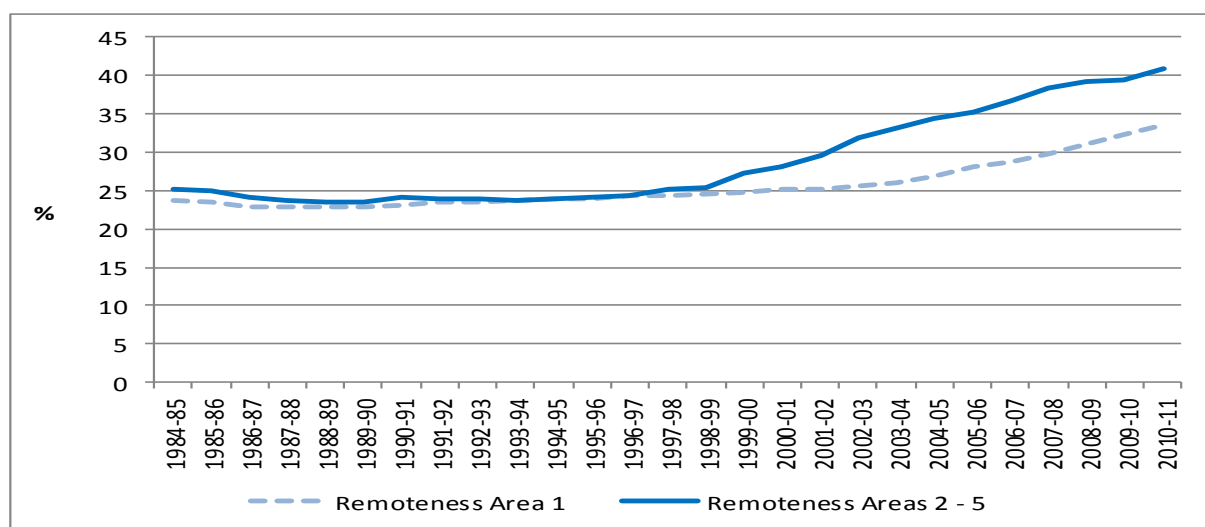
This pattern of lower proportions of GPs having overseas qualifications in metropolitan areas is also reflected in Medicare data. In 2010-11, Medicare data showed 34 percent of GPs in Major Cities obtained their basic qualification overseas, compared with 41 percent of GPs in Australia obtaining their basic qualification overseas.



**Figure 13-3: Proportion of GPs, by place of qualification and remoteness area, 2009**

Source: 2009 AIHW Medical Labour Force Survey

Medicare data also shows the proportion of GPs whose basic qualifications were obtained overseas has increased dramatically over the last 25 years across all areas. In Major Cities (RA1), 24 percent of GPs had an overseas qualification in 1984-85. This increased to 34 percent in 2010-11. In Inner Regional to Very Remote Areas (RAs 2-5), the increase was greater – from 25 percent in 1984-85 to 41 percent in 2010-11.



**Figure 13-4: Proportion of GPs whose basic qualifications were obtained overseas**

Source: Medicare, General Practice Workforce Statistics

## GP services provided

### Services provided by age and remoteness areas

The number of Medicare billed GP services completed per capita reduces as remoteness increases (Table 13.12). This reflects the distribution of GPs. However it needs to be interpreted with reference to existing service models in increasingly remote communities that may include salaried medical officers and other health professionals providing primary care services.

The number of service provided by GPs aged over 45 is higher than those aged less than 45. This reflects common feedback that more recent graduates (male and female) are choosing to work fewer hours on average.

**Table 13.12: Number of services delivered by GPs, by age of GP and Remoteness Area, 2010-11**

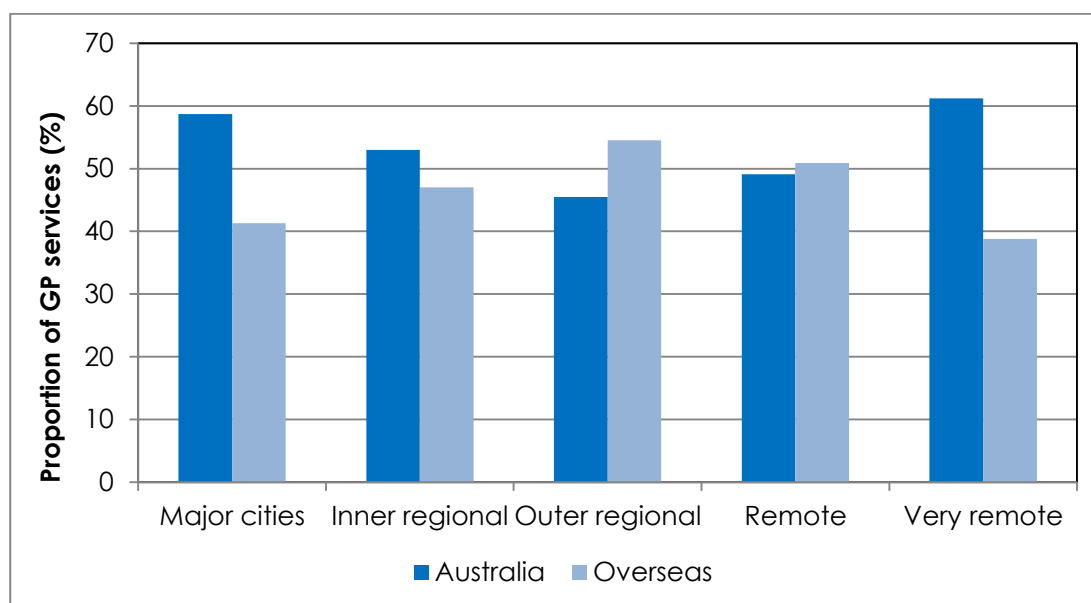
Remoteness Area	Aged Less than 45		Aged 45 and Over		Total	
	Number of Services '000	Number of Services Per GP	Number of Services '000	Number of Services Per GP	Number of Services '000	Number of Services Per GP
Major Cities	22,345	4,143	70,469	5,318	92,814	4,978
Inner Regional	7,584	3,604	15,952	4,752	23,534	4,309
Outer Regional	3,561	3,246	6,268	4,605	9,829	3,999
Remote	505	1,629	766	2,837	1,271	2,191

Very Remote	195	813	323	1,267	518	1,046
<b>Australia</b>	<b>34,190</b>	<b>3,739</b>	<b>93,778</b>	<b>5,070</b>	<b>127,966</b>	<b>4,630</b>

Source: Medicare, General Practice Workforce Statistics

### GP services provided by place of qualification

A higher proportion of GP services are delivered by overseas-qualified GPs in Outer Regional (55 percent) and Remote (51 percent) areas. In Major Cities and Inner Regional areas, higher proportions of services are delivered by Australian-trained GPs.



**Figure 13-5: Proportion of services delivered by GPs, by place of qualification, 2010-11**

Source: Medicare, General Practice Workforce Statistics

### In summary

Overall, the data indicates:

- per-capita GP numbers and Medical services delivered declined with increasing remoteness;
- average age of GPs decreases with increasing remoteness;
- older GPs and IMGs provide a greater number of services than younger GPs;
- the rural and regional workforce is disproportionately dependent on IMGs; and
- significantly more GPs working in rural and regional practice do not hold vocational registration (specialist qualifications or in a recognised training program).

## GP Proceduralists

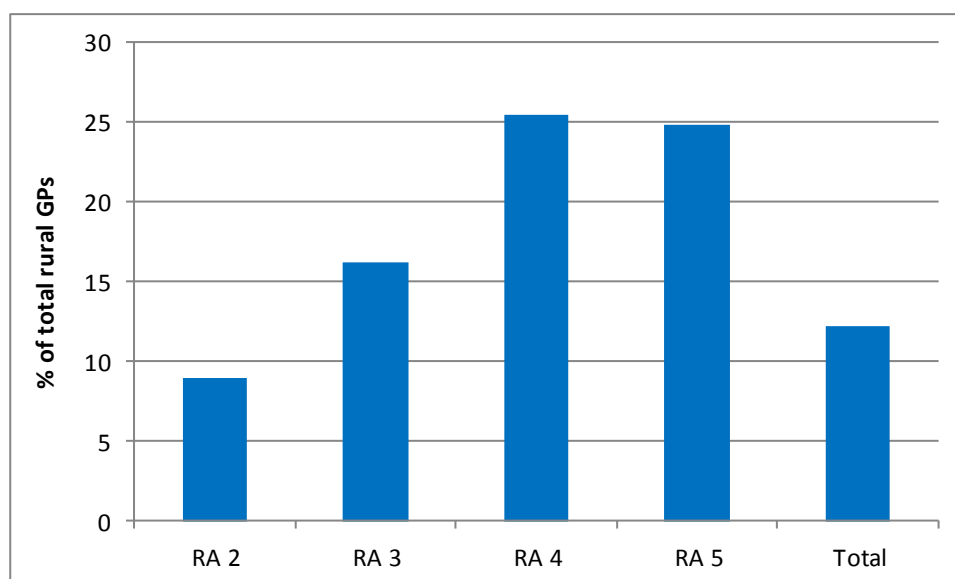
GP proceduralists provide essential medical services for rural and remote communities.

GP proceduralists have defined training in the procedural area they work in (for example, the Diploma of the Royal Australian New Zealand College of Obstetrics and Gynaecology), and are credentialed by local hospitals or health services to provide services including: obstetrics, anaesthetics, surgical and emergency services. GP proceduralists provide non-referred services, normally in a hospital theatre, maternity care setting or appropriately equipped facility, which in urban areas are typically the province of a specific referral-based specialty.

Differences exist in the definition of a GP proceduralist which makes data capture difficult. For example, there are a number of proceduralists who cease using their procedural skills for a variety of reasons, and a group of IMGs who self-report as a GP proceduralist without formal recognition of their procedural experience.

Services provided by GP proceduralists are vital; they prevent unnecessary referral, costs and disruption for rural and remote patients and provide local access to those services listed above. This reduces the need for patients to seek services from distant specialists or hospitals, or from fly-in, fly-out providers.

In 2011, there were 846 GPs who self-reported as providing GP obstetrics, anaesthetics and surgery services the rural and remote Australia. Of these, 524 reported providing normal delivery obstetrics services and 432 provided general anaesthetics services. Most GP proceduralists are located in Remote (RA4) and Very Remote (RA5) areas (Figure 5).



**Figure 5: Percentage of GPs who are Procedural GPs, by Remoteness Areas 2 to 5**

Source: Rural Workforce Agencies Minimum Dataset 2011

The number of GP proceduralists is declining. The latest data from the Rural Workforce Agencies indicates that GP proceduralists as a proportion of the regional, rural and remote GP workforce has halved, from 24 percent in 2002 to 12 percent in 2011<sup>34</sup>.

Significant concern about this decline has prompted targeted investment in GP procedural training and upskilling, and rural generalist training programs.

At this stage in HW 2025, it has not been possible to separately identify and model the GP proceduralist workforce. They are not able to be accurately identified through the existing AIHW workforce data, and demand data cannot be accurately attributed to these groups.

HWA recognises further understanding of the distribution of GP proceduralists and their scope of practice is essential to regional, rural and remote health workforce planning.

HWA is proposing to work with Rural Health Workforce Australia and the Rural Workforce Agencies to extend the Rural Workforce Agencies national data collection, and evidence available on the contribution of the GP proceduralist workforce. This cohort will also be considered in future rural and remote workforce planning.

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<sup>34</sup> Rural Workforce Agencies (2002-2011). Medical Practice in rural and remote Australia: Combined rural workforce Agencies National Minimum Dataset Report as at 30<sup>th</sup> November. Self-published and available at [www.rhwa.org.au](http://www.rhwa.org.au)



## 14 Intensive care

### What is an intensivist?

The intensive care medical specialty involves the assessment, resuscitation and ongoing care of critically ill patients with life-threatening single and multiple organ failure. Work for intensive care physicians (or intensivists), is based in intensive care units (ICUs), as well as other parts of hospitals. Intensivists are often also involved in the transport and transfer of critically ill patients.<sup>35</sup>

The College of Intensive Care Medicine (CICM) is the peak body for intensive care medicine specialist training and education in Australia and New Zealand. CICM offers a six-year program of training and examination, culminating in fellowship of the college. A paediatric intensive care endorsement is also offered.

### How are they trained?<sup>36</sup>

The CICM training program requires successful completion of three years (full-time) basic training and three years (full-time) advanced training. The training program is flexible – many trainees undertake dual training or have completed training in a primary specialty, such as anaesthesia, medicine or emergency medicine.

The six years must include three years of intensive care training. Trainees who are undertaking concurrent training with another college (ANZCA, ACEM and RACP) may have their period of intensive care training reduced by six months.

The intensive care training program provides for interrupted and part-time training.

For endorsement in paediatric intensive care, the training program has specific requirements that relate to core paediatric intensive care training and paediatric medicine, including a paediatric fellowship examination and formative assessment of at least four paediatric cases by the supervisor.

### What is the assessment for international graduates?

The CICM SIMG assessment process can involve the following components:

- a face-to-face interview;
- a performance assessment; and
- a clinical practice assessment period of up to two years.

The interview is the initial step and results in one of three recommendations:

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<sup>35</sup> Information sourced from <http://www.cicm.org.au/index.php>

<sup>36</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

1. Ineligibility for further consideration because training and experience is deemed to not be of the standard of an Australian or New Zealand trained intensive care specialist (not comparable).
2. Eligible to proceed to a performance assessment and clinical practice assessment – training and experience is not equivalent to an Australian-trained specialist, but is at a level that should enable the SIMG to complete the requirements, or
3. Eligible for specialist recognition and possible consideration for admission to fellowship because training and experience is at least equivalent to an Australian-trained specialist.

CICM advised that the vast majority of SIMGs are required to undertake a period of further training in the Australian system. The recommended period will be up to 24 months. These applicants are placed in accredited training posts and are counted in the new fellows data.

## What issues have stakeholders identified for the intensive care workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

The primary issue raised in relation to the intensive care specialty was the continued reliance on doctors in service positions (in excess of intensive care trainees) to deliver intensive care services in public hospitals. It was also noted there is increasing competition for training rotations in intensive care training facilities.

### What were the medical college views?

CICM's primary feedback was that past trends in the intensive care workforce may not be representative of the future, due to the newness of the specialty. Specific factors raised as potentially impacting future workforce supply were:

- changes to rostering practices to incorporate safe working hour principles;
- more balanced gender diversity in the intensivist workforce – currently most intensivists are male and more females may impact average hours worked;
- a revised training pathway (including the development of a basic training pathway and a higher education requirement for direct entry into advanced training) which is likely to:

- change the skill sets of intensivists that previously commonly included anaesthetic training and/ or some physician training; and
- reduce the number of international medical graduates able to access formal training; and
- a potential move to a different service delivery model, for example, consultant delivered care (where currently trainees are relied upon to staff ICU departments).
- CICM also expect an increased demand for intensive care physicians and trainees from the planned expansion of ICU beds in a number of large hospital developments nationally and there is a pattern of increasing work for intensivists outside the ICU environment, for example, in high dependency units, and on medical emergency teams (MET).

In relation to geographic distribution of the intensivist workforce, ongoing problems were noted, in particular:

- an emerging mismatch between new fellows' expectations of employment in major metropolitan centres versus the availability of new positions;
- continued reliance on SIMGs and increasingly on a fly-in fly-out locum workforce in regional centres; and
- potentially (as a result of the move to a single training pathway) less flexibility of consultant ICU staff in regional areas. This is because second skill sets such as anaesthetics or basic physician training would not be obtained under the single pathway.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The intensive care existing workforce position was assessed as **green**.

### Workforce dynamics indicators

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for

duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For intensive care, there is little change in the workforce dynamics indicators from 2012 to 2025. While average age does increase, this is of minimal concern given it is still at the second lowest rating in 2025.

**Table 14.1: Intensive care – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 14.2 presents the workforce projection scenario results for intensive care. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment showed no current perceived shortage in the intensive care workforce. The comparison scenario indicates small growth in the workforce relative to demand by 2025. The registrar work value and capped working hours scenarios have substantial impacts relative to the comparison scenario. Consultation highlighted there is a reliance on registrars for service provision in ICUs – the registrar scenario reflects this, with a large positive movement relative to the comparison scenario because of the projected large number of trainees within intensive care.

On the other hand, the capped working hours scenario has a significant negative impact relative to the comparison scenario. This is because a large number of intensivists work more than 50 hours per week. Consultation referred to potential changes in rostering hours to incorporate safe working

hours principles; hence the capped working hours scenario indicates that changes in hours worked will substantially negatively affect workforce supply.

**Table 14.2: Intensive care, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	829	780	<b>49</b>	1,020	985	<b>35</b>
Service and workforce reform	829	703	<b>126</b>	1,020	836	<b>184</b>
Registrar work value	949	780	<b>169</b>	1,140	985	<b>155</b>
Medium self-sufficiency	820	780	<b>40</b>	994	985	<b>9</b>
Capped working hours	726	780	<b>-54</b>	889	985	<b>-96</b>

**Table 14.3: Intensive care, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>517</b>	<b>630</b>	<b>829</b>	<b>1,020</b>
New fellows	42	49	51	51
Permanent migration	7	6	6	6
Exits (%)	3.32%	3.29%	2.89%	3.47%
<b>Expressed demand</b>	<b>517</b>	<b>594</b>	<b>780</b>	<b>985</b>
<b>Positive/negative movement</b>		<b>36</b>	<b>49</b>	<b>35</b>

**Table 14.4: Intensive care, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>517</b>	<b>630</b>	<b>829</b>	<b>1,020</b>
New fellows	42	49	51	51
Permanent migration	7	6	6	6
Exits (%)	3.32%	3.29%	2.89%	3.47%
<b>Expressed demand</b>	<b>517</b>	<b>574</b>	<b>703</b>	<b>836</b>
<b>Positive/negative movement</b>		<b>56</b>	<b>126</b>	<b>184</b>

**Table 14.5: Intensive care, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>517</b>	<b>735</b>	<b>949</b>	<b>1,140</b>
New fellows	42	49	51	51
Permanent migration	7	6	6	6
Exits (%)	3.32%	3.29%	2.89%	3.47%
<b>Expressed demand</b>	<b>517</b>	<b>594</b>	<b>780</b>	<b>985</b>
<b>Positive/negative movement</b>		<b>141</b>	<b>169</b>	<b>155</b>

**Table 14.6: Intensive care, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>517</b>	<b>629</b>	<b>820</b>	<b>994</b>
New fellows	42	49	51	51
Permanent migration	7	6	5	3
Exits (%)	3.32%	3.30%	2.92%	3.57%
<b>Expressed demand</b>	<b>517</b>	<b>594</b>	<b>780</b>	<b>985</b>
<b>Positive/negative movement</b>		<b>35</b>	<b>40</b>	<b>9</b>

**Table 14.7: Intensive care, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>517</b>	<b>551</b>	<b>726</b>	<b>889</b>
New fellows	42	49	51	51
Permanent migration	7	6	6	6
Exits (%)	3.32%	3.29%	2.89%	3.47%
<b>Expressed demand</b>	<b>517</b>	<b>594</b>	<b>780</b>	<b>985</b>
<b>Positive/negative movement</b>		<b>-43</b>	<b>-54</b>	<b>-96</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the intensive care workforce supply and expressed demand estimates.

### Workforce stock

The base intensive care workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified intensive care as their main field of specialty. In 2009, there were 517 active intensivists in Australia. Within this:

- intensivists had an average age of 45.5 years;
- they worked an average of 53 hours per week;
- approximately 11 percent were aged 55 years and over; and
- 192 were jointly Fellows of the Royal Australasian College of Physicians.

**Table 14.8: Intensive care workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	7	34.9	20	48.3	27
35-39	22	35.0	76	56.6	98
40-44	21	53.1	127	53.3	148
45-49	12	50.7	90	48.8	102
50-54	6	64.0	78	51.7	84
55-59	1	80.0	21	59.6	22
60-64	0	-	24	58.3	24
65-69	0	-	10	30.8	10
70-74	1	9.0	1	4.0	2
75+	0	-	0	-	0
<b>Total</b>	<b>70</b>	<b>45.9</b>	<b>447</b>	<b>52.4</b>	<b>517</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed demand for intensive care is estimated to grow at 5.43 percent per annum. This is based on a combination of utilisation data and Medicare data. Utilisation data was calculated using Australian and New Zealand Intensive Care Society (ANZSICS) data per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Utilisation data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked.



This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

## Workforce inflows

### New fellows

In the modelling, MTRP data is the basis for the number of new fellows. Over the period 2005 to 2010, the number of intensive care new fellows has generally increased. In particular, the number of new fellows almost doubled from 2007 (36) to 2008 (62) (Table 14.9).

Advice from CICM during consultation was that the number of new fellows reported in MTRP (and presented in Table 14.9) includes New Zealand fellows and SIMGs. For modelling purposes, the number of domestically-trained new fellows is required. Therefore, 2009 new fellows were adjusted to 42 and 2010 new fellows were adjusted to 46 to show domestically-trained new fellows only. This data formed the basis for new fellow inflows in the modelling.

**Table 14.9: Intensive care new fellows<sup>(a)</sup>, 2009 and 2010**

	2005	2006	2007	2008	2009	2010
New fellows	29	23	36	62	63	60

(a) Includes New Zealand new fellows and specialist international medical graduates

Source: Medical Training Review Panel Fifteenth Report

### Immigration

For permanent migrants, DIAC data showed seven permanent migrants entered the intensive care workforce in 2009. The MTRP Fifteenth Report showed five in 2010, with the average of these two years (six) held constant over the projection period.

DIAC data showed no temporary migrants were in the intensive care workforce in 2009 or 2010, and this was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 14.10), and data supplied by the CICM (Table 14.11), which provided information on the number of trainees by training year.

**Table 14.10: Intensive care advanced vocational training positions/trainees, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	156	60	58
<b>Advanced total</b>	<b>375</b>	<b>332</b>	<b>312</b>

Source: Medical Training Review Panel Reports Thirteen, Fourteen and Fifteen

Upon request, the CICM provided HWA with data on the number of trainees (Table 14.11). This data was used in combination with MTRP trainee numbers to calculate the proportions in each year of the training program.

**Table 14.11: Active number of advanced trainees by year of training, 2011**

Training year	2011
Advanced year 1	70
Advanced year 2	98
Advanced year 3	132
<b>Total</b>	<b>300</b>

Source: CICM data

Amongst the trainees shown in Table 14.11 there were three SIMGs in advanced year 2 and five in advanced year 3.

## 15 Obstetrics and gynaecology

### What are obstetricians and gynaecologists?

Obstetrics and gynaecology (O&G) are specialist branches of medicine. Although they are each concerned with separate aspects of the health care of women, they are usually merged into the one service. Obstetricians provide medical care before, during and after childbirth, while gynaecologists diagnose, treat and aid in the prevention of disorders of the female reproductive system.<sup>37</sup>

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) trains and accredits doctors throughout Australia and New Zealand in the specialties of O&G.

### How are they trained?<sup>38</sup>

The first four years of general O&G training is known as the integrated training program (ITP). Years five and six are known as elective training. Elective training may involve further general O&G training, further research or sub-specialty training – only one year of which can be credited towards further training in a sub-specialty program. There is no formal selection process for elective trainees – trainees progress from the ITP training into the elective years.

The training program provides for part-time and interrupted training. Training must be completed within eleven years.

### What is the assessment for international graduates?<sup>39</sup>

A SIMG whose training is assessed as substantially comparable will complete up to 12 months supervised work and participate in continuous professional development activities.

A SIMG whose training is assessed as partially comparable must complete further training and assessment, comprising:

- a minimum of 12 months and maximum of 24 months of prospectively approved, supervised training;
- in-hospital clinical assessments;
- the RANZCOG written examination (maximum four attempts);
- the RANZCOG oral examination (maximum four attempts); and
- specified basic and advanced surgical procedures.

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<sup>37</sup> <http://www.ranzcog.edu.au/the-ranzcog/about-specialty.html>

<sup>38</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

<sup>39</sup> <http://www.ranzcog.edu.au/education-a-training/simgs/134-specialist-img.html>

Applicants whose training is assessed as either substantially comparable or partially comparable to an Australian-trained specialist, who have satisfactorily completed the required periods of oversight or training, are eligible to apply for fellowship.

## What issues have stakeholders identified for the obstetrics and gynaecology workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Jurisdictions highlighted increasing sub-specialisation within the O&G specialty is an issue. Although it is a general training program, sub-specialisation is occurring in areas such as IVF, gynaecology and foetal medicine. This has implications for affordability, distribution and service provision in the public sector.

### What were the medical college views?

RANZCOG highlighted a number of considerations that may influence the interpretation of the supply and demand projections for O&G. Factors noted as affecting supply were:

- training capacity limitations, in particular limited availability to train in the private sector, the lack of continuity for funded training posts in regional areas, and the high number of SIMGs unable to supervise trainees due to their registration requirements; and
- increasing female workforce participation and the potential continued fall in average hours worked.

For demand, RANZCOG highlighted models of care would directly impact future demand for O&G services. Cited was the recent development of Medicare funded midwifery services. While there is currently minimal impact on O&G service provision due to the recency of this change, this may influence future demand for O&G services.

RANZCOG noted significant issues with the geographic distribution of the O&G workforce. Financial barriers were highlighted as a contributing factor to geographic maldistribution, including:

- the financial disparity between regional and urban obstetric practice;
- indemnity issues in relation to locum schemes; and
- the lack of rural incentive payments for specialist practitioners.

Investigations are underway on how distribution can be improved. The development of rural pathways have the potential to halt the decline in GP obstetricians, who provide an important part of rural obstetric service provision (recognising GP obstetricians are not included in the O&G modelling).

### What other considerations may influence O&G workforce projections?

A range of data and technical issues affecting the current workforce projection results were raised:

- the exclusion of obstetric services provided by GP obstetricians from the O&G modelling – any change in the proportion of deliveries and care provided by O&G specialists and GP obstetricians will affect the demand for O&G specialists;
- not separately modelling the IVF workforce, which is the largest growth area within the current expressed demand rate calculations (in both hospital and Medicare services);
- the likely inclusion of a significant component of on-call hours in reported O&G working hours may distort demand for the O&G workforce (due to the potential mismatch between the requirement for specialists to provide the service versus the requirement to cover after hours); and
- the lack of outpatient data may underestimate expressed demand for the specialist workforce.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The obstetrics and gynaecology existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce

dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

The only indicator assessed at the lowest rating for the O&G workforce was the replacement rate in 2012. This shows more new fellows are entering the profession than leaving. This is consistent with MTRP data which showed the number of new fellows (including SIMGs) increased from 28 in 2005 to 83 in 2010. However a significant number of new fellows are comprised of SIMGs (Table 15.1), which is consistent with the third indicator (dependence on SIMGs) rating moving to the highest level in 2025.

**Table 15.1: Obstetrics and gynaecology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 15.2 presents the workforce projection scenario results for obstetrics and gynaecology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

In the comparison scenario, there is a negative movement away from the existing workforce position by 2025, that is, growth in expressed demand exceeds growth in supply. This is from a projected reduction in new fellows (reflected in the replacement rate workforce dynamics indicator) combined with an increasing number of workforce exits over the projection period. The two scenarios with the greatest impact relative to the comparison scenario are:

- the service and workforce reform scenario, which results in a substantial positive movement relative to the comparison scenario; and

- the medium self-sufficiency scenario, which results in the largest negative movement relative to the comparison scenario.

Given the existing workforce position assessment and the comparison scenario projecting a negative movement, the service and workforce reform scenario is of particular interest. Consultation highlighted reforms to models of care, including the provision of services by midwives and GP obstetricians, would affect future O&G workforce requirements.

The medium self-sufficiency scenario results are consistent with the high number of O&G SIMGs – with approximately 40 percent new fellows in 2010 being overseas trained (Table 15.6).

**Table 15.2: Obstetrics and gynaecology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,987	1,992	-5	2,180	2,322	-142
Service and workforce reform	1,987	1,791	196	2,180	1,959	221
Registrar work value	2,060	1,992	68	2,252	2,322	-70
Medium self-sufficiency	1,931	1,992	-61	2,020	2,322	-302
Capped working hours	1,875	1,992	-117	2,057	2,322	-265

**Table 15.3: Obstetrics and gynaecology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,562</b>	<b>1,718</b>	<b>1,987</b>	<b>2,180</b>
New fellows	56	63	49	49
Permanent migration	35	35	35	35
Temporary migration	22	22	22	22
Exits (%)	2.07%	2.25%	2.44%	3.02%
<b>Expressed demand</b>	<b>1,562</b>	<b>1,702</b>	<b>1,992</b>	<b>2,322</b>
<b>Positive/negative movement</b>		<b>16</b>	<b>-5</b>	<b>-142</b>

**Table 15.4: Obstetrics and gynaecology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,562</b>	<b>1,718</b>	<b>1,987</b>	<b>2,180</b>
<i>New fellows</i>	56	63	49	49
<i>Permanent migration</i>	35	35	35	35
<i>Temporary migration</i>	22	22	22	22
<i>Exits (%)</i>	2.07%	2.25%	2.44%	3.02%
<b>Expressed demand</b>	<b>1,562</b>	<b>1,639</b>	<b>1,791</b>	<b>1,959</b>
<b>Positive/negative movement</b>		<b>79</b>	<b>196</b>	<b>221</b>

**Table 15.5: Obstetrics and gynaecology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,562</b>	<b>1,794</b>	<b>2,060</b>	<b>2,252</b>
<i>New fellows</i>	56	63	49	49
<i>Permanent migration</i>	35	35	35	35
<i>Temporary migration</i>	22	22	22	22
<i>Exits (%)</i>	2.07%	2.25%	2.44%	3.02%
<b>Expressed demand</b>	<b>1,562</b>	<b>1,702</b>	<b>1,992</b>	<b>2,322</b>
<b>Positive/negative movement</b>		<b>92</b>	<b>68</b>	<b>-70</b>

**Table 15.6: Obstetrics and gynaecology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,562</b>	<b>1,709</b>	<b>1,931</b>	<b>2,020</b>
<i>New fellows</i>	56	63	49	49
<i>Permanent migration</i>	35	32	25	18
<i>Temporary migration</i>	22	20	16	11
<i>Exits (%)</i>	2.07%	2.26%	2.51%	3.26%
<b>Expressed demand</b>	<b>1,562</b>	<b>1,702</b>	<b>1,992</b>	<b>2,322</b>
<b>Positive/negative movement</b>		<b>7</b>	<b>-61</b>	<b>-302</b>



**Table 15.7: Obstetrics and gynaecology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,562</b>	<b>1,628</b>	<b>1,875</b>	<b>2,057</b>
<i>New fellows</i>	56	63	49	49
<i>Permanent migration</i>	35	35	35	35
<i>Temporary migration</i>	22	22	22	22
<i>Exits (%)</i>	2.07%	2.25%	2.44%	3.02%
<b>Expressed demand</b>	<b>1,562</b>	<b>1,702</b>	<b>1,992</b>	<b>2,322</b>
<b>Positive/negative movement</b>		<b>-74</b>	<b>-117</b>	<b>-265</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the O&G workforce supply and expressed demand estimates.

### Workforce stock

The base O&G workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified O&G as their main field of specialty. In 2009, there were 1,562 active obstetricians and gynaecologists in Australia. Within this:

- obstetricians and gynaecologists had an average age of 51 years;
- over one-third (35 percent) were female;
- they worked an average of 46 hours per week; and
- approximately 37 percent were aged 55 years and over.

**Table 15.8: Obstetrics and gynaecology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	15	48.7	6	52.2	21
35-39	112	38.5	73	51.2	185
40-44	166	40.4	153	54.4	319
45-49	105	45.2	142	51.5	247
50-54	81	49.6	133	54.4	214
55-59	44	44.4	157	55.5	201
60-64	13	51.2	157	43.9	170
65-69	5	35.8	116	41.0	121
70-74	2	37.7	54	29.1	56
75+	3	11.9	25	19.4	28
<b>Total</b>	<b>546</b>	<b>42.9</b>	<b>1,016</b>	<b>48.5</b>	<b>1,562</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

The expressed workforce demand for O&G is estimated to grow at 2.6 percent per annum. This is based on a combination of utilisation data and Medicare data. Utilisation data were identified on the basis of Service Related Groups (SRGs), which were mapped to relevant Diagnosis Related Groups (DRGs) per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age).

Utilisation data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections (for females only) from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

There are a number of issues limiting the expressed demand rate calculations for the O&G workforce, including:

- the inability to separately identify services provided by GP obstetricians, therefore these services are not contributing to the O&G expressed demand calculation; and
- the lack of outpatient data, which may underestimate expressed demand for the obstetric workforce given the nature of the services they provide.

HWA recognises these limitations and will continue to investigate alternative data sources to measure expressed demand for O&G services.

## Workforce inflows

### New fellows

MTRP data was used to determine the number of O&G new fellows (Table 15.9). The number of O&G new fellows generally increased over the period 2005 to 2010, from a low of 28 in 2005 to a high of 83 in 2010. The number of new fellows in 2009 (56) formed the starting point for new fellow inflows in the modelling.

**Table 15.9: Obstetrics and gynaecology new fellows, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
Australian trained	..	..	..	..	..	48
Specialist international medical graduates	..	..	..	..	..	35
<b>Total</b>	<b>28</b>	<b>49</b>	<b>46</b>	<b>66</b>	<b>56</b>	<b>83</b>

.. data not available

Source: Medical Training Review Panel Fifteenth Report

### Immigration

Of the 83 O&G new fellows in 2010, 35 were SIMGs (Table 15.9). This was used to represent permanent migration and was held constant across the projection period.

DIAC data showed 20 temporary migrants in the O&G workforce in 2009. This was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of vocational trainees in the program (Table 15.10), and data supplied by RANZCOG (Table 15.11), which provided information on the number of trainees by training year.

While advanced trainees have been used for most other specialties, for O&G, the trainee numbers from years one to six are used. This is because for HW 2025, the term 'advanced training' indicates the first year of a specialty training program that trainees are 'selected' onto. In O&G, this selection occurs at the beginning (year one) of the training program.

**Table 15.10: Obstetrics and gynaecology, vocational training positions/trainees by year of training for 2009 to 2011**

Training year	2009	2010	2011
Basic trainee year 1 (Integrated training program year 1)	81	77	87
<b>Basic trainee (Integrated training program) total</b>	<b>301</b>	<b>295</b>	<b>330</b>
Advanced year 1 (Elective training year 5)	65	59	58
<b>Advanced trainee total (Elective training years 5 and 6)</b>	<b>131</b>	<b>123</b>	<b>143</b>

Source: Medical Training Review Panel Fifteenth Report

**Table 15.11: Obstetrics and gynaecology active number of trainees by year of training, 2010 and 2011**

Training year	2010		2011	
	Part-time	Full-time	Part-time	Full-time
Integrated training program year 1	2	96	1	83
Integrated training program year 2	6	95	8	67
Integrated training program year 3	11	76	4	79
Integrated training program year 4	22	56	14	64
Elective training year 5	10	59	11	48
Elective training year 6	8	62	4	55
<b>Total</b>	<b>59</b>	<b>444</b>	<b>42</b>	<b>396</b>

Source: RANZCOG data

## 16 Ophthalmology

### What is an ophthalmologist?

An ophthalmologist is a medically trained doctor who commonly acts as both physician and surgeon. They examine, diagnose and treat diseases and injuries in and around the eye.<sup>40</sup>

### How are they trained?<sup>41</sup>

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) is responsible for the training and examination of ophthalmologists in Australia and New Zealand. The Vocational Training Program (VTP) requires a minimum of five years to complete. This is comprised of two years of basic training, two years of advanced training (all in accredited training posts), and a final year of special interest training (often spent overseas).

For selection the VTP, applicants must meet RANZCO selection criteria. Throughout training, trainees undergo regular work-based assessment and formal exams, and must satisfy all assessment criteria to progress to the next stage. Applicants are ranked, matched and appointed on merit to accredited ophthalmology training posts.

Successful completion of the VTP program enables a trainee to be admitted to fellowship of the RANZCO.

### What is the assessment for international graduates?

The RANZCO SIMG committee assesses an overseas-trained ophthalmologist's training for comparability with an Australian-trained ophthalmologist. The assessment process initially consists of a review of the applicant's documentation. The outcome of this review may result in any of the following three categories:

1. Not comparable – with no further assessment;
2. Substantially comparable – the applicant is invited to interview to confirm the determination; or
3. Partially comparable – the applicant is invited to interview to confirm or change the assessment.

Those whose training is confirmed as substantially comparable at interview are eligible to apply for fellowship of RANZCO. Those still considered partially comparable after interview are required to complete further assessment. This generally entails sitting the RANZCO advanced clinical exam, and may involve other assessments such as supervised practice. Upon completion of these assessments, the SIMG may be determined as substantially comparable (and eligible for fellowship) or still partially comparable, with further training required.

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<sup>40</sup> <http://www.ranzco.edu/index.php/about/what-is-an-ophthalmologist>

<sup>41</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

## What issues have stakeholders identified for the ophthalmology workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Some jurisdictions advised they had no concerns as this specialty is primarily delivered in the private sector. Some of the larger jurisdictions with public eye and ear facilities highlighted concerns around existing models of care, but they also acknowledged the work they were doing with the college to change the models of care.

It was noted the college keeps training numbers low.

### What were the medical college views?

RANZCO highlighted a number of considerations that may influence future workforce supply or demand. Factors noted as potentially influencing future supply were:

- reduced working hours from increasing female participation in the ophthalmology training program and new fellows (both male and female) working less hours;
- limited training capacity within the private sector, particularly significant given most ophthalmology services are provided in the private sector; and
- increased permanent migrants due to adverse economic conditions in Europe.

In terms of demand for ophthalmologists, the following factors were highlighted:

- changing service delivery models, for example, changing patterns of work between ophthalmologists and optometrists via integrated teams (refer Chapter 4); and
- advancements in technology, for example, the treatment of macular degeneration often previously involved monthly injections, where the new treatment is required every second month. Given the high prevalence of this condition, this significantly affects work required per patient. There are a number of other technological changes to ophthalmological equipment in the pipeline, however the long-term efficiencies and clinical benefits from these remain unknown at this stage.

RANZCO also noted a critical workforce issue is the small number (20 full-time equivalents) of paediatric ophthalmologists<sup>42</sup> in Australia. This workforce is nearing retirement, which will affect training supervision capacity. The funding of supervised training places was highlighted as crucial.

In terms of distribution, RANZCO acknowledged the maldistribution of ophthalmologists, with most practising in metropolitan and urban areas, with some visiting rural and remote areas. RANZCO's approach to addressing maldistribution is the use of integrated eye care teams, supplemented by other practices such as telehealth, locum support, visiting specialists and education and training support for specialists and GPs already servicing rural and remote areas.

The introduction of telehealth measures, the continuation of funding through the Medical Specialist Outreach Program and the support of the states and territories are critical in addressing the challenges of improving access in rural areas.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The ophthalmology existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

<sup>42</sup> An ophthalmologist whose practice is at least 50 percent paediatric.

### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For ophthalmology, both the average age and replacement rate indicators changed rating from 2012 to 2025. The replacement rate moved two increments, from the lowest rating in 2012 (where there were more new fellows to workforce exits), to a medium rating in 2025 (where new fellows to workforce exits is approximately on par). This was driven by an increasing exit rate, a result of an ageing workforce (also reflected in the increased rating for average age).

**Table 16.1: Ophthalmology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 16.2 presents the workforce projection scenario results for ophthalmology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

Given the existing workforce position assessment, the comparison scenario results for ophthalmology suggest an increasing workforce gap if recent trends in supply and demand were to continue. The service and workforce reform scenario results in the largest positive movement relative to the comparison scenario, as well as the largest movement of all scenarios. Stakeholders highlighted innovations through technology, and reform through changes in service delivery, as influencing future workforce requirements. Examples of collaborative care between optometrists and ophthalmologists already being implemented are contained in Chapter 4.

The potential for reduced average working hours as a result of increasing female participation in the training program and a trend for new fellows (both male and female) to work fewer hours was also highlighted in consultation. This would reduce workforce supply, resulting (in the absence of any other changes) in a greater negative movement than projected.



**Table 16.2: Ophthalmology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	960	1,033	<b>-73</b>	1,034	1,196	<b>-162</b>
Service and workforce reform	960	933	<b>27</b>	1,034	1,006	<b>28</b>
Registrar work value	987	1,033	<b>-46</b>	1,060	1,196	<b>-136</b>
Medium self-sufficiency	945	1,033	<b>-88</b>	992	1,196	<b>-204</b>
Capped working hours	943	1,033	<b>-90</b>	1,016	1,196	<b>-180</b>

**Table 16.3: Ophthalmology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>843</b>	<b>870</b>	<b>960</b>	<b>1,034</b>
New fellows	11	20	21	21
Permanent migration	7	9	9	9
Temporary migration	8	8	8	8
Exits (%)	1.83%	1.53%	2.02%	2.16%
<b>Expressed demand</b>	<b>843</b>	<b>905</b>	<b>1,033</b>	<b>1,196</b>
<b>Positive/negative movement</b>		<b>-35</b>	<b>-73</b>	<b>-162</b>

**Table 16.4: Ophthalmology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>843</b>	<b>870</b>	<b>960</b>	<b>1,034</b>
New fellows	11	20	21	21
Permanent migration	7	9	9	9
Temporary migration	8	8	8	8
Exits (%)	1.83%	1.53%	2.02%	2.16%
<b>Expressed demand</b>	<b>843</b>	<b>873</b>	<b>933</b>	<b>1,006</b>
<b>Positive/negative movement</b>		<b>-3</b>	<b>27</b>	<b>28</b>

**Table 16.5: Ophthalmology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>843</b>	<b>897</b>	<b>987</b>	<b>1,060</b>
New fellows	11	20	21	21
Permanent migration	7	9	9	9
Temporary migration	8	8	8	8
Exits (%)	1.83%	1.53%	2.02%	2.16%
<b>Expressed demand</b>	<b>843</b>	<b>905</b>	<b>1,033</b>	<b>1,196</b>
<b>Positive/negative movement</b>		<b>-8</b>	<b>-46</b>	<b>-136</b>

**Table 16.6: Ophthalmology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>843</b>	<b>868</b>	<b>945</b>	<b>992</b>
New fellows	11	20	21	21
Permanent migration	7	8	6	5
Temporary migration	8	7	6	4
Exits (%)	1.83%	1.53%	2.05%	2.25%
<b>Expressed demand</b>	<b>843</b>	<b>905</b>	<b>1,033</b>	<b>1,196</b>
<b>Positive/negative movement</b>		<b>-37</b>	<b>-88</b>	<b>-204</b>

**Table 16.7: Ophthalmology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>843</b>	<b>854</b>	<b>943</b>	<b>1,016</b>
New fellows	11	20	21	21
Permanent migration	7	9	9	9
Temporary migration	8	8	8	8
Exits (%)	1.83%	1.53%	2.02%	2.16%
<b>Expressed demand</b>	<b>843</b>	<b>905</b>	<b>1,033</b>	<b>1,196</b>
<b>Positive/negative movement</b>		<b>-51</b>	<b>-90</b>	<b>-180</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the ophthalmology workforce supply and demand estimates.

### Workforce stock

The base ophthalmology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified ophthalmology as their main field of specialty. In 2009, there were 843 active ophthalmologists in Australia. Within this:

- ophthalmologists had an average age of 53 years;
- they worked an average of 39 hours per week; and
- approximately 38 percent were aged 55 years and over.

**Table 16.8: Five-year groupings of workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	3	50.7	8	53.8	11
35-39	34	30.6	51	39.9	85
40-44	33	35.1	106	47.4	139
45-49	28	38.6	118	47.1	146
50-54	22	43.0	118	48.0	140
55-59	15	45.7	65	42.1	80
60-64	8	32.1	77	41.6	85
65-69	5	25.4	74	39.1	79
70-74	2	30.7	40	25.0	42
75+	4	24.3	32	17.2	36
<b>Total</b>	<b>154</b>	<b>36.4</b>	<b>689</b>	<b>42.2</b>	<b>843</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for ophthalmology is estimated to grow at two percent per annum. This was based on a combination of hospital separations and Medicare data. Hospital separations were identified on the basis of Service Related Groups (SRGs) which were mapped to relevant Diagnosis Related Groups (DRGs) per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Hospital separations data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

It should be noted the expressed demand rate for ophthalmology is likely to be affected by optometrists' increasing prescribing capabilities for common eye conditions.

## Workforce inflows

### New fellows

In the modelling, MTRP data is used for the number of new fellows. Over the period 2005 to 2010 the number of new fellows varied greatly – the highest number occurring in 2007 (30) and the lowest in 2009 (11).

**Table 16.9: Ophthalmology new fellows, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
Australian trained	..	..	..	..	..	19
Specialist international medical graduates	..	..	..	..	..	7
<b>Total</b>	<b>26</b>	<b>16</b>	<b>30</b>	<b>14</b>	<b>11</b>	<b>26</b>

.. data not available

Source: Medical Training Review Panel Fifteenth Report

## Immigration

RANZCO provided data on the number of ophthalmologists declared substantially comparable for 2009 (seven) and 2010 (nine), where nine was held constant over the projection period.

DIAC data for temporary migration was used for 2009 (eight) and held constant over the projection period.

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 16.10), and data supplied by RANZCO (Table 16.11), which provided information on the number of trainees by training year.

**Table 16.10: Ophthalmology advanced vocational training positions/trainees by year of training, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	24	27	28
<b>Total advanced</b>	<b>77</b>	<b>49<sup>(a)</sup></b>	<b>86<sup>(b)</sup></b>

(a) Excludes 5th year trainees.

(b) Includes six trainees who are completing their final year of training overseas.

Source: Medical Training Review Panel Thirteenth, Fourteenth and Fifteenth Reports

**Table 16.11: Ophthalmology active number of advanced trainees by year of training, 2009 to 2011**

Training Year	2009	2010	2011
Advanced year 1	23	26	32
Advanced year 2	25	21	26
Advanced year 3	26	24	21
<b>Total</b>	<b>74</b>	<b>71</b>	<b>79</b>

Source: Royal Australian and New Zealand College of Ophthalmologists

## 17 Pathology

### What is a pathologist?

Pathology is concerned with the study of the nature and causes of diseases. It underpins every aspect of medicine, from diagnostic testing and monitoring of chronic diseases, to genetic research and blood transfusion technologies. Pathology is integral to the diagnosis of every cancer.

Pathologists are specialist medical practitioners who study the cause of disease and the ways in which diseases affect our bodies, by examining changes in tissues, in blood and other body fluids.

### How are they trained?<sup>43</sup>

The Royal College of Pathologists of Australasia (RCPA) is responsible for the training and professional development of pathologists. Pathology is an advanced training program of five years duration. There are nine major areas of pathology specialty:

- Anatomical pathology
- Chemical pathology
- Clinical pathology
- Forensic pathology
- General pathology
- Genetics pathology
- Haematology
- Immunopathology
- Microbiology

Trainees are able to choose a variety of options to achieve sub-specialisation. Pathologists can also specialise in more than one area, and in areas more specialised than the nine disciplines above. For example, specialist training in forensic pathology and neuropathology can be completed as a post-fellowship diploma following anatomical pathology training and years of work experience.

Some programs are joint with the Royal Australasian College of Physicians, including:

- Haematology;
- Immunopathology;
- Endocrinology/chemical pathology; and
- Microbiology/infectious diseases.

Part-time training is supported, as is interrupted training. There is no time limit to achieving fellowship.

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<sup>43</sup> <http://www.rcpa.edu.au/pathology.htm> and Medical Training Review Panel Fifteenth Report

## What is the assessment for international graduates?<sup>44</sup>

The RCPA's Board of Censors (BOC) determine any additional training time or examinations a SIMG would need to undertake to attain fellowship. Possible outcomes and requirements for those SIMGs whose training is found partially or substantially comparable to Australian training are:

- Partially comparable – assessments are determined by the BOC to confirm comparability of the SIMG with an Australian-trained specialist. Upon successful completion of the assessments, the SIMG is eligible for admission to fellowship of the college.
- Partially comparable but further acclimatisation/experience/assessment required – the SIMG is eligible to enter a scheme or process of up to two years to 'top up' their knowledge, leading to assessment for fellowship.
- Substantially comparable – the SIMG is granted approval to work as a specialist pathologist and can apply for fellowship after a suitable period of peer review.

## What issues have stakeholders identified for the pathology workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

The increasing sub-specialisation within pathology was highlighted as an issue for service provision and affordability in the public sector.

### What were the medical college views?

The RCPA advised the following characteristics may affect future supply through reduced working hours.

- An increasing proportion (currently over 55 percent) of female trainees.
- Both trainees and new fellows have suggested they do not intend to work the existing long hours of current pathologists.

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<sup>44</sup><http://www.rcpa.edu.au//static/File/Asset%20library/public%20documents/Policy%20Manual/Policies/Assessment%20of%20OTD%20and%20OTS%20in%20Australia%20and%20NZ.PDF>

- The lower productivity of new fellows – they have lesser case loads than more experienced consultants.

In relation to the training pathway, the college advised:

- the specialty training program has significantly expanded pathology training places;
- by supporting training places in the private sector, the specialty training program has exposed trainees to the private sector model of service delivery;
- trainees in their first three years of training (particularly in anatomical pathology) require a high degree of supervision and do not contribute a lot to the workload of their department; and
- there are a large number of joint trainees who do not practise in pathology following fellowship. There is an opportunity cost in not providing those places to trainees who will practise in pathology.

In terms of demand, the RCPA highlighted the following factors:

- there is increasing demand for pathologists in regional areas due to reported difficulties in public and private sector recruitment;
- new innovations such as pharmacogenomics (examining variations in genes that dictate drug response) and proteomics (the large scale study of proteins) will change service requirements in pathology in the future; and
- the clinical pathologist's role is expanding into wards, ongoing clinical audit, adverse occurrence screening and critical incident monitoring.

For anatomical pathology specifically, the following trends were highlighted as considerations for future workforce requirements:

- increasing complexity and volume of work required per specimen;
- structured reporting protocols may increase the time per specimen;
- increasing involvement of pathologists in reviewing complex cases as part of a multidisciplinary team or through clinicopathological conferences;
- increasing incidence of cancer combined with the increased complexity per case and genetic technology, may increase expressed demand for anatomical pathology beyond that expected through an ageing population alone; and
- greater requirements for increased training places for anatomical pathologists and genetic pathologists.

The college also advised a long-term shortage (estimated to currently be around 70 vacancies) of pathologists is not reflected in the workforce projections.



### What other considerations may influence pathology workforce projections?

The following data issues affecting current workforce projections were highlighted.

- Public health services not billed under Medicare are currently excluded from expressed demand calculations.
- Major differences exist between private and public sector workforce practices, with higher proportions of time spent outside the laboratory in the public sector.

The demand for pathology services is also expected to increase beyond historical rates because of the increasing knowledge of genetics and its role in disease (leading to more tests). This is considered to be one of the key drivers in the upcoming work of anatomical and genetic pathologists. Genetic components exist on all pathology training programs, in addition to the discipline of genetic pathology (which is relatively new, with only 18 genetic pathologists in Australia). Increased access to training places for these groups were considered important.

### Pathology sub-specialties modelled

The pathology specialties that had modelling conducted are:

- Anatomical pathology – which accounts for the majority of the pathology workforce and trainees in pathology; and
- Other (clinical) pathology, which is comprised of
  - Chemical pathology
  - Microbiology
  - Haematology
  - Immunology
  - Oral pathology
  - Genetics

The other (clinical) pathology group was created for workforce projection purposes only, due to the variability of training pathways and small workforce numbers at the sub-specialty level.

Forensic pathology was not included in the workforce projections because of inadequate information on expressed demand. Information is presented in this chapter on the existing forensic pathology workforce, including new fellows and trainees.

### Pathology (total)

While supply and demand modelling was not conducted for pathology in total, this section provides information on the pathology workforce, new fellows and trainees.

## Workforce stock

The following table outlines the characteristics of the total pathology workforce, where a survey respondent identified one the pathology sub-specialties as their main field of specialty in the AIHW 2009 medical labour force survey. In 2009, there were 1,172 active pathologists in Australia. Within this:

- pathologists (total) had an average age of 48 years;
- they worked an average of 41 hours per week; and
- approximately one-third were aged 55 years or over.

**Table 17.1: Pathology (total) workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	39	43.9	41	38.9	80
35-39	45	39.8	77	42.7	122
40-44	64	37.9	54	42.3	118
45-49	112	38.1	142	45.9	254
50-54	69	36.7	140	44.7	209
55-59	32	44.7	82	44.2	114
60-64	29	37.9	98	46.2	127
65-69	13	40.4	55	40.8	68
70-74	18	29.5	27	32.7	45
75+	7	18.0	28	32.0	35
<b>Total</b>	<b>428</b>	<b>38.4</b>	<b>744</b>	<b>43.2</b>	<b>1,172</b>

Source: 2009 AIHW Medical Labour Force Survey

RCPA raised concerns about discrepancies between AIHW data and their workforce data. Table 17.2 shows the differences between the two data sources. A potential reason for the difference is that the AIHW medical labour force survey is voluntary and responses are based on an individual's interpretation of the question. As more detailed data becomes available from the AHPRA national registration process, many data limitations will be overcome.

**Table 17.2: Differences between RCPA and AIHW pathology workforce data, 2009**

Sub-specialty	RCPA Australian Fellows <sup>(a)</sup>	Pathology <sup>(b)</sup>	Difference
Anatomical pathology	641	728	-87
Chemical pathology	70	102	-32
Forensic pathology	31	44	-13
General pathology	100	53	47
Genetics	10	0	10
Haematology	356	142	214
Immunology	81	15	66
Microbiology	171	88	83
<b>Total</b>	<b>1,460</b>	<b>1,172</b>	<b>288</b>

(a) 2009 RCPA data

(b) 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

The number of pathology new fellows varied over the period 2005 to 2010, reaching a high of 77 in 2007, with slight decreases since that year.

**Table 17.3: Pathology new fellow, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
Australian trained	..	..	..	..	..	43
Specialist international medical graduates	..	..	..	..	..	20
<b>Total</b>	<b>48</b>	<b>46</b>	<b>77</b>	<b>68</b>	<b>64</b>	<b>63</b>

.. data not available

Source: Medical Training Review Panel Fifteenth Report

Data on joint pathology and RACP new fellows is only available for 2010, where there were 31 joint new fellows.

**Table 17.4: New fellows, Pathology and RACP jointly, 2010**

	2010
Australian trained	31
Specialist international medical graduates	0
<b>Total</b>	<b>31</b>

Source: Medical Training Review Panel Fifteenth Report

### Trainees

Table 17.5 shows the number of advanced vocational pathology trainees.

**Table 17.5: Pathology – advanced trainees, 2009 to 2011**

	Pathology			Pathology and RACP (jointly)		
	2009	2010	2011	2009	2010	2011
First year advanced trainees	38	50	40	28	34	41
<b>Total advanced trainees</b>	<b>224</b>	<b>301</b>	<b>314</b>	<b>137</b>	<b>131</b>	<b>173</b>

Source: Medical Training Review Panel Fifteenth Report

Upon request, the RCPA provided HWA with trainee data from 2009 to 2011, with 2011 data split by year of training.

**Table 17.6: RCPA data: advanced trainees by year of training, 2011**

Year of training	2009	2010	2011
Year 1	..	..	135
Year 2	..	..	65
Year 3	..	..	88
Year 4	..	..	92
Year 5 or longer	..	..	95
<b>Total</b>	<b>363</b>	<b>399</b>	<b>475</b>

.. data not available Source: RCPA

## Anatomical pathology

### What is an anatomical pathologist?

Anatomical pathology is the branch of pathology that deals with the tissue diagnosis of disease. Anatomical pathologists need a broad-based knowledge and understanding of the pathological and clinical aspects of many diseases.<sup>45</sup>

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The anatomical pathology existing workforce position was assessed as **orange**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

Of the three indicators assessed, only the replacement rate had the lowest rating. This means there are currently more new fellows entering the profession than leaving. This is consistent with MTRP data (which showed anatomical new fellows almost doubling from 25 in 2005 to 43 in 2010); and

<sup>45</sup> <http://www.rcpa.edu.au/Pathology/Disciplines/AnatomicalPathology.htm>

consultation, which noted the specialty training program has significantly expanded pathology training places.

**Table 17.7: Anatomical pathology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 17.8 presents the workforce projection scenario results for anatomical pathology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

It should be noted that for the registrar work value scenario, the work value assigned to anatomical pathologist registrars in their last two years of training was 15 percent (compared with 50 percent for all other specialties except other clinical pathology). This was based on advice from the RCPA.

For anatomical pathology, there is a substantial negative movement from the existing workforce position by 2025, that is, growth in expressed demand exceeds growth in supply. Stakeholders also highlighted demand for services is expected to increase beyond historical levels for reasons including pathologist's increasing role in multi-disciplinary teams and increased complexity of work. The service and workforce reform scenario has the greatest impact on reducing an existing gap, and minimising a potential future gap between supply and demand.

The medium self-sufficiency scenario results in the largest negative movement relative to the comparison scenario, however because DIAC data on total pathologist immigration was apportioned across sub-specialties, this should be interpreted with caution.

**Table 17.8: Anatomical pathology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	992	1,073	<b>-81</b>	1,189	1,371	<b>-182</b>
Service and workforce reform	992	978	<b>14</b>	1,189	1,180	<b>9</b>
Registrar work value	1,009	1,073	<b>-64</b>	1,205	1,371	<b>-166</b>
Medium self-sufficiency	973	1,073	<b>-100</b>	1,139	1,371	<b>-232</b>
Capped working hours	984	1,073	<b>-89</b>	1,181	1,371	<b>-190</b>

**Table 17.9: Anatomical pathology, comparison scenario parameters**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>728</b>	<b>816</b>	<b>992</b>	<b>1,189</b>
New fellows	24	18	34	34
Permanent migration	6	9	9	9
Temporary migration	23	23	23	23
Exits (%)	0.70%	1.10%	1.16%	1.15%
<b>Expressed demand</b>	<b>728</b>	<b>846</b>	<b>1,073</b>	<b>1,371</b>
<b>Positive/negative movement</b>		<b>-30</b>	<b>-81</b>	<b>-182</b>

**Table 17.10: Anatomical pathology, service and workforce scenario parameters**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>728</b>	<b>816</b>	<b>992</b>	<b>1,189</b>
New fellows	24	18	34	34
Permanent migration	6	9	9	9
Temporary migration	23	23	23	23
Exits (%)	0.70%	1.10%	1.16%	1.15%
<b>Expressed demand</b>	<b>728</b>	<b>816</b>	<b>978</b>	<b>1,180</b>
<b>Positive/negative movement</b>		<b>0</b>	<b>14</b>	<b>9</b>

**Table 17.11: Anatomical pathology, registrar work value scenario parameters**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>728</b>	<b>833</b>	<b>1,009</b>	<b>1,205</b>
New fellows	24	18	34	34
Permanent migration	6	9	9	9
Temporary migration	23	23	23	23
Exits (%)	0.70%	1.10%	1.16%	1.15%
<b>Expressed demand</b>	<b>728</b>	<b>846</b>	<b>1,073</b>	<b>1,371</b>
<b>Positive/negative movement</b>		<b>-13</b>	<b>-64</b>	<b>-166</b>

**Table 17.12: Anatomical pathology, medium self-sufficiency scenario parameters**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>728</b>	<b>812</b>	<b>973</b>	<b>1,139</b>
New fellows	24	18	34	34
Permanent migration	6	8	6	5
Temporary migration	23	21	17	12
Exits (%)	0.70%	1.10%	1.18%	1.20%
<b>Expressed demand</b>	<b>728</b>	<b>846</b>	<b>1,073</b>	<b>1,371</b>
<b>Positive/negative movement</b>		<b>-34</b>	<b>-100</b>	<b>-232</b>

**Table 17.13: Anatomical pathology, capped working hours scenario parameters**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>728</b>	<b>811</b>	<b>984</b>	<b>1,181</b>
New fellows	24	18	34	34
Permanent migration	6	9	9	9
Temporary migration	23	23	23	23
Exits (%)	0.70%	1.10%	1.16%	1.15%
<b>Expressed demand</b>	<b>728</b>	<b>846</b>	<b>1,073</b>	<b>1,371</b>
<b>Positive/negative movement</b>		<b>-35</b>	<b>-89</b>	<b>-190</b>



## What is included in the projections?

Information in this section broadly outlines the data used to generate the anatomical pathology workforce supply and demand estimates.

### Workforce stock

The base anatomical pathologist workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified anatomical pathology as their main field of specialty. In 2009, there were 728 active anatomical pathologists in Australia. Within this:

- anatomical pathologists had an average age of 44 years;
- they worked an average of 41 hours per week; and
- almost 30 percent were aged 55 years or over.

**Table 17.14: Anatomical pathology (incl. cytopathology) workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	33	43.8	33	39.5	66
35-39	30	39.1	62	42.0	92
40-44	41	36.6	30	46.3	71
45-49	91	37.8	71	46.5	162
50-54	44	35.8	78	44.6	122
55-59	17	47.6	38	40.5	55
60-64	13	34.6	58	45.0	71
65-69	12	40.4	32	38.9	44
70-74	5	19.0	18	29.4	23
75+	1	42.1	21	32.9	22
<b>Total</b>	<b>287</b>	<b>38.4</b>	<b>441</b>	<b>42.4</b>	<b>728</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Medicare services under category 6 are the only data source currently available to calculate an expressed demand rate. The number of these services for 2005 to 2009 per 100,000 population was applied to the group items for pathology. These items were grouped by specimen type and number of procedures for workforce projection purposes.

For anatomical pathology, the P5 – tissue pathology items (with a level 3 or greater complexity) were grouped for the expressed workforce demand calculation. While items with a level 3 or lower complexity have a lower growth rate than those with a level 3 or greater complexity, there are a greater number of level 3 or lower services (accounting for 60 percent of all the services being provided within the P5 grouped item for 2005 to 2009).

Using the above approach, expressed workforce demand for anatomical pathology is estimated to grow at 5.0 percent per annum.

There are several points to note in relation to the anatomical pathology expressed demand calculation:

- Cytopathology Medicare items were not included in the demand calculation. This was based on the assumption that cytopathology forms only a small proportion of work conducted by anatomical pathologists, with most conducted by scientists and technicians.
- Medicare items do not cover all output of pathologists in public hospitals, which may underestimate expressed demand.

In relation to the incomplete coverage of public hospital data, HWA will continue to work with the RCPA to ascertain the size of this impact.

## Workforce inflows

### New fellows

MTRP data was used to determine the number of anatomical pathology new fellows. Table 17.15 shows new fellows over the period 2005 to 2010.

**Table 17.15: Number of anatomical pathology new fellows(a), 2005 to 2010**

2005	2006	2007	2008	2009	2010
25	20	50	27	30	43

(a) Includes SIMGs

Source: Medical Training Review Panel Reports 14 and 15

The MTRP Fifteenth Report included a split between Australian-trained and overseas-trained total pathology new fellows for 2010. This enabled a proportion of Australian to overseas-trained new fellows to be calculated for total pathology. For workforce projection purposes, this proportion was applied to anatomical pathology new fellows data, which equated to 24 domestic new fellows in 2009. This formed the basis for anatomical pathology domestic new fellows in the projections.

## Immigration

Both permanent and temporary migration data sources only provided information on immigration at the total pathology level, not at the pathology sub-specialty level. As a result, immigration data was apportioned across pathology sub-specialties in accordance with their share of the pathology workforce in 2009.

For permanent migration, the MTRP Fifteenth Report showed there were 20 SIMGs in pathology for 2010. Of these, nine were apportioned to anatomical pathology.

DIAC data was used for temporary migration, with 23 temporary migrants apportioned to the anatomical pathology workforce (and held constant across the projection period).

## Trainees

MTRP data and data provided by the RCPA on advanced trainees was used in the workforce projections. MTRP data provided information on the number of advanced pathology trainees by sub-specialty. The RCPA provided a detailed breakdown of trainees by year of training and sub-specialty (for 2011).

MTRP data on the number of anatomical pathology advanced vocational trainees is shown in Table 17.16.

**Table 17.16: Anatomical pathology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	177	221	242

Source: Medical Training Review Panel Thirteenth, Fourteenth and Fifteenth Reports

## Other (clinical) pathology

The group other (clinical) pathology includes the following sub-specialties:

- General pathology
- Microbiology
- Chemical pathology
- Haematology
- Immunology

As noted earlier in this chapter, the other (clinical) pathology grouping was created because of the variability of training pathways and small workforce numbers at the sub-specialty level.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The other (clinical) pathology existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

There is little change in the workforce dynamics indicators between 2012 and 2025, indicating workforce characteristics remain similar across the projection period. While the replacement rate assessment moved up one level (because workforce exits increase at a greater rate than new fellows), the assessment still indicates more new fellows are entering the workforce than pathologists leaving.

**Table 17.17: Other (clinical) pathology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 17.18 presents the workforce projection scenario results for other (clinical) pathology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

It should be noted that for the registrar work value scenario, the work value assigned to registrars in the other (clinical) pathology group in their last two years of training was 30 percent (compared with 50 percent for all other specialties except anatomical pathology). This was based on advice from RCPA.

The comparison scenario results in minimal negative movement from the existing workforce position. The service and workforce reform scenario, which incorporates a combination of reducing demand and increasing workforce productivity, has the greatest impact on reducing an existing gap between supply and demand. The capped working hours and medium self-sufficiency scenarios result in negative movements relative to the comparison scenario (as both these scenarios reduce workforce supply).

**Table 17.18: Other (clinical) pathology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	643	642	1	806	840	-34
Service and workforce reform	643	590	53	806	733	73
Registrar work value	676	642	34	838	840	-2
Medium self-sufficiency	625	642	-17	756	840	-84
Capped working hours	629	642	-13	790	840	-50

**Table 17.19: Other (clinical) pathology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>400</b>	<b>483</b>	<b>643</b>	<b>806</b>
New fellows	24	20	36	36
Permanent migration	9	10	10	10
Temporary migration	15	15	15	15
Exits (%)	2.72%	2.82%	3.93%	3.64%
<b>Expressed demand</b>	<b>400</b>	<b>475</b>	<b>642</b>	<b>840</b>
<b>Positive/negative movement</b>		<b>8</b>	<b>1</b>	<b>-34</b>

**Table 17.20: Other (clinical) pathology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>400</b>	<b>483</b>	<b>643</b>	<b>806</b>
New fellows	24	20	36	36
Permanent migration	9	10	10	10
Temporary migration	15	15	15	15
Exits (%)	2.72%	2.82%	3.93%	3.64%
<b>Expressed demand</b>	<b>400</b>	<b>460</b>	<b>590</b>	<b>733</b>
<b>Positive/negative movement</b>		<b>23</b>	<b>53</b>	<b>73</b>

**Table 17.21: Other (clinical) pathology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>400</b>	<b>515</b>	<b>676</b>	<b>838</b>
<i>New fellows</i>	24	20	36	36
<i>Permanent migration</i>	9	10	10	10
<i>Temporary migration</i>	15	15	15	15
<i>Exits (%)</i>	2.72%	2.82%	3.93%	3.64%
<b>Expressed demand</b>	<b>400</b>	<b>475</b>	<b>642</b>	<b>840</b>
<b>Positive/negative movement</b>		<b>40</b>	<b>34</b>	<b>-2</b>

**Table 17.22: Other (clinical) pathology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>400</b>	<b>480</b>	<b>625</b>	<b>756</b>
<i>New fellows</i>	24	20	36	36
<i>Permanent migration</i>	9	9	7	5
<i>Temporary migration</i>	15	14	11	8
<i>Exits (%)</i>	2.72%	2.84%	4.05%	3.89%
<b>Expressed demand</b>	<b>400</b>	<b>475</b>	<b>642</b>	<b>840</b>
<b>Positive/negative movement</b>		<b>5</b>	<b>-17</b>	<b>-84</b>

**Table 17.23: Other (clinical) pathology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>400</b>	<b>471</b>	<b>629</b>	<b>790</b>
<i>New fellows</i>	24	20	36	36
<i>Permanent migration</i>	9	10	10	10
<i>Temporary migration</i>	15	15	15	15
<i>Exits (%)</i>	2.72%	2.82%	3.93%	3.64%
<b>Expressed demand</b>	<b>400</b>	<b>475</b>	<b>642</b>	<b>840</b>
<b>Positive/negative movement</b>		<b>-4</b>	<b>-13</b>	<b>-50</b>

## What is included in the projections?

### Workforce stock

The following tables outline the characteristics of each of the sub-specialties within the other (clinical) pathology group. This includes those specialists that reported general pathology, microbiology, chemical pathology, haematology or immunology as one of their main specialties in the AIHW 2009 medical labour force survey.

### General pathology

A general pathologist is familiar with the major aspects of all branches of laboratory medicine, and is usually trained in anatomical pathology, cytology, chemical pathology, microbiology, haematology and blood banking, though not in as much detail as sub-specialists in each field<sup>46</sup>. In 2009, there were 53 active general pathologists in Australia. Within this:

- general pathologists had an average age of 44 years;
- they worked an average of 41 hours per week; and
- approximately half (51 percent) were aged 55 years or over.

**Table 17.24: General pathology workforce by gender, age and hours worked**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
35-39	1	40	-	-	1
40-44	2	40	4	40	6
45-49	0	-	12	45	12
50-54	3	24	4	45	7
55-59	3	40	8	48	11
60-64	0	-	8	41	8
65-69	0	-	3	31	3
70-74	2	40	2	26	4
75+	0	-	1	43	1
<b>Total</b>	<b>11</b>	<b>35.6</b>	<b>42</b>	<b>42.5</b>	<b>53</b>

Source: 2009 AIHW Medical Labour Force Survey

<sup>46</sup> <http://www.rcpa.edu.au/Pathology/Disciplines/GeneralPathology.htm>



## Microbiology

Microbiology deals with diseases caused by infectious agents such as bacteria, viruses, fungi and parasites. Microbiologists perform roles in the laboratory and in patient care.<sup>47</sup> In 2009, there were 88 active microbiologists in Australia. Within this:

- microbiologists had an average age of 46 years;
- they worked an average of 43 hours per week; and
- approximately 43 percent were aged 55 years or over.

**Table 17.25: Microbiology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	2	0.0	2
35-39	0	-	1	45.0	1
40-44	0	-	4	10.7	4
45-49	7	38.0	11	45.3	18
50-54	10	41.0	15	50.7	25
55-59	5	32.0	8	55.1	13
60-64	2	31.0	14	52.8	16
65-69	1	40.0	1	53.6	2
75+	6	14.0	1	53.6	7
<b>Total</b>	<b>31</b>	<b>33.0</b>	<b>57</b>	<b>46.2</b>	<b>88</b>

Source: 2009 AIHW Medical Labour Force Survey

<sup>47</sup> <http://www.rcpa.edu.au/Pathology/Disciplines.htm>

## Chemical pathology

Chemical pathology deals with the entire range of disease. It encompasses detecting changes in a wide range of substances in blood and body fluids (electrolytes, enzymes and proteins) in association with many diseases. In addition, it involves detecting and measuring tumour (cancer) markers, hormones, poisons and both therapeutic and illicit drugs.<sup>48</sup> In 2009, there were 102 active chemical pathologists in Australia. Within this:

- chemical pathologists had an average age of 48 years;
- they worked an average of 43 hours per week; and
- almost half (46 percent) were aged 55 years or over.

**Table 17.26: Chemical pathology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	2	43.2	-	-	2
35-39	0	-	1	52.2	1
40-44	6	35.6	-	-	6
45-49	8	39.3	12	47.0	20
50-54	4	39.4	22	41.0	26
55-59	4	56.3	13	44.9	17
60-64	4	30.3	6	43.7	10
65-69	0	-	4	55.5	4
70-74	10	31.3	3	45.2	13
75+	0	-	3	26.1	3
<b>Total</b>	<b>38</b>	<b>37.7</b>	<b>64</b>	<b>43.8</b>	<b>102</b>

Source: 2009 AIHW Medical Labour Force Survey

<sup>48</sup> <http://www.rcpa.edu.au/Pathology/Disciplines/ChemicalPathology.htm>

## Haematology

Haematology deals with many aspects of diseases which affect the blood, such as anaemia, leukemia, lymphoma, and clotting or bleeding disorders.<sup>49</sup> In 2009, there were 142 active haematologists in Australia. Within this:

- haematologists had an average age of 48 years;
- they worked an average of 43 hours per week; and
- approximately 37 percent were aged 55 years or over.

**Table 17.27: Haematology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	2	45.9	4	52.2	6
35-39	12	40.8	-	-	12
40-44	11	42.8	13	41.4	24
45-49	6	41.4	21	46.5	27
50-54	6	39.8	14	43.7	20
55-59	3	39.1	13	44.0	16
60-64	9	46.2	12	48.9	21
65-69	0	-	11	33.8	11
70-74	1	43.2	3	48.0	4
75+	0	-	1	26.6	1
<b>Total</b>	<b>50</b>	<b>42.3</b>	<b>92</b>	<b>43.9</b>	<b>142</b>

Source: 2009 AIHW Medical Labour Force Survey

<sup>49</sup> <http://www.rcpa.edu.au/Pathology/Disciplines/Haematology.htm>

## Immunology

Immunology is a specialty which often involves laboratory medicine (the testing of specimens collected from patients) and clinical practice (interviewing, examining and advising patients about clinical problems).<sup>50</sup> In 2009, there were 15 active immunologists in Australia. Within this:

- immunologists had an average age of 48 years;
- they worked an average of 43 hours per week; and
- over one-quarter (27 percent) were aged 55 years or over.

**Table 17.28: Immunology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	2	40	2
35-39	0	-	3	37.33	3
40-44	1	32	-	-	1
45-49	0	-	5	28.2	5
55-59	0	-	1	50	1
65-69	0	-	2	52	2
75+	0	-	1	4	1
<b>Total</b>	<b>1</b>	<b>32</b>	<b>14</b>	<b>35.1</b>	<b>15</b>

Source: 2009 AIHW Medical Labour Force Survey

<sup>50</sup> <http://www.rcpa.edu.au/Pathology/Disciplines/Immunopathology.htm>

### Other (clinical) pathology

The above workforces were grouped for workforce projection purposes. In 2009, there were 400 active other (clinical) pathologists in Australia. Within this:

- they had an average age of 44 years;
- they worked an average of 41 hours per week; and
- approximately 42 percent were aged 55 years or over.

**Table 17.29: Other (clinical) pathology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	4	44.6	8	36.1	12
35-39	13	40.7	5	41.8	18
40-44	20	39.8	21	35.3	41
45-49	21	39.5	61	44.7	82
50-54	23	38.2	55	44.6	78
55-59	15	41.5	43	47.2	58
60-64	15	39.9	40	48.0	55
65-69	1	40.0	21	40.2	22
70-74	13	33.6	8	41.5	21
75+	6	14.0	7	29.3	13
<b>Total</b>	<b>131</b>	<b>38.1</b>	<b>269</b>	<b>43.7</b>	<b>400</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Medicare number of services under category 6 is the only data source currently available to determine an expressed demand rate. The number of services for 2005 to 2009 per 100,000 population was applied to the group items for pathology. These items were grouped by specimen type and number of procedures for modelling purposes.

For the other (clinical) pathology grouping, the following items were grouped for the expressed workforce demand calculation:

- P1 – Haematology
- P2 – Chemical
- P3 – Microbiology
- P4 – Immunology
- P7 – Cytogenetics
- P8 – Infertility and pregnancy tests

Using the above approach and items, the expressed demand rate for clinical pathology is estimated to grow at 6.3 percent per annum.

As noted with the anatomical pathology expressed demand calculation, HWA recognises the Medicare items do not cover all output of pathologists in public hospitals, but this does represent the best current available measure.

## Workforce inflows

### New fellows

MTRP data was used to determine the number of other (clinical) pathology new fellows. Table 17.30 shows the number of new fellows in each sub-specialty within the other (clinical) pathology group.

**Table 17.30: Other (clinical) pathology sub-specialties: New fellows, 2009 and 2010**

Specialty	2009	2010
Chemical pathology	3	4
General pathology	0	-
Microbiology	7	11
Haematology	20	21
Immunology	1	9
<b>Total</b>	<b>31</b>	<b>45</b>

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

The same as for anatomical pathology, the proportion of Australian to overseas-trained total pathology fellows (calculated from the MTRP Fifteenth Report) was applied to this data to provide the number of domestic new fellows by sub-specialty in 2009. For other (clinical) pathology, 24 domestic new fellows formed the basis for the workforce projections.

## Immigration

Both permanent and temporary migration data sources only provided information on immigration at the total pathology level, not at the pathology sub-specialty level. Therefore, immigration data was apportioned across all pathology sub-specialties in accordance with their share of the pathology workforce in 2009.

For permanent migration, the MTRP Fifteenth Report showed there were 20 SIMGs in pathology for 2010. Of these, nine were apportioned to the other (clinical) pathology group.

DIAC data was used for temporary migration, with 15 temporary migrants apportioned to the other (clinical) pathology workforce (and held constant across the projection period).

## Trainees

MTRP data and data provided by the RCPA on advanced trainees was used in the workforce projections. MTRP data provided information on the number of advanced pathology trainees by sub-specialty. The RACP provided a detailed breakdown of trainees by year of training and sub-specialty (for 2011).

MTRP data on the number of pathology advanced vocational trainees for the sub-specialties in the in the other (clinical) pathology group is shown in Table 17.31.

**Table 17.31: Advanced trainees by pathology sub-specialty**

Sub-specialty	2009	2010	2011
Chemical pathology	15	20	19
General pathology	3	6	6
Microbiology	39	45	45
Haematology	94	118	136
Immunology	22	23	37
Oral pathology	2	2	0
<b>Total</b>	<b>175</b>	<b>214</b>	<b>243</b>

Source: Medical Training Review Panel Thirteenth, Fourteenth and Fifteenth Reports

## Forensic pathology

While workforce projections were not generated for forensic pathology, this section provides information on the forensic pathology workforce, new fellows and trainees.

### Workforce stock

The following table outlines the characteristics of the forensic pathology workforce, where a survey respondent identified forensic pathology as their main field of specialty in the AIHW 2009 medical labour force survey. In 2009, there were 44 active forensic pathologists in Australia. Within this:

- Forensic pathologists worked an average of 48 hours per week
- Over two-thirds (68 percent) were aged less than 50.

**Table 17.32: Forensic pathology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	2	45.0	0	-	2
35-39	2	45.0	10	47.5	12
40-44	3	44.7	3	51.7	6
45-49	0	-	10	48.1	10
50-54	2	40.0	7	46.6	9
55-59	0	-	1	60.0	1
60-64	1	50.0	0	-	1
65-69	0	-	2	77.0	2
70-74	0	-	1	20.0	1
75+	0	-	0	-	0
<b>Total</b>	<b>10</b>	<b>44.4</b>	<b>34</b>	<b>49.1</b>	<b>44</b>

Source: 2009 AIHW Medical Labour Force Survey



## Workforce inflows

### New fellows

**Table 17.33: Number of forensic pathology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
1	n.a.	3	2	2	3

(a) Includes SIMGs

n.a. not available

Source: Medical Training Review Panel Reports 14 and 15

### Trainees

**Table 17.34: Forensic pathology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	5	10	7

Source: Medical Training Review Panel Thirteenth, Fourteenth and Fifteenth Reports

## 18 Physicians – adult

### What is a physician?

Physicians are specialists in internal medicine who diagnose and manage complex medical problems. Physicians manage the medical problems of adults, while paediatricians focus on children and adolescents. Patients are generally referred to a physician by a GP.<sup>51</sup> Physicians often specialise in a particular area of medicine, with the Royal Australasian College of Physicians (RACP) providing vocational training programs in the following areas:

- Adult Medicine
- Paediatrics and Child Health

#### Chapter training

- Palliative Medicine
- Addiction Medicine
- Sexual Health Medicine

#### Tailored training programs

- Australasian Faculty of Occupational and Environmental Medicine
- Australasian Faculty of Public Health Medicine
- Australasian Faculty of Rehabilitation Medicine

This chapter focusses on the adult medicine area. Paediatrics and child health, all Chapters and the Faculties of Occupational and Environmental Medicine and Public Health Medicine have separate sections within this publication.

### How are they trained?

The RACP has implemented a common education framework, the Physician Readiness for Expert Practice (PREP) program. The PREP training program requires at least six years to complete, which includes three years of basic training and three or more years of advanced training. Selection into advanced training in a sub-specialty relies upon successful completion of basic training, and a trainee securing a suitable advanced training position in a hospital in advance of submitting their application for approval. The training program provides for part-time and interrupted training.

Successful completion of the PREP program enables a trainee to be admitted to fellowship of the RACP. Trainees enrolled in joint training programs with other specialist colleges must complete the training requirements of both colleges before fellowships are awarded.

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<sup>51</sup> <http://www.racp.edu.au>

## What is the assessment for international graduates?

The RACP SIMG assessment process is common across the RACP areas. The SIMG assessment is conducted by the relevant college sub-committee, and possible outcomes are:

- if training is found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review; or
- if training is found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training;
  - a period of up to 24 months practice under peer review;
  - the written and /or clinical examinations of the Chapter;
  - a practice visit.

A SIMG is eligible to apply for fellowship after successfully completing specified requirements.

## Identification of SIMGs for physician sub-specialty modelling

In the workforce projections, the assessment of a SIMG (as substantially, partially or not comparable), in combination with DIAC data, was used to align migrant workforce flows into each sub-specialty where required.

However SIMG assessment outcome data for physicians (from RACP) and immigration data (from DIAC) was not available for physician sub-specialties. Data available from DIAC showed 57 permanent physician migrants in total. This was apportioned across the physician sub-specialties in accordance with their share of the total physician workforce (as at 2009), and is included within the new fellows inflow within the modelling.

**Because of this, the medium self-sufficiency scenario was not generated for the physician sub-specialties.**

## Physician sub-specialties modelled

Within the adult medicine area, there are a number of sub-specialties. The following physician sub-specialties had modelling conducted:

- Cardiology
- Endocrinology
- Gastroenterology and Hepatology
- General medicine
- Geriatric medicine
- Medical oncology

- Nephrology
- Neurology

The sub-specialties above were selected on the basis of the size of the workforce, the size of the training program and the age structure of the sub-specialty.

The sub-specialties below due to their smaller size have a description of the existing workforce characteristics, numbers of new fellows and advanced trainees. :

- Clinical genetics
- Clinical pharmacology
- Haematology
- Infectious disease
- Immunology and allergy
- Nuclear medicine
- Respiratory and sleep medicine
- Rheumatology

The tailored training programs below also have a description of the existing workforce characteristics, numbers of new fellows and advanced trainees:

- Occupational and Environmental Medicine (chapter 25)
- Public Health Medicine (chapter 28)
- Rehabilitation Medicine (chapter 29)

## Expressed demand methodology

Expressed workforce demand for each physician sub-specialty was based on a combination of hospital separations and Medicare data. Hospital separations were identified on the basis of Service Related Groups (SRGs) which were mapped to relevant Diagnosis Related Groups (DRGs) per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Hospital separations data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medial labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

## Data Limitations

A limitation with expressed demand calculations for physicians is the lack of outpatient data. This is particularly problematic for the sub-specialties with a high proportion of public hospital outpatient activity.

In discussion with the college they indicated the number of advanced trainees that are completing dual training is increasing and as the model allocates trainees to this might over estimate the headcount in the projection models.

HWA will continue to work with the RACP on these issues.

## Cardiology

### What is a cardiologist?

Cardiology is a branch of internal medicine concerned with the prevention, investigation and therapy of, and research into, diseases involving the cardiovascular system.

Trainees are required to complete 36 months of advanced training in cardiology, in an accredited core training position.

### What issues have stakeholders identified for the cardiology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

The distribution of the cardiology workforce was the key issue raised by jurisdictions. It was also noted that over-servicing could occur, where cardiologists conduct follow up appointments that could be conducted by GPs.

#### What were the medical college views?

Technology and new interventions were highlighted as key drivers of reform that may affect future cardiology workforce requirements. Examples included:

- computed tomography (CT) and magnetic resonance imaging (MRI); and
- interventions such as percutaneous valve implants and atrial fibrillation ablations.

Other factors raised as potentially influencing future supply or demand were:

- increasing age at which patients are being treated. In addition, there is more treatment of chronic conditions. This requires more outpatient/community care and hospital separations might underestimate this;
- increasing specialisation and reliance on technology creates difficulties for distribution of cardiologists, in addition to considerations of the minimum amount of work that would justify a resident cardiologist within a region;
- the high proportion of cardiologists aged over 50 years – although there is a view this cohort may remain in the workforce due to job satisfaction and favourable superannuation rules;

- a potential reduction in average working hours due to the stabilisation of workforce supply;
- expected growth in clinical training positions in regional and rural areas and ongoing growth in metropolitan clinical training positions (public and private), and research positions;
- increasing sub-specialisation, with a likely consequent fall in the proportion of general cardiologists;
- potential growth in research careers impacting clinical service provision; and
- the need for greater flexibility in training with a focus on working in teams and for trainees to receive meaningful exposure to indigenous cardio-vascular health during their program.

In relation to geographic distribution, the college advised cardiology service (and cardiologists) expansion has largely occurred in metropolitan and larger regional centres services. Therefore disparities exist in the equitable distribution of services to regional, rural and Indigenous populations. The current regional and rural cardiology service delivery model is outreach services, supplemented by telemedicine and internet services, nurse practitioners, practice nurses and allied health workers.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The cardiology existing workforce position was assessed as **green**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For cardiology, the only indicator to change over the projection period is average age, which is projected to increase.

The replacement rate remained at the lowest rating in 2025 – indicating the number of new fellows entering the workforce exceeds is projected to exceed workforce exits.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.1: Cardiology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a not assessed

### What are our projections for the future?

Table 18.2 presents the workforce projection scenario results for cardiology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment shows no current perceived shortage in the cardiology workforce. If recent trends in supply and demand were to continue, there would also be a substantial growth in workforce supply relative to demand by 2025. The service and workforce scenario results in the largest positive movement relative to the comparison scenario. Consultation highlighted technology and new interventions as drivers of reform that may affect the cardiology workforce.

The capped working hours scenario results in the second largest movement relative to the comparison scenario, suggesting a number of cardiologists work more than 50 hours per week.



**Table 18.2: Cardiology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,112	919	<b>193</b>	1,280	1,048	<b>232</b>
Service and workforce reform	1,112	827	<b>285</b>	1,280	880	<b>400</b>
Registrar work value	1,171	919	<b>252</b>	1,337	1,048	<b>289</b>
Capped working hours	1,022	919	<b>103</b>	1,182	1,048	<b>134</b>

**Table 18.3: Cardiology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>790</b>	<b>922</b>	<b>1,112</b>	<b>1,280</b>
New fellows	63	58	49	49
Temporary migration	5	5	5	5
Exits (%)	1.75%	1.95%	2.04%	2.41%
<b>Expressed demand</b>	<b>790</b>	<b>831</b>	<b>919</b>	<b>1,048</b>
<b>Positive/negative movement</b>		<b>91</b>	<b>193</b>	<b>232</b>

**Table 18.4: Cardiology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>790</b>	<b>922</b>	<b>1,112</b>	<b>1,280</b>
New fellows	63	58	49	49
Temporary migration	5	5	5	5
Exits (%)	1.75%	1.95%	2.04%	2.41%
<b>Expressed demand</b>	<b>790</b>	<b>801</b>	<b>827</b>	<b>880</b>
<b>Positive/negative movement</b>		<b>121</b>	<b>285</b>	<b>400</b>

**Table 18.5: Cardiology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>790</b>	<b>975</b>	<b>1,171</b>	<b>1,337</b>
<i>New fellows</i>	63	58	49	49
<i>Temporary migration</i>	5	5	5	5
<i>Exits (%)</i>	1.75%	1.95%	2.04%	2.41%
<b>Expressed demand</b>	<b>790</b>	<b>831</b>	<b>919</b>	<b>1,048</b>
<b>Positive/negative movement</b>		<b>144</b>	<b>252</b>	<b>289</b>

**Table 18.6: Cardiology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>790</b>	<b>851</b>	<b>1,022</b>	<b>1,182</b>
<i>New fellows</i>	63	58	49	49
<i>Temporary migration</i>	5	5	5	5
<i>Exits (%)</i>	1.75%	1.95%	2.04%	2.41%
<b>Expressed demand</b>	<b>790</b>	<b>831</b>	<b>919</b>	<b>1,048</b>
<b>Positive/negative movement</b>		<b>20</b>	<b>103</b>	<b>134</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the cardiology workforce supply and expressed demand estimates.

### Workforce stock

The base cardiology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified cardiology as their main field of specialty. In 2009, there were 790 active cardiologists in Australia. Within this:

- cardiologists had an average age of 50 years;
- they worked an average of 49 hours per week; and
- almost one-third (32 percent) were aged 55 years or over.

**Table 18.7: Cardiology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	8	43.3	29	51.5	37
35-39	19	26.8	92	48.6	111
40-44	21	47.0	113	52.1	134
45-49	21	49.1	135	54.1	156
50-54	4	54.7	92	52.0	96
55-59	7	54.7	76	53.7	83
60-64	0	-	86	51.0	86
65-69	0	-	43	44.1	43
70-74	0	-	22	30.9	22
75+	0	-	22	26.7	22
<b>Total</b>	<b>80</b>	<b>43.5</b>	<b>710</b>	<b>50.1</b>	<b>790</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Expressed workforce demand for cardiology is estimated to grow at 2.0 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

### Workforce inflows

#### New fellows

Cardiology new fellows have generally increased over the period 2005 to 2010 (Table 18.8).

**Table 18.8: Number of cardiology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
30	42	47	43	56	52

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in five temporary migrants in the cardiology workforce. This was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.9), and formed the basis for the training pipeline analysis.

**Table 18.9: Cardiology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	160	189	185

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## Endocrinology

### What is an endocrinologist?

Endocrinology is the study of hormones and hormone producing tissues, their normal physiology and their pathophysiology. The specialty of endocrinology encompasses the diagnosis and management of disorders of the endocrine system.

### What issues have stakeholders identified for the endocrinology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

Jurisdiction advice was that current workforce supply is sufficient for existing expressed demand. However the increasing prevalence of diabetes is expected to significantly increase future demand for this workforce.

#### What were the medical college views?

The RACP provided a range of considerations that may affect the endocrinologist workforce projections. There has been a significant shift toward greater female participation in the endocrinology workforce – this is expected to continue and potential impacts are:

- reductions in average hours worked;
- increased proportions of specialists in private practice due to greater flexibility in working hours and on call demands;
- reduced numbers of active endocrinologists at any one time because of increased interruptions to work, for example, because of family reasons; and
- a likely greater demand for part-time training positions (also resulting in longer training time).

Closer team based working arrangements between GPs and the endocrinology workforce (through primary care organisations such as Medicare Locals) are also anticipated to impact on the workforce; along with new technologies such as insulin pumps and continuous glucose monitoring (which requires specialist supervision).

### What other considerations may influence endocrinology workforce projections?

Data issues highlighted as impacting on the accuracy of the workforce supply and demand modelling were:

- the likely underestimation of expressed demand, due to:
  - the use of Diagnosis Related Groups (DRGs), as a significant amount of endocrinology work is outside of acute care and in consultation with other specialties
  - the lack of out patient data

There is an expected increasing demand for endocrinology services because of the increasing prevalence of endocrine-related conditions. Specifically, diabetes is one of the most rapidly growing conditions in Australia (affecting an estimated 1.5 million Australians). While most people with diabetes do not currently see an endocrinologist, there are more people moving from 'simple type 2 diabetes' (managed by a GP) to 'complex type 2 diabetes', which may require specialist input. It was also noted:

- with such a large base of people with type 2 diabetes, the number moving to a complex condition can be expected to increase; and
- the management of type 2 diabetes is also becoming more complex, with increasing numbers of oral and injectable agents becoming available.

Both of these factors may also increase demand for specialist services.

The prevalence of type 1 diabetes is also increasing (estimated by AIHW to increase by 10 percent between 2008 and 2013 in children). Type 1 diabetes requires specialist input, and new technologies such as insulin pumps and continuous glucose monitoring have also increased the time required for consultations.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The endocrinology existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For endocrinology, average age is projected to increase by the end of the projection period. However the replacement rate indicator remains at the lowest rating in 2025, indicating new fellows are projected to exceed workforce exits.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.10: Endocrinology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.11 presents the workforce projection scenario results for endocrinology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

Consultation highlighted an expected increased demand for endocrinology services due to the increasing incidence of diabetes. The existing workforce position assessment suggests some perceived difficulty in filling positions, either through maldistribution or insufficient workforce. The comparison scenario shows there will be minimal change in the workforce position if recent trends

in supply and demand were to continue. The service and workforce reform scenario results in the largest positive movement relative to the comparison scenario, suggesting innovation and reform could be used to assist in meeting increasing demand. This may be particularly important if, as highlighted in consultation, future supply may be influenced by reducing hours of work and extended training time (as part-time training increases).

**Table 18.11: Endocrinology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	598	572	<b>26</b>	687	658	<b>29</b>
Service and workforce reform	598	489	<b>109</b>	687	535	<b>152</b>
Registrar work value	627	572	<b>55</b>	716	658	<b>58</b>
Capped working hours	573	572	<b>1</b>	663	658	<b>5</b>

**Table 18.12: Endocrinology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>499</b>	<b>598</b>	<b>687</b>
New fellows	24	25	28	28
Temporary migration	3	3	3	3
Exits (%)	2.74%	1.95%	2.28%	2.56%
<b>Expressed demand</b>	<b>442</b>	<b>486</b>	<b>572</b>	<b>658</b>
<b>Positive/negative movement</b>		<b>13</b>	<b>26</b>	<b>29</b>

**Table 18.13: Endocrinology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>499</b>	<b>598</b>	<b>687</b>
New fellows	24	25	28	28
Temporary migration	3	3	3	3
Exits (%)	2.74%	1.95%	2.28%	2.56%
<b>Expressed demand</b>	<b>442</b>	<b>459</b>	<b>489</b>	<b>535</b>
<b>Positive/negative movement</b>		<b>40</b>	<b>109</b>	<b>152</b>





**Table 18.14: Endocrinology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>527</b>	<b>627</b>	<b>716</b>
<i>New fellows</i>	24	25	28	28
<i>Temporary migration</i>	3	3	3	3
<i>Exits (%)</i>	2.74%	1.95%	2.28%	2.56%
<b>Expressed demand</b>	<b>442</b>	<b>486</b>	<b>572</b>	<b>658</b>
<b>Positive/negative movement</b>		<b>41</b>	<b>55</b>	<b>58</b>

**Table 18.15: Endocrinology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>479</b>	<b>573</b>	<b>663</b>
<i>New fellows</i>	24	25	28	28
<i>Temporary migration</i>	3	3	3	3
<i>Exits (%)</i>	2.74%	1.95%	2.28%	2.56%
<b>Expressed demand</b>	<b>442</b>	<b>486</b>	<b>572</b>	<b>658</b>
<b>Positive/negative movement</b>		<b>-7</b>	<b>1</b>	<b>5</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the endocrinology physician workforce supply and expressed demand estimates.

### Workforce stock

The base endocrinology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified endocrinology as their main field of specialty. In 2009, there were 442 active endocrinologists in Australia. Within this:

- endocrinologists had an average age of 50 years;
- they worked an average of 44 hours per week; and
- approximately 28 percent were aged 55 years or over.

**Table 18.16: Endocrinology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	32	32.0	8	43.3	40
35-39	62	35.1	20	44.4	82
40-44	40	43.6	33	41.9	73
45-49	21	37.2	24	54.8	45
50-54	12	42.9	66	50.4	78
55-59	3	35.4	45	52.5	48
60-64	7	46.6	29	51.3	36
65-69	0	-	17	41.3	17
70-74	0	-	16	32.4	16
75+	0	-	7	36.9	7
<b>Total</b>	<b>177</b>	<b>37.7</b>	<b>265</b>	<b>47.5</b>	<b>442</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Expressed workforce demand for endocrinology is estimated to grow at 2.3 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

It should be noted that the lack of outpatient data for expressed demand calculations particularly affects endocrinology given the nature of the services they provide.

### Workforce inflows

#### New fellows

The number of endocrinology new fellows remained constant across the period 2005 to 2009, with a substantial increase from 2009 (19) to 2010 (33).

**Table 18.17: Number of endocrinology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
15	17	18	20	19	33

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009), resulted in three temporary migrants in the endocrinology workforce. This was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data, which provided the total number of advanced vocational trainees in the program (Table 18.18), formed the basis for the training pipeline analysis.

**Table 18.18: Endocrinology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	92	116	112

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

### Exit rates

For most medical specialties, exit rates were calculated on an individual specialty basis. However this was not the case for endocrinology. This was because the small size of the workforce generated abnormally low exit rates. Upon consultation with the RACP, it was agreed to apply the exit rate calculated for the overall physician group to this workforce.

## Gastroenterology and Hepatology

### What are gastroenterologist and hepatologists?

Gastroenterology and hepatology are branches of internal medicine, usually practised together, that are concerned with the prevention, investigation, treatment of and research into illnesses involving the gastrointestinal tract and liver.

Trainees are required to complete 36 months of advanced training in gastroenterology. Of this, 24 months must be in an accredited core training position, and up to 12 months may be accredited as non-core training.

### What issues have stakeholders identified for the gastroenterology and hepatology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

Similar to endocrinology, jurisdiction advice was current workforce supply is sufficient for existing demand. However demand is expected to rise from increases in procedures such as colonoscopies (due to bowel cancer screening programs). Increases in training places are required to ensure sufficient supply of this workforce into the future.

#### What were the medical college views?

The society consultation highlighted the following factors that may influence the future of the Gastroenterology workforce:

- an ongoing waiting list for public outpatient appointments and colonoscopies;
- a high proportion of consultants working in private practice;
- preferred work model for individuals across the private sector and the public hospitals sector through VMO appointments;
- new fellows are moving to work in outer metro areas in order to have a large enough caseload; and
- poor distribution of trainees, with the society having a view that regional were unable to provide quality training opportunities.

The society also highlighted that the bowel cancer screening program would increase demand in particular if screening modalities changed e.g. using endoscopy rather than fecal occult blood (FOB) for screening.

Changing treatment for common conditions e.g. Hepatitis C Virus may also decrease demand.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The gastroenterology and hepatology existing workforce position was assessed as **green**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For gastroenterology and hepatology, the average age of existing workforce is the only indicator that changes rating from 2012 to 2025. This is likely to be a result of a projected fall in the number of new fellows over the period. Despite this projected fall, the replacement rate indicator remained at the lowest rating in 2025. This indicates the projected lower number of new fellows still exceeds the projected number of workforce exits in 2025.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.19: Gastroenterology and hepatology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.20 presents the workforce projection scenario results for gastroenterology and hepatology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment showed no current perceived shortage in the gastroenterology and hepatology workforce. If recent trends in supply and demand were to continue, there would also be growth in workforce supply relative to demand by 2025. This result is reversed in the capped working hours scenario, suggesting a number of specialists in this workforce work more than 50 hours per week.

**Table 18.20: Gastroenterology and Hepatology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	923	820	<b>103</b>	1,045	935	<b>110</b>
Service and workforce reform	923	740	<b>183</b>	1,045	788	<b>257</b>
Registrar work value	960	820	<b>140</b>	1,081	935	<b>146</b>
Capped working hours	859	820	<b>39</b>	966	935	<b>31</b>

**Table 18.21: Gastroenterology and Hepatology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>683</b>	<b>786</b>	<b>923</b>	<b>1,045</b>
New fellows	41	41	33	33
Temporary migration	4	4	4	4
Exits (%)	1.45%	0.97%	1.91%	2.04%
<b>Expressed demand</b>	<b>683</b>	<b>721</b>	<b>820</b>	<b>935</b>
<b>Positive/negative movement</b>		<b>65</b>	<b>103</b>	<b>110</b>

**Table 18.22: service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>683</b>	<b>786</b>	<b>923</b>	<b>1,045</b>
New fellows	41	41	33	33
Temporary migration	4	4	4	4
Exits (%)	1.45%	0.97%	1.91%	2.04%
<b>Expressed demand</b>	<b>683</b>	<b>695</b>	<b>740</b>	<b>788</b>
<b>Positive/negative movement</b>		<b>91</b>	<b>183</b>	<b>257</b>

**Table 18.23: registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>683</b>	<b>819</b>	<b>960</b>	<b>1,081</b>
New fellows	41	41	33	33
Temporary migration	4	4	4	4
Exits (%)	1.45%	0.97%	1.91%	2.04%
<b>Expressed demand</b>	<b>683</b>	<b>721</b>	<b>820</b>	<b>935</b>
<b>Positive/negative movement</b>		<b>98</b>	<b>140</b>	<b>146</b>

**Table 18.24: capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>683</b>	<b>736</b>	<b>859</b>	<b>966</b>
New fellows	41	41	33	33
Temporary migration	4	4	4	4
Exits (%)	1.45%	0.97%	1.91%	2.04%
<b>Expressed demand</b>	<b>683</b>	<b>721</b>	<b>820</b>	<b>935</b>
<b>Positive/negative movement</b>		<b>15</b>	<b>39</b>	<b>31</b>



## What is included in the projections?

Information in this section broadly outlines the data used to generate the gastroenterology and hepatology physician workforce supply and expressed demand estimates.

### Workforce stock

The base gastroenterology and hepatology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified gastroenterology and hepatology as their main field of specialty. In 2009, there were 683 active gastroenterology and hepatology specialists in Australia. Within this:

- they had an average age of 48 years;
- they worked an average of 45 hours per week; and
- approximately 27 percent were aged 55 years or over.

**Table 18.25: Gastroenterology and hepatology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	6	46.7	54	43.2	60
35-39	14	29.2	91	46.1	105
40-44	27	41.4	83	52.5	110
45-49	18	32.1	117	46.1	135
50-54	11	32.7	76	53.9	87
55-59	7	47.4	63	47.9	70
60-64	2	40.0	67	42.3	69
65-69	1	4.0	22	44.7	23
70-74	0	-	15	28.7	15
75+	0	-	9	27.9	9
<b>Total</b>	<b>86</b>	<b>36.8</b>	<b>597</b>	<b>46.7</b>	<b>683</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for gastroenterology and hepatology is estimated to grow at 2.2 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

## Workforce inflows

### New fellows

After reaching a low of 17 in 2007, the number of gastroenterology and hepatology new fellows almost doubled to 32 in 2008, and remained similar across 2008 to 2010.

**Table 18.26: Number of gastroenterology and hepatology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
29	20	17	32	34	34

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

## Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in four temporary migrants in the gastroenterology and workforce, which was held constant across the projection period.

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.27), and formed the basis for the training pipeline analysis.

**Table 18.27: Gastroenterology and hepatology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	104	118	112

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## General Medicine

### What is a general physician?

General physicians are specialty physicians with expertise in the diagnosis and management of complex, chronic and multisystem disorders in adults. They undertake a comprehensive assessment of a patient's problems and needs, both biomedical and psychosocial, and provide and coordinate patient care with the assistance of multidisciplinary teams to optimise health outcomes.

A minimum of 24 months must be spent in accredited clinical training positions under the supervision of two fellows of the college, with at least one fellow practising general medicine.

### What issues have stakeholders identified for the general physician workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

All jurisdictions noted an existing shortage in general medicine physicians. Increasing sub-specialisation is an issue for jurisdictions, and common feedback was to change models of care and bring in more generalists.

Increasing the attractiveness of the general medicine pathway was highlighted as a way to improve general medicine physician numbers.

#### What were the medical college views?

Considerations highlighted that may influence the future general medicine workforce were:

- increasing numbers of patients with complex and multiple chronic disease, which is expected to require greater contribution from general physicians;
- changing in models of care, in particular the introduction of acute medical units across a number of hospitals, where general physicians play a key role in management;
- continuing role of general physicians in teaching and training (reducing clinical capacity);
- increasing challenges in obtaining training posts in general medicine; and

- the active promotion and development of dual training pathways which are longer than single sub-specialty training (but shorter than additive advanced training for general medicine and another sub-specialty).

The importance of general physicians in providing sustainable specialty physician services in rural and regional areas was highlighted.

### What other considerations may influence general medicine workforce projections?

The potential underestimation of expressed demand for the general physician workforce was highlighted as a data issue. General physicians frequently manage patients with diagnostic related groups that can be coded to specialty practice. Demand in HW 2025 is calculated by the utilisation method (refer Appendix 2), which projects demand based on existing service utilisation patterns. Assigning service provision to a specialty other than that supplying the service will underestimate expressed demand and affect the workforce projections.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The general medicine existing workforce position was assessed as **red**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

Compared with other physician sub-specialties, the general medicine workforce has a higher average age rating in 2012, which increases by 2025. In 2009 almost one-half of general physicians were aged over 55 years which is reflected in the 2012 average age rating, with the higher average age rating in 2025 a reflection of low exits from the workforce.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.28: General medicine – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.29 presents the workforce projection scenario results for general medicine. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment was that the general physician workforce is perceived to be in shortage. The comparison scenario indicates if recent trends in supply and demand were to continue, there would be some reduction in this perceived existing gap. The service and workforce reform scenario has the greatest impact of all scenarios in reducing the existing shortage by 2025. However changing models of care highlighted in consultation suggested increasing demand for the general medicine workforce.

**Table 18.29: General medicine, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,067	1,013	<b>54</b>	1,292	1,155	<b>137</b>
Service and workforce reform	1,067	873	<b>194</b>	1,292	899	<b>393</b>
Registrar work value	1,133	1,013	<b>120</b>	1,359	1,155	<b>204</b>
Capped working hours	1,009	1,013	<b>-4</b>	1,216	1,155	<b>61</b>

**Table 18.30: General medicine, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>818</b>	<b>868</b>	<b>1,067</b>	<b>1,292</b>
New fellows	25	31	46	46
Temporary migration	5	5	5	5
Exits (%)	0.79%	0.95%	1.04%	1.53%
<b>Expressed demand</b>	<b>818</b>	<b>874</b>	<b>1,013</b>	<b>1,155</b>
<b>Positive/negative movement</b>		<b>-6</b>	<b>54</b>	<b>137</b>

**Table 18.31: General medicine, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>818</b>	<b>868</b>	<b>1,067</b>	<b>1,292</b>
New fellows	25	31	46	46
Temporary migration	5	5	5	5
Exits (%)	0.79%	0.95%	1.04%	1.53%
<b>Expressed demand</b>	<b>818</b>	<b>836</b>	<b>873</b>	<b>899</b>
<b>Positive/negative movement</b>		<b>32</b>	<b>194</b>	<b>393</b>

**Table 18.32: General medicine, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>818</b>	<b>927</b>	<b>1,133</b>	<b>1,359</b>
New fellows	25	31	46	46
Temporary migration	5	5	5	5
Exits (%)	0.79%	0.95%	1.04%	1.53%
<b>Expressed demand</b>	<b>818</b>	<b>874</b>	<b>1,013</b>	<b>1,155</b>
<b>Positive/negative movement</b>		<b>53</b>	<b>120</b>	<b>204</b>

**Table 18.33: General medicine, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>818</b>	<b>831</b>	<b>1,009</b>	<b>1,216</b>
New fellows	25	31	46	46
Temporary migration	5	5	5	5
Exits (%)	0.79%	0.95%	1.04%	1.53%
<b>Expressed demand</b>	<b>818</b>	<b>874</b>	<b>1,013</b>	<b>1,155</b>
<b>Positive/negative movement</b>		<b>-43</b>	<b>-4</b>	<b>61</b>

### What is included in the projections?

Information in this section broadly outlines the data used to generate the general medicine workforce supply and expressed demand estimates.

### Workforce stock

The base general medicine workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified general medicine as their main field of specialty.

In 2009, there were 818 active general medical physicians in Australia. Within this:

- general physicians had an average age of 53 years;
- they worked an average of 43 hours per week; and
- almost one-half (46 percent) were aged 55 years or over.

**Table 18.34: General medical workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	6	33.8	11	28.7	17
35-39	25	31.5	71	44.9	96
40-44	65	38.5	69	51.7	134
45-49	35	39.7	52	53.4	87
50-54	26	50.4	83	51.3	109
55-59	10	54.0	98	46.5	108
60-64	11	42.6	106	46.0	117
65-69	8	41.9	66	32.4	74
70-74	4	21.7	37	33.6	41
75+	0	-	35	18.6	35
<b>Total</b>	<b>190</b>	<b>40.1</b>	<b>628</b>	<b>43.9</b>	<b>818</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Expressed demand for general medicine is estimated to grow at 2.0 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

### Workforce inflows

#### New fellows

The number of general medicine new fellows over the period 2005 to 2010 varied, from a low of four in 2006 to a high of 18 in 2009.

**Table 18.35: Number of general medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
14	4	15	6	18	13

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports



It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in five temporary migrants in the general medicine workforce. This was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data, which provided the total number of advanced vocational trainees in the program (Table 18.36), formed the basis for the training pipeline analysis.

**Table 18.36: General medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	138	155	199

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## Geriatric Medicine

### What is a geriatrician?

A geriatrician has expertise in the diagnosis and management of complex and/or multifactorial internal medicine disorders that impact the cognition and functional status of older people. The scope of geriatric practice is wide, and encompasses acute care of older people, their rehabilitation and community care.

Trainees are required to complete 36 months of advanced training in geriatric medicine. Of this, 24 months must be in an accredited core training position, and up to 12 months may be accredited as non-core training.

### What issues have stakeholders identified for the geriatric medicine workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

Jurisdictions advised this specialty is difficult to recruit to, there is a high reliance on SIMGs and most trainees coming into the specialty are older – with implications for length of service provision.

#### What were the medical college views?

In relation to future workforce supply of geriatric physicians, the potential impact of reduced average working hours was the primary consideration – a result of increasing participation of female trainees, and the likely reduction in working hours of future specialists (both male and female).

Acute geriatric medicine will continue to increase with the lack of general medicine physicians in the acute sector. The likely result of this is more geriatricians working in the acute than community care. The society noted that this trend is already apparent in the UK.

Other issues raised were:

- the view there is an existing unmet need in geriatrics;
- there is an expected increasing demand for geriatric physicians because of the likely increasing prevalence of conditions such as dementia; and

- it is difficult to fill consultant posts outside of capital cities.

### What other considerations may influence geriatric medicine workforce projections?

Data issues highlighted as impacting on the accuracy of the workforce supply and demand modelling were:

- the likely underestimation of expressed demand, due to:
  - the use of Diagnosis Related Groups (DRGs), because a lot of geriatric work is outside of acute care and in consultation with other specialties; and
  - concerns with defining the geriatric patient population though Medicare data
- the application of dual trainees in the modelling, particularly as dual training is increasing and will also impact on training time.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The geriatric medicine existing workforce position was assessed as **orange**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact



For geriatric medicine, the only indicator to change over the projection period is average age, showing average age is projected to increase.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.37: Geriatric medicine – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.38 presents the workforce projection scenario results for geriatric medicine. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

For geriatric medicine, the comparison scenario results in minimal positive movement from the existing workforce position – a result of a steady number of new fellows and small change in exit rates over the projection period. The service and workforce reform scenario has the greatest impact on reducing an existing perceived gap between supply and demand, with the largest positive movement relative to the comparison scenario.

**Table 18.38: Geriatric medicine, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	631	604	<b>27</b>	784	771	<b>13</b>
Service and workforce reform	631	574	<b>57</b>	784	682	<b>102</b>
Registrar work value	667	604	<b>63</b>	820	771	<b>49</b>
Capped working hours	614	604	<b>10</b>	764	771	<b>-7</b>

**Table 18.39: Geriatric medicine, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>397</b>	<b>476</b>	<b>631</b>	<b>784</b>
New fellows	36	37	37	37
Temporary migration	2	2	2	2
Exits (%)	2.01%	1.89%	2.05%	2.24%
<b>Expressed demand</b>	<b>397</b>	<b>465</b>	<b>604</b>	<b>771</b>
<b>Positive/negative movement</b>		<b>11</b>	<b>27</b>	<b>13</b>

**Table 18.40: Geriatric medicine, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>397</b>	<b>476</b>	<b>631</b>	<b>784</b>
New fellows	36	37	37	37
Temporary migration	2	2	2	2
Exits (%)	2.01%	1.89%	2.05%	2.24%
<b>Expressed demand</b>	<b>397</b>	<b>452</b>	<b>574</b>	<b>682</b>
<b>Positive/negative movement</b>		<b>24</b>	<b>57</b>	<b>102</b>

**Table 18.41: Geriatric medicine, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>397</b>	<b>509</b>	<b>667</b>	<b>820</b>
New fellows	36	37	37	37
Temporary migration	2	2	2	2
Exits (%)	2.01%	1.89%	2.05%	2.24%
<b>Expressed demand</b>	<b>397</b>	<b>465</b>	<b>604</b>	<b>771</b>
<b>Positive/negative movement</b>		<b>44</b>	<b>63</b>	<b>49</b>

**Table 18.42: Geriatric medicine, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>397</b>	<b>461</b>	<b>614</b>	<b>764</b>
New fellows	36	37	37	37
Temporary migration	2	2	2	2
Exits (%)	2.01%	1.89%	2.05%	2.24%
<b>Expressed demand</b>	<b>397</b>	<b>465</b>	<b>604</b>	<b>771</b>
<b>Positive/negative movement</b>		<b>-4</b>	<b>10</b>	<b>-7</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the geriatric medicine physician workforce supply and demand estimates.

### Workforce stock

The base geriatric medicine workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified emergency medicine as their main field of specialty. In 2009, there were 397 active geriatricians in Australia. Within this:

- geriatricians had an average age of 48 years;
- they worked an average of 49 hours per week; and
- almost one-quarter (24 percent) were aged 55 years or over.

**Table 18.43: Geriatric medical workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	15	37.9	7	38.2	22
35-39	34	32.4	40	48.1	74
40-44	31	35.8	61	48.2	92
45-49	24	30.5	40	48.2	64
50-54	15	34.9	33	52.0	48
55-59	5	44.1	32	49.7	37
60-64	8	41.3	25	47.4	33
65-69	1	35.9	7	47.3	8
70-74	2	20.5	14	29.0	16
75+	2	24.6	1	42.8	3
<b>Total</b>	<b>137</b>	<b>34.4</b>	<b>260</b>	<b>47.4</b>	<b>397</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

The demand rate for geriatric medicine is estimated to grow at 5.5 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

## Workforce inflows

### New fellows

Table 18.44 shows the number of new fellows over the period 2005 to 2010, with the highest number occurring in 2009 (with 31 new fellows).

**Table 18.44: Number of geriatric medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
11	25	23	19	31	30

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in two temporary migrants in the geriatric medicine workforce, which was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.45), and formed the basis for the training pipeline analysis.

**Table 18.45: Geriatric medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	115	129	137

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

### Exit rates

For most medical specialties, exit rates were calculated on an individual specialty basis. However this was not the case for geriatric medicine. This was because the small size of the workforce generated abnormally low exit rates. Upon consultation with RACP, it was agreed to apply the exit rate calculated for the overall physician group to this workforce.





## Medical oncology

### What is a medical oncologist?

Medical oncologists specialise in the investigation, study, diagnosis, management, and treatment of benign and malignant growths, tumours, cancers, and diseases. This includes both preventative and palliative medicine, using medications such as chemotherapy, hormones, molecular targeted agents, and analgesics.

Trainees are required to complete 36 months of advanced training in medical oncology, of which 24 months must be in an accredited core medical oncology training position. At least 12 months of advanced training in medical oncology must be completed in Australia or New Zealand.

### What issues have stakeholders identified for the medical oncology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

The view was there are insufficient accredited training places for medical oncology. The smaller states specifically mentioned difficulties in gaining accreditation because of the number and breadth of presentations in the system.

#### What were the medical college views?

Various factors were raised by the college as potentially influencing the future medical oncology workforce, and included:

- changes in models of care – particularly the use of multi-disciplinary care and the increased involvement of medical oncologists in such models;
- changes in average hours worked, as a result of the combination of increasing female participation in the workforce and the difference in the average working hours for females versus males;
- movements within the training program to related specialties, such as haematology, paediatrics, endocrinology, immunology, nuclear medicine and palliative care;

- training programs need to be more innovative to allow the inclusion of training in the private sector.

### What other considerations may influence medical oncology workforce projections?

The number of cases of cancer diagnosed in Australia is projected to reach 150,000 in 2020, an increase of almost 40 percent from 2007.<sup>52</sup> This will impact the future demand for medical oncologist services.

Medical Oncology is a key element of multidisciplinary cancer care and it is estimated that about half of cancers require treatment with at least one course of systemic therapy (Ng WL, et al.). Increasing involvement of medical oncologists in multidisciplinary care will increase the demand for services by medical oncologists

New drugs / medication regimes are becoming more complicated, which requires more complicated paperwork and leads to less face to face clinical time.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The medical oncology existing workforce position was assessed as **red**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

<sup>52</sup> AIHW 2012. Cancer incidence projections, Australia 2011 to 2020. Cancer series no. 66. Cat. no. CAN 62. Canberra: AIHW.

### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For medical oncology, the only indicator to change over the projection period is average age, which is projected to increase.

The replacement rate remained at the lowest rating in 2025 – indicating the number of new fellows entering the workforce exceeds is projected to exceed workforce exits.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.46: Medical oncology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.47 presents the workforce projection scenario results for medical oncology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

For medical oncology, the existing workforce position was perceived to be in shortage. While the comparison scenario shows growth in workforce supply relative to expressed demand by 2025, consultation highlighted demand for services is expected to grow at a greater rate than historical trends. This is from an expected increasing incidence of cancer. The service and workforce reform scenario has the largest positive movement relative to the comparison scenario, suggesting reform could be used to assist in meeting increasing future demand. This may be particularly important if, as highlighted in consultation, future supply may be influenced by a trend towards reducing hours of work.

The registrar work value scenario also results in a positive movement relative to the comparison scenario, with the capped working hours scenario resulting in a negative movement relative to the comparison scenario.

**Table 18.47: Medical oncology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	568	521	<b>47</b>	718	636	<b>82</b>
Service and workforce reform	568	457	<b>111</b>	718	534	<b>184</b>
Registrar work value	612	521	<b>91</b>	762	636	<b>126</b>
Capped working hours	531	521	<b>10</b>	675	636	<b>39</b>

**Table 18.48: Medical oncology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>363</b>	<b>425</b>	<b>568</b>	<b>718</b>
New fellows	30	30	34	34
Temporary migration	2	2	2	2
Exits (%)	1.83%	1.84%	1.82%	2.09%
<b>Expressed demand</b>	<b>363</b>	<b>428</b>	<b>521</b>	<b>636</b>
<b>Positive/negative movement</b>		<b>-3</b>	<b>47</b>	<b>82</b>

**Table 18.49: Medical oncology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>363</b>	<b>425</b>	<b>568</b>	<b>718</b>
New fellows	30	30	34	34
Temporary migration	2	2	2	2
Exits (%)	1.83%	1.84%	1.82%	2.09%
<b>Expressed demand</b>	<b>363</b>	<b>397</b>	<b>457</b>	<b>534</b>
<b>Positive/negative movement</b>		<b>28</b>	<b>111</b>	<b>184</b>

**Table 18.50: Medical oncology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>363</b>	<b>463</b>	<b>612</b>	<b>762</b>
New fellows	30	30	34	34
Temporary migration	2	2	2	2
Exits (%)	1.83%	1.84%	1.82%	2.09%
<b>Expressed demand</b>	<b>363</b>	<b>428</b>	<b>521</b>	<b>636</b>
<b>Positive/negative movement</b>		<b>35</b>	<b>91</b>	<b>126</b>

**Table 18.51: Medical oncology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>363</b>	<b>396</b>	<b>531</b>	<b>675</b>
New fellows	30	30	34	34
Temporary migration	2	2	2	2
Exits (%)	1.83%	1.84%	1.82%	2.09%
<b>Expressed demand</b>	<b>363</b>	<b>428</b>	<b>521</b>	<b>636</b>
<b>Positive/negative movement</b>		<b>-32</b>	<b>10</b>	<b>39</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the medical oncology physician workforce supply and demand estimates.

### Workforce stock

The base medical oncology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified medical oncology as their main field of specialty.

In 2009, there were 363 active medical oncologists in Australia. Within this:

- medical oncologists had an average age of 45 years;
- they worked an average of 47 hours per week; and
- 43 percent were aged 55 years or over.

**Table 18.52: Medical oncology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	15	36.8	12	45.5	27
35-39	31	36.1	40	50.9	71
40-44	68	33.6	42	50.0	110
45-49	18	49.4	35	55.7	53
50-54	8	48.4	39	56.8	47
55-59	5	43.5	32	56.6	37
60-64	1	46.7	5	43.8	6
65-69	1	46.7	9	43.6	10
70-74	0	-	2	30.8	2
75+	0	-	0	-	0
<b>Total</b>	<b>147</b>	<b>37.7</b>	<b>216</b>	<b>52.5</b>	<b>363</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Expressed workforce demand for medical oncology is estimated to grow at 4.5 percent per annum. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

### Workforce inflows

#### New fellows

The number of new fellows has varied over the period 2005 to 2010, from a low of 10 in 2005, tripling to a high of 30 in 2008.

**Table 18.53: Number of medical oncology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
10	19	12	30	25	21

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in two temporary migrants in the medical oncology workforce, which was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.54), and formed the basis for the training pipeline analysis.

**Table 18.54: Medical oncology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	101	133	137

Source: Medical Training Review Panel Fifteenth Report

### Exit rates

For most medical specialties, exit rates were calculated on an individual specialty basis. However this was not the case for medical oncology. This was because the small size of the workforce generated abnormally low exit rates. Upon consultation with the RACP, it was agreed to apply the exit rate calculated for the overall physician group to this workforce.



## Nephrology

### What is a nephrologist?

Nephrology is the care of patients with diseases of the kidneys and urinary tract. Nephrology is a specialty with significant components of general medicine, basic science and clinical research, teaching, and clinical areas of transplantation, hypertension and obstetric medicine. More recently nephrology offers an opportunity for procedural work.

Trainees are required to complete 36 months of advanced training in nephrology, of which 24 months must be in an accredited core training position.

### What issues have stakeholders identified for the nephrology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

Jurisdiction advice was while existing workforce supply is sufficient, the ageing population and increasing incidence of disease such as diabetes, hypertension and obesity, will increase future demand for this workforce.

#### What were the medical college views?

Considerations highlighted by the college to assist in interpreting the workforce projections were:

- the significant proportion of nephrologists working in public practice (84 percent) compared with private practice (16 percent)<sup>53</sup> is expected to continue;
- increases in trainees (of approximately 200 percent, from 27 in 2004 to 85 in 2010) has exceeded estimated growth in chronic kidney disease and dialysis patients – resulting in too few training sites with adequate clinical exposure; and
- there is a potential increase in the duration of the nephrology training program, from two to three core clinical years.

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<sup>53</sup> RACP survey data

### What other considerations may influence nephrology workforce projections?

The ageing of the population and increasing incidence of diabetes, hypertension and obesity is expected to have increase the presentation numbers for chronic kidney disease management, affecting future demand for the nephrology workforce.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The nephrology existing workforce position was assessed as **orange**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For nephrology, average age is projected to rise by 2025. The replacement rate indicator remains at the lowest level in 2025. This indicates new fellows are projected to exceed workforce exits in that year.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.55: Nephrology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.56 presents the workforce projection scenario results for nephrology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

In the comparison scenario, there is a small negative movement away from the existing workforce position by 2025, that is, growth in expressed demand exceeds growth in supply. Consultation highlighted demand for nephrology services is expected to rise, because of the anticipated increasing incidence of diabetes, hypertension and obesity. The service and workforce reform scenarios has the largest positive movement relative to the comparison scenario, suggesting this as a potential response to managing increasing demand.

**Table 18.56: Nephrology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	502	525	<b>-23</b>	615	633	<b>-18</b>
Service and workforce reform	502	467	<b>35</b>	615	547	<b>68</b>
Registrar work value	531	525	<b>6</b>	643	633	<b>10</b>
Capped working hours	484	525	<b>-41</b>	589	633	<b>-44</b>

**Table 18.57: Nephrology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>369</b>	<b>405</b>	<b>502</b>	<b>615</b>
New fellows	21	21	27	27
Temporary migration	2	2	2	2
Exits (%)	2.06%	1.92%	1.84%	2.15%
<b>Expressed demand</b>	<b>369</b>	<b>425</b>	<b>525</b>	<b>633</b>
<b>Positive/negative movement</b>		<b>-20</b>	<b>-23</b>	<b>-18</b>

**Table 18.58: Nephrology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>369</b>	<b>405</b>	<b>502</b>	<b>615</b>
New fellows	21	21	27	27
Temporary migration	2	2	2	2
Exits (%)	2.06%	1.92%	1.84%	2.15%
<b>Expressed demand</b>	<b>369</b>	<b>403</b>	<b>467</b>	<b>547</b>
<b>Positive/negative movement</b>		<b>2</b>	<b>35</b>	<b>68</b>

**Table 18.59: Nephrology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>369</b>	<b>428</b>	<b>531</b>	<b>643</b>
New fellows	21	21	27	27
Temporary migration	2	2	2	2
Exits (%)	2.06%	1.92%	1.84%	2.15%
<b>Expressed demand</b>	<b>369</b>	<b>425</b>	<b>525</b>	<b>633</b>
<b>Positive/negative movement</b>		<b>3</b>	<b>6</b>	<b>10</b>

**Table 18.60: Nephrology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>369</b>	<b>389</b>	<b>484</b>	<b>589</b>
New fellows	21	21	27	27
Temporary migration	2	2	2	2
Exits (%)	2.06%	1.92%	1.84%	2.15%
<b>Expressed demand</b>	<b>369</b>	<b>425</b>	<b>525</b>	<b>633</b>
<b>Positive/negative movement</b>		<b>-36</b>	<b>-41</b>	<b>-44</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the nephrology physician workforce supply and demand estimates.

### Workforce stock

The base nephrology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified nephrology as their main field of specialty. In 2009, there were 369 active nephrologists in Australia (Table 18.61). Within this:

- nephrologists had an average age of 45 years;
- they worked an average of 44 hours per week; and
- almost one-fifth (18 percent) were aged 55 years or over.

**Table 18.61: Nephrology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	10	59.1	49	40.6	59
35-39	37	38.7	42	45.4	79
40-44	20	31.9	41	48.8	61
45-49	11	50.4	28	48.4	39
50-54	21	36.8	44	47.8	65
55-59	3	51.5	22	42.6	25
60-64	0	-	17	49.8	17
65-69	3	26.1	10	44.9	13
70-74	0	-	9	28.9	9
75+	1	47.0	1	35.0	2
<b>Total</b>	<b>106</b>	<b>40.3</b>	<b>263</b>	<b>45.2</b>	<b>369</b>

Source: 2009 AIHW Medical Labour Force Survey

The AIHW results differ from a recent survey conducted by the Australian and New Zealand Society of Nephrology (ANZSN). This survey showed:

- there were 250 nephrologists and 61 nephrology trainees in Australia, with 220 currently working; and
- nephrologists worked on average 50.9 hours per week, and trainees 49.5 hours per week.

ANZSN membership is voluntary, so the survey may not capture all clinicians who practice nephrology in Australia and New Zealand. This may be a reason for the difference, also the ANZSN survey captured all working hours, not clinical hours.

### Expressed workforce demand

Expressed workforce demand is estimated to grow at 4.3 percent per annum for nephrology. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

### Workforce inflows

#### New fellows

The number of nephrology new fellows over the period 2005 to 2010 is presented in Table 18.62.

**Table 18.62: Number of nephrology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
10	8	10	17	17	15

(a) Does not include international medical graduates or New Zealand Fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

### Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in two temporary migrants in the nephrology workforce, which was held constant across the projection period.

### Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections.

Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.63), and formed the basis for the training pipeline analysis.

**Table 18.63: Nephrology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	62	85	92

Source: Medical Training Review Panel Fourteenth and Fifteenth Report

### Exit rates

For most medical specialties, exit rates were calculated on an individual specialty basis. However this was not the case for nephrology. This was because the small size of the workforce generated abnormally low exit rates. Upon consultation with the college, it was agreed to apply the exit rate calculated for the overall physician group to this workforce.

## Neurology

### What is a neurologist?

Neurology encompasses the diagnosis and management of diseases affecting the central, peripheral and autonomic nervous systems as well as muscle.

Trainees are required to complete 36 months of advanced training in neurology, with a minimum of 24 months in an accredited core training position in Australia and/or New Zealand.

### What issues have stakeholders identified for the neurology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for the neurology workforce. Demand for services is expected to rise from the increasing incidence and prevalence of certain diseases such as Alzheimer's disease and the ageing population.

#### What were the medical college views?

The college highlighted two factors as potentially influencing future neurologist workforce supply and demand.

1. An anticipated reduction in working hours, from increasing female participation in the workforce (with at least 30 percent of new fellows female)<sup>54</sup> and increased up-take of part-time work.
2. Increasing sub-specialisation creates problems for rural practices.
3. The increasing incidence and prevalence of conditions such as Parkinson's disease, stroke and Alzheimer's disease (increasing at a greater rate than population growth).

In terms of distribution, the college advised neurologists are primarily located in city centres rather than regional and rural areas. This creates potential inequalities of care.

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<sup>54</sup> Australian and New Zealand Association of Neurologists Work Force Survey 2009



## What other considerations may influence neurology workforce projections?

Data issues affecting workforce demand projection were highlighted, specifically:

- the lack of public outpatient demand data (as managing patients in public outpatients forms a large part of the work of neurologists);
- the exclusion of certain Medicare item numbers that cover investigational work performed by neurologists; and
- increasing innovation in treatments will continue to increase demand

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The neurology existing workforce position was assessed as **green**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

Compared with other physician sub-specialties, the neurology workforce has a higher average age rating in 2012. This reflects the fact over one-third of neurologists were aged over 55 years in 2009 (Table 18.70). Average age is projected to increase by 2025, to the second highest rating, suggesting some concern for potential workforce impact.

Dependence on SIMGs was not assessed as immigration data was not available by physician sub-specialty.

**Table 18.64: Neurology – workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs	n.a.	n.a.
Duration of training program		

n.a. not assessed

### What are our projections for the future?

Table 18.65 presents the workforce projection scenario results for neurology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

There is no current perceived shortage in the neurology workforce, with the comparison scenario indicating growth in workforce supply relative to expressed demand by 2025 (if recent trends in supply and demand were to continue).

**Table 18.65: Neurology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	522	493	<b>29</b>	611	568	<b>43</b>
Service and workforce reform	522	453	<b>69</b>	611	478	<b>133</b>
Registrar work value	548	493	<b>55</b>	637	568	<b>69</b>
Capped working hours	500	493	<b>7</b>	585	568	<b>17</b>

**Table 18.66: Neurology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>411</b>	<b>440</b>	<b>522</b>	<b>611</b>
New fellows	16	22	25	25
Temporary migration	3	3	3	3
Exits (%)	2.05%	1.89%	1.98%	2.31%
<b>Expressed demand</b>	<b>411</b>	<b>439</b>	<b>493</b>	<b>568</b>
<b>Positive/negative movement</b>		<b>1</b>	<b>29</b>	<b>43</b>

**Table 18.67: Neurology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>411</b>	<b>440</b>	<b>522</b>	<b>611</b>
New fellows	16	22	25	25
Temporary migration	3	3	3	3
Exits (%)	2.05%	1.89%	1.98%	2.31%
<b>Expressed demand</b>	<b>411</b>	<b>419</b>	<b>453</b>	<b>478</b>
<b>Positive/negative movement</b>		<b>21</b>	<b>69</b>	<b>133</b>

**Table 18.68: Neurology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>411</b>	<b>464</b>	<b>548</b>	<b>637</b>
New fellows	16	22	25	25
Temporary migration	3	3	3	3
Exits (%)	2.05%	1.89%	1.98%	2.31%
<b>Expressed demand</b>	<b>411</b>	<b>439</b>	<b>493</b>	<b>568</b>
<b>Positive/negative movement</b>		<b>25</b>	<b>55</b>	<b>69</b>

**Table 18.69: Neurology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>411</b>	<b>420</b>	<b>500</b>	<b>585</b>
New fellows	16	22	25	25
Temporary migration	3	3	3	3
Exits (%)	2.05%	1.89%	1.98%	2.31%
<b>Expressed demand</b>	<b>411</b>	<b>439</b>	<b>493</b>	<b>568</b>
<b>Positive/negative movement</b>		<b>-19</b>	<b>7</b>	<b>17</b>

### What is included in the projections?

Information in this section broadly outlines the data used to generate the neurology workforce supply and demand estimates.

### Workforce stock

The base neurology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified emergency medicine as their main field of specialty. In 2009, there were 411 active neurologists in Australia. Within this:

- neurologists had an average age of 51 years;
- they worked an average of 45 hours per week; and
- over one-third (36 percent) were aged 55 years or over.

**Table 18.70: Neurology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	16	37.9	16
35-39	8	36.8	38	49.6	46
40-44	22	36.4	55	48.9	77
45-49	10	40.0	50	53.1	60
50-54	5	36.3	57	50.9	62
55-59	1	45.4	50	51.6	51
60-64	3	60.5	51	40.4	54
65-69	2	53.3	16	41.2	18
70-74	0	-	10	23.8	10
75+	0	-	17	21.1	17
<b>Total</b>	<b>51</b>	<b>39.4</b>	<b>360</b>	<b>46.2</b>	<b>411</b>

Source: 2009 AIHW Medical Labour Force

## Expressed workforce demand

Expressed workforce demand is estimated to grow at 1.5 percent per annum for neurology. This was based on a combination of hospital separations data and Medicare data. Refer to the expressed demand methodology section at the beginning of this chapter for further detail.

During consultation, there was extensive discussion on the expressed demand calculation for neurology. This was because of the lack of outpatient data, and in relation to the Medicare item numbers used.

It was highlighted that managing patients in public outpatients forms a large part of a neurologist's work, so by missing outpatient activity, expressed demand is underestimated. Excluding item numbers recording investigational work (such as EMG Nerve Conduction Studies and EEG, under item numbers 11018 and 11000) was also highlighted as underestimating expressed demand. HWA will work to ascertain the size of this impact.

## Workforce inflows

### New fellows

Table 18.71 shows the number of neurology new fellows over the period 2005 to 2010.

**Table 18.71: Number of neurology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
15	14	11	18	12	15

(a) Does not include international medical graduates or New Zealand fellows.

Source: Medical Training Review Panel Tenth to Fifteenth Reports and RACP

It should be noted in the workforce projections for physician sub-specialties, the new fellow inflows also incorporates permanent migration inflows.

## Immigration

As noted above, permanent migrants were not separately identified within the modelling flows, and are included within the new fellows inflows.

For temporary migration, DIAC data was apportioned across the physician sub-specialties (in accordance with each sub-specialties share of the total physician workforce as at 2009). This resulted in three temporary migrants in the neurology workforce. This was held constant across the projection period.

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

MTRP data provided the total number of advanced vocational trainees in the program (Table 18.72), and formed the basis for the training pipeline analysis.

**Table 18.72: Neurology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	61	82	89

Source: Medical Training Review Panel Fifteenth Report

### Exit rates

For most medical specialties, exit rates were calculated on an individual specialty basis. However this was not the case for neurology. This was because the small size of this workforce generated abnormally low exit rates. Upon consultation with the college, it was agreed to apply the exit rate calculated for the overall physician group to this workforce.

## Clinical Genetics

### What is a clinical geneticist?

Clinical genetics is the medical specialty that provides a diagnostic service and genetic counselling for individuals or families with, or at risk of, conditions which may have a genetic basis.

Trainees are required to complete a minimum of 36 months advanced training in clinical genetics. Of this, 30 months must be in a core training position, and up to six months may be accredited as non-core training.

There are adult and paediatric basic trained clinical geneticists who are dual registered with the Australian Health Practitioner Regulation Agency as both adult and paediatric specialists.

### What issues have stakeholders identified for the clinical genetics workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence clinical genetics workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for the clinical genetics workforce.

#### What were the medical college views?

The college highlighted the size of the clinical genetics workforce as the primary factor influencing future supply. It is a small workforce (with 51 practitioners in 2009), who work a high number of average hours. This limits the capacity to train the future workforce.

In common with other physician sub-specialties, there is an expected increased demand for services as the knowledge of the role of genetics in disease, as well as technology available, increases and improves.

### Workforce stock

The following table outlines the characteristics of the clinical genetics workforce, where a survey respondent identified clinical genetics as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 51 active clinical geneticists in Australia. Within this:

- clinical geneticists had an average age of 48 years;
- they worked an average of 64 hours per week; and
- approximately 22 percent were aged 55 years or over.



**Table 18.73: Clinical genetics workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	0	-	0
35-39	1	32.0	8	80.0	9
40-44	9	51.3	5	73.1	14
45-49	9	50.7	2	80.0	11
50-54	3	80.0	3	80.0	6
55-59	2	63.0	0	-	2
60-64	0	-	1	80.0	1
65-69	0	-	5	70.0	5
70-74	1	58.0	0	-	1
75+	1	26.0	1	8.0	2
<b>Total</b>	<b>26</b>	<b>53.9</b>	<b>25</b>	<b>73.7</b>	<b>51</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.74: Number of clinical genetics new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
0	0	1	0	1	1

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

### Trainees

**Table 18.75: Clinical genetics advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	3	19	14

Source: Medical Training Review Panel Fifteenth Report

## Clinical Pharmacology

### What is a clinical pharmacologist?

Clinical pharmacology is the scientific discipline that involves all aspects of the relationship between drugs and humans. It is a multidisciplinary science that encompasses professionals with a wide variety of scientific skills including medicine, pharmacology, pharmacy, biomedical science and nursing. The term 'clinical pharmacologist' is commonly used in the professional sense to refer to physicians who are specialists.

Trainees are required to complete 36 months of advanced training in clinical pharmacology. Of this, 24 months must be in an accredited core training position and up to 12 months may be accredited as non-core training.

### What issues have stakeholders identified for the clinical pharmacology workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence clinical pharmacology workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for the clinical pharmacology workforce.

#### What were the medical college views?

The lack of a sustainable training model for clinical pharmacology was raised as the most significant factor likely to affect future workforce supply. This is because existing training and service models focus on 'front-line' service positions rather than 'value add' roles such as clinical pharmacology. It is also an area of need that is currently suffering from unmet demand for clinical pharmacology skills training. Other considerations included:

- the workforce is often dual trained and is provided places in hospital on the basis of their "primary" training, hence the profession cannot be accounted for just on 'pure' numbers;
- further development of professional roles for clinical pharmacologists as complexity of care increases. For example, the increasing use of multiple medications by patients;
- expected continuation of clinical pharmacologists' involvement in undergraduate and postgraduate medical education;
- increasingly complex medicines use. Issues such as Polypharmacy, drug monitoring, adverse reactions, pharmacogenetics, prescribing, and quality use of medicines are increasing the demand for clinical pharmacology skills particularly in advice to the wider prescribing medical profession;

- increasing complexity of medicines policy and governance requiring expert technical advice to government on matters of public safety; and
- increasing focus on personalised medicine and new technologies (ie genomics) and what that means for prescribers.

## Workforce profile

### Workforce stock

The following table outlines the characteristics of the clinical pharmacology workforce, where a survey respondent identified clinical pharmacology as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 25 active clinical pharmacologists in Australia. Within this:

- clinical pharmacologists had an average age of 50 years; and
- approximately one-third were aged 55 years or over.

**Table 18.76: Clinical pharmacologists by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	0	-	0
35-39	0	-	0	-	0
40-44	0	-	6	80.0	6
45-49	0	-	10	76.0	10
55-59	2	64.0	3	78.0	5
60-64	0	-	2	80.0	2
65-69	0	-	1	80.0	1
70-74	0	-	1	40.0	1
75+	0	-	0	-	0
<b>Total</b>	<b>2</b>	<b>64.0</b>	<b>23</b>	<b>76.3</b>	<b>25</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.77: Number of clinical pharmacology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
1	0	0	2	0	2

(a) Does not include international medical graduates or New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

### Trainees

**Table 18.78: Clinical pharmacology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	11	14	16

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## Haematology

### What is a haematologist?

Haematology incorporates clinical and laboratory aspects of diseases of the blood and blood-forming organs. This specialty encompasses the investigation and treatment of a wide range of neoplastic and benign diseases, including leukaemias and lymphoproliferative disorders, inherited and acquired coagulation abnormalities, abnormalities of haemoglobin and red cells, haemopoietic stem cell transplantation and transfusion medicine.

A minimum of 24 months must be spent in accredited core clinical training positions under the supervision of a fellow of the RACP. The remaining six months of core training can be completed in either a core clinical, or core laboratory training position.

### What were the college views?

Consultation indicated that the current supply of hematologists was adequate but not in some sub specialists areas:

- most trainees do dual training, training positions vary as they are unique in each state. There are currently inadequate laboratory training positions in some states; and
- Public hospitals are the best places for training positions as they allow trainees to obtain the full breadth of training required.

Demand will continue to increase on both the clinical and laboratory side with increasing incidence of benign and malignant tumors, ageing population. On the laboratory side the complexity and volume is increasing combined with the need for quick turn around time for the results.

### Workforce profile

#### Workforce stock

The following table outlines the characteristics of the haematology workforce, where a survey respondent identified haematology as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 239 active haematologists in Australia. Within this:

- haematologists had an average age of 51 years;
- they worked an average of 48 hours per week; and
- almost one-third (31 percent) were aged 55 years or over.

**Table 18.79: Haematology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	4	39.0	2	51.8	6
35-39	33	46.0	15	49.8	48
40-44	7	43.3	33	53.3	40
45-49	13	44.0	24	55.5	37
50-54	6	37.7	28	55.0	34
55-59	4	52.2	5	61.8	9
60-64	4	53.8	15	49.4	19
65-69	2	47.5	31	34.4	33
70-74	0	-	1	53.7	1
75+	1	33.0	11	34.2	12
<b>Total</b>	<b>74</b>	<b>45.0</b>	<b>165</b>	<b>48.7</b>	<b>239</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.80: Number of haematology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
0	12	14	21	16	16

(a) Does not include international medical graduates or New Zealand new fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

## Trainees

**Table 18.81: Haematology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees ( includes joint with RCPA)	94	116	120

Source: Medical Training Review Panel Tenth to Fifteenth Reports

## Immunology and Allergy

### What are immunology and allergy physicians?

Immunology and allergy physicians provide laboratory and clinical services for paediatric and adult patients with allergy, immunodeficiency and autoimmune diseases. Some of these physicians also work in the transplantation immunology area.

Trainees are required to complete 36 months of advanced training in clinical immunology and allergy.

Immunology and allergy physicians may combine one or more of: clinical-only training, immunopathology-only training or joint training with the RCPA. More than half of the current trainees are undertaking joint training.

### What issues have stakeholders identified for the immunology and allergy workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence immunology and allergy workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for the immunology and allergy workforce.

#### What were the medical college views?

A number of factors were highlighted as potentially influencing future workforce supply for immunology and allergy, mostly focused on the training pathway. This included:

- small size and high average age of the workforce adding to vulnerability of the workforce;
- extended training time, with many trainees undertaking dual specialisation, a PhD or training part-time;
- volatility in training positions year to year due to uncertainty of positions with a significant amount of funding for training positions coming from outside the traditional sources e.g. fellowships, research grants, industry grants;
- delayed commencement in clinical practice after completing training, with many new fellows pursuing research and overseas placements; and
- potential mismatches between the practice and training environments, with many training positions in the public hospital system, while work is often in clinical and laboratory immunology – also highlighting a need to pursue training opportunities in ambulatory practice.

An existing trend expected to continue is the relatively high proportion of specialists practising in academic, administrative and laboratory appointments, affecting supply for direct patient care purposes.

College advice was that there is a current undersupply in the immunology and allergy workforce, evidenced by:

- long waiting lists, with an Australasian Society of Clinical Immunology and Allergy (ASCIA) survey showing average wait for a routine food allergy appointment exceeds six months throughout Australia; and
- an inability to fill positions – with SIMGs filling two positions in the last 12 months and three current unfilled positions across Australia.

It was also noted geographic distribution of the immunology and allergy workforce varies, with significant inter-jurisdictional differences in workforce supply.

#### What other considerations may influence the immunology and allergy workforce?

Expressed demand measurement for immunology and allergy was highlighted as limitation for workforce projections. This is because clinical immunology and allergy is an ambulatory specialty without specific Diagnosis Related Groups (DRGs) or Medicare item numbers.

There is also an expected increasing demand for services, from an increasing burden of allergic disease. Access Economics prepared a report for the ASCIA in 2007 that projected the number of patients affected by allergic diseases in Australia will increase 70 percent from 2007 (with 4.1 million patients or 19 percent of the population) to 2050 (with 7.7 patients or 26 percent of the population)<sup>55</sup>.

There has been an increase in the prevalence of allergic and immunologic diseases throughout the western world. This includes increased prevalence of allergic rhinitis, asthma, atopic eczema and food allergy in the last 20 years and increases in the rates and prevalence of autoimmune diseases in Australia.

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<sup>55</sup> Report by Access Economics for the Australasian Society of Clinical Immunology (ASCIA), The economic impact of allergic disease in Australia: not to be sneezed at, November 2007



## Workforce profile

### Workforce stock

The following table outlines the characteristics of the immunology and allergy workforce, where a survey respondent identified immunology and allergy as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 101 active immunology and allergy physicians in Australia. Within this:

- they had an average age of 54 years;
- they worked an average of 40 hours per week; and
- one-half were aged 55 years or over.

**Table 18.82: Immunology and allergy workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	0	-	0
35-39	4	33.0	4	50.0	8
40-44	6	28.3	15	46.4	21
45-49	2	39.0	10	47.7	12
50-54	2	42.5	7	55.6	9
55-59	3	34.0	13	37.9	16
60-64	1	42.0	11	45.8	12
65-69	0	-	11	43.0	11
70-74	0	-	7	24.1	7
75+	0	-	5	11.2	5
<b>Total</b>	<b>18</b>	<b>33.8</b>	<b>83</b>	<b>41.6</b>	<b>101</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.83: Number of immunology and allergy new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
0	4	0	6	3	6

(a) Does not include international medical graduates or New Zealand new fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

### Trainees

**Table 18.84: Immunology and allergy advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	27	36	37

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## Infectious Diseases

### What are infectious diseases physicians?

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. Infectious disease specialists have extensive expertise in the diagnosis and management of diseases caused by microbial agents and the management of patients presenting with infections in settings including perioperative and intensive care. An infectious diseases physician also has expertise in the assessment of non-infective causes of febrile (fever) illnesses and other apparent infections.

Trainees are required to complete 36 months of advanced training in infectious diseases, of which 30 months must be in an accredited core training position.

### What issues have stakeholders identified for the infectious diseases workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence infectious disease physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

The Northern Territory and Western Australia indicated they have a great need for this specialty and struggle to recruit.

#### What were the medical college views?

##### Data

- Many infectious disease physicians are dual trained which may impact the numbers of infectious disease physicians captured in the AIHW data.

##### Key Issues

- The specialty derives most of their referrals from other specialist groups rather than from primary care;
- Limited opportunities for private practice;
- Largely a metropolitan based workforce but some recent expansion into outer metropolitan and regional areas; and
- Demand may be influenced by:
  - Increasing referrals from specialty groups that are becoming less comfortable with managing infectious complications e.g. post surgery. May be related to decreased undergraduate exposure;

- Increasing fragmentation of care with increasing subspecialisation likely to result in greater referrals; and
  - Increasing drug resistance will make more infectious complications more difficult to treat and therefore require specialist input.
- Supply may be influenced by increasing female participation and decreased working hours.

### Workforce profile

#### Workforce stock

The following table outlines the characteristics of the infectious disease physician workforce, where a survey respondent identified infectious disease as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 250 active infection disease physicians in Australia. Within this:

- infectious disease physicians had an average age of 47 years;
- they worked an average of 44 hours per week; and
- approximately 18 percent were aged 55 years or over.

**Table 18.85: Infectious disease workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	9	26.1	0	-	9
35-39	15	29.6	25	36.2	40
40-44	22	34.1	49	45.5	71
45-49	21	43.4	36	48.4	57
50-54	4	54.0	25	58.1	29
55-59	5	34.4	17	55.7	22
60-64	1	50.0	13	54.7	14
65-69	0	-	6	27.2	6
70-74	0	-	1	16.5	1
75+	1	20.0	0	-	1
<b>Total</b>	<b>78</b>	<b>35.9</b>	<b>172</b>	<b>41.6</b>	<b>250</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.86: Number of infectious disease new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
10	9	7	13	17	11

(a) Does not include international medical graduates or New Zealand new fellow  
Source: Medical Training Review Panel Tenth to Fifteenth Reports and RACP

## Trainees

**Table 18.87: Infectious disease advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	91	117	64

Source: Medical Training Review Panel Fifteenth Report

## Nuclear Medicine

### What is a nuclear medicine physician?

Nuclear medicine is the medical specialty that uses the nuclear properties of radioactive nuclides to make diagnostic evaluations of the anatomical and/or physiological conditions of the body, and to provide therapy with unsealed radioactive sources.

Trainees may enter the nuclear medicine advanced training program through either the FRACP or FRANZCR training streams. There is a *single advanced training program in nuclear medicine* that is administered by the Joint Specialist Advisory Committee of the RACP and RANZCR that operates under the auspices of the RACP.

RACP trainees are required to complete 36 months of advanced training in nuclear medicine. Of this, 24 months must be in an accredited core training position in nuclear medicine, and up to 12 months may be accredited as non-core training.

RANZCR trainees are required to complete 24 months of advanced training in nuclear medicine, all of which must be in an accredited core training position in nuclear medicine.

### Workforce profile

#### Workforce stock

The following table outlines the characteristics of the nuclear medicine workforce, where a survey respondent identified nuclear medicine as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 174 active nuclear medicine physicians in Australia. Within this:

- nuclear medicine physicians had an average age of 48 years;
- they worked an average of 42 hours per week; and
- almost one-quarter (24 percent) were aged 55 years or over.

**Table 18.88: Nuclear medical workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	3	42.7	2	40.3	5
35-39	11	39.6	23	47.0	34
40-44	6	33.8	17	43.6	23
45-49	10	40.2	29	47.2	39
50-54	1	42.0	30	47.7	31
55-59	1	55.0	13	48.2	14
60-64	1	26.0	14	22.1	15
65-69	0	-	13	30.7	13
70-74	0	-	0	-	0
75+	0	-	0	-	0
<b>Total</b>	<b>33</b>	<b>39.2</b>	<b>141</b>	<b>42.8</b>	<b>174</b>

Source: 2009 AIHW Medical Labour Force Survey

\*It is noted that this figure significantly understates the number of active nuclear medicine specialists in Australia, given there are currently approximately 350 nuclear medicine specialists credentialed under the Joint Nuclear Medicine Specialist Credentialling Program. It is recognised that a proportion of this number will not be working in nuclear medicine as their main specialty, however they will be practising to some extent in nuclear medicine and therefore contributing to the "workforce stock"

## Workforce inflows

### New fellows

The Australasian Association of Nuclear Medicine Specialists (AANMS) formerly the Australian & New Zealand Association of Physicians in Nuclear Medicine, has advised that the number of new fellows for nuclear medicine does not reflect the actual numbers for similar reasons to those set out in relation to "workforce stock". The MTRP 15<sup>th</sup> Report data are understood to include only physician trainees in the reported new nuclear medicine fellows (line one of Table 18.89) and, as such, understate the actual number of new fellows (set out in line two of Table 18.89).

**Table 18.89: Number of Nuclear medicine new fellows 2005 to 2010**

Data Source	2005	2006	2007	2008	2009	2010
MTRP	8	6	4	2	8	2
AANMS	13	14	12	16	15	10

(a) Does not include international medical graduates and New Zealand fellows (but does include radiologist trainees who have completed the nuclear medicine advanced training program and have been credentialled for nuclear medicine)

Source: Medical Training Review Panel Tenth to Fifteenth Reports and Australasian Association of Nuclear Medicine Specialists

### Trainees

**Table 18.90: Nuclear medicine advanced trainees (a), 2009 to 2011**

	2009	2010	2011
Advanced trainees	20	20	16
AANMS	31	28	29

Source: Medical Training Review Panel Tenth to Fifteenth

(a) The above advanced trainee numbers reflect the total of physician and radiologist nuclear medicine advanced trainees



## Rheumatology

### What is a rheumatologist?

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 is practised in a variety of settings. Some practise only rheumatology in private practice, at public hospitals or in conjunction with academic or research posts. Others combine rheumatology expertise with related clinical expertise, for example general medicine, nuclear medicine, aged care, or sports medicine.

Trainees are required to complete 36 months of advanced training in rheumatology. Of this, 24 months must be in an accredited core training position, and up to 12 months in non-core training.

### What issues have stakeholders identified for the rheumatology workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence rheumatology workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

There is uneven distribution of rheumatologists across jurisdictions, and poor access to services in regional, rural and remote areas (as demonstrated by a study by Arthritis Victoria). Actions taken to improve this include:

- outreach service provision in rural and regional Australia and
- telehealth, in particular videoconferencing between GPs and specialist rheumatologists.

#### What were the medical college views?

Factors influencing future rheumatology workforce supply or demand highlighted by the college were:

- increasing ambulatory based treatment in both public and private settings;
- increasing use of multidisciplinary care in the management of chronic musculoskeletal conditions;
- increasing accuracy of early diagnosis from advances in laboratory-based tests and imaging techniques;
- anticipated falls in average hours worked – from the increasing participation of women in the workforce and trends of reduced working hours for both males and females;

- continuation of rheumatologists performing non-clinical roles such as research, teaching, and medical professional committees;
- training capacity issues, particularly the variable funding for paediatric rheumatology (also noting the specialty training program has increased the number of advanced trainees); and
- delayed entry of new fellows to the workforce, from large numbers pursuing further training.

### What other considerations may influence the rheumatology workforce?

Feedback from the rheumatology profession indicated an existing workforce shortage, evidenced by the time taken to access an appointment – with approximately 50 percent of patients in Australia waiting longer than six weeks between referral and consultations.

Arthritis has been identified as a national health priority in Australia. It is one of the most common long-term diseases in Australia and is a significant contributor to disability, with 15 percent of the population estimated to be affected by arthritis in 2007–08.<sup>56</sup> Arthritis comprises a high proportion of rheumatologists' work, so demand for the profession can be expected to increase.

### Workforce profile

#### Workforce stock

The following table outlines the characteristics of the rheumatologist workforce, where a survey respondent identified rheumatology as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 274 active rheumatologists in Australia. Within this:

- rheumatologists had an average age of 51 years; and
- approximately one-third were aged 55 years or over.

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<sup>56</sup> AIHW 2010. A snapshot of arthritis in Australia 2010. Arthritis series no. 13. Cat. no. PHE 126. Canberra: AIHW.

**Table 18.91: Rheumatology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	1	40.7	3	41.0	4
35-39	23	31.7	17	41.8	40
40-44	18	27.9	13	44.1	31
45-49	22	28.6	32	47.0	54
50-54	17	47.1	36	45.7	53
55-59	3	53.9	31	43.9	34
60-64	1	20.4	30	41.1	31
65-69	1	76.3	17	43.1	18
70-74	0	-	1	20.5	1
75+	0	-	8	9.0	8
<b>Total</b>	<b>86</b>	<b>34.4</b>	<b>188</b>	<b>42.4</b>	<b>274</b>

Source: 2009 AIHW Medical Labour Force Survey

The ARA recently conducted a workforce survey, with different workforce results to the AIHW medical labour force survey. This is likely to be the result of different survey methodologies and the survey being conducted at a different point in time (in 2012, compared with 2009 for the AIHW survey).

## Workforce inflows

### New fellows

**Table 18.92: Number of rheumatology new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
9	5	11	12	5	11

(a) Includes international medical graduates

Source: Medical Training Review Panel Tenth to Fifteenth Reports and RACP

## Trainees

**Table 18.93: Rheumatology advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	32	43	37

Source: Medical Training Review Panel Fifteenth Report

## Respiratory and Sleep Medicine

### What are respiratory and sleep medicine physicians?

Respiratory medicine encompasses diseases of the respiratory system, including the upper airway, the lungs, the chest wall and the ventilatory control system. Sleep medicine is devoted to the diagnosis and therapy of sleep disturbances and disorders.

Trainees are required to complete 36 months of advanced training in respiratory medicine or sleep medicine. Of this, 24 months must be in an accredited core training position and up to 12 months may be accredited as non-core training.

For dual accreditation in respiratory and sleep medicine, trainees must undertake 24 months of core respiratory training and 12 months of core sleep training as part of the 36 month training program.

Training in sleep medicine now has a separately identified training program. While most sleep medicine trainees are respiratory physicians-in-training seeking dual accreditation, there are other specialties that may train in sleep medicine (for example neurology).

### What issues have stakeholders identified for the sleep medicine physician workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence respiratory and sleep medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for this workforce.

#### What were the medical college views?

The college highlighted workforce demand may increase from new procedures such as endo-bronchial and thoracic ultrasounds and pleural procedures. New models of care incorporating practice nurses, nurse practitioners and GPs were also flagged as potentially impacting future workforce needs.

In relation to the training pathway, the college noted a lack of trainers and a shortage of training opportunities, particularly in sleep medicine, may affect future supply. Simulated learning was raised as a potential opportunity (in addition to increased provision for clinical training positions).

### What other considerations may influence the respiratory and sleep medicine workforce?

The most common sleep disorders are obstructive sleep apnea (OSA) and insomnia. Strong correlations exist between obesity and OSA, and it was highlighted the rising rate of obesity may therefore increase demand for sleep physicians.

### Workforce profile

#### Workforce stock

The following table outlines the characteristics of the respiratory and sleep medical workforce, where a survey respondent identified respiratory and sleep medicine as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 268 active respiratory and sleep physicians in Australia. Within this:

- they had an average age of 46 years;
- they worked an average of 49 hours per week; and
- almost one-fifth (18 percent) were aged 55 years or over.

**Table 18.94: Respiratory and sleep medicine workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	7	48.7	8	33.3	15
35-39	12	33.4	51	45.2	63
40-44	16	34.4	49	52.5	65
45-49	7	49.0	40	54.4	47
50-54	3	45.7	28	60.0	31
55-59	2	37.0	21	52.1	23
60-64	2	45.5	16	51.4	18
65-69	0	-	3	42.8	3
70-74	0	-	3	23.6	3
75+	0	-	0	-	0
<b>Total</b>	<b>49</b>	<b>39.5</b>	<b>219</b>	<b>50.8</b>	<b>268</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 18.95: Number of respiratory and sleep medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
16	22	18	21	22	16

(a) Does not include international medical graduates or New Zealand new fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

### Trainees

**Table 18.96: Respiratory and sleep medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	92	111	124

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## 19 Physicians – paediatrics and child health

### What is a paediatrician?

General paediatrics is a multidisciplinary specialty which provides expert diagnosis, treatment and care for infants, children and young people aged from 0 to 19 years. General paediatricians work closely with other medical professionals including GPs, paediatric nurses, allied health professionals and associated community organisations.<sup>57</sup>

### How are they trained?<sup>58</sup>

The Royal Australian College of Physicians (RACP) provides vocational training for paediatrics and child health. The RACP has a common educational framework – the Physician Readiness for Expert Practice (PREP) program. The PREP program encompasses three years basic and three or more years advanced training and continuing professional development. Entry to the program is at PGY2 or AMC certificate level.

Advanced training in general paediatrics requires three years in an accredited training position..

On satisfactory completion of all training requirements, trainees are admitted to fellowship of the Royal Australian College of Physicians (FRACP).

### What is the assessment for international graduates?

Almost all applicants are interviewed to assess their comparability to Australian-trained physicians and paediatricians. SIMGs whose training is assessed as partially comparable to an Australian-trained physician/paediatrician are required to complete 12 to 24 months peer review. The college may also require up to 12 months top-up training, completion of summative assessment(s), and/or a practice visit.

For SIMGs whose training is assessed as substantially comparable to an Australian-trained physician/paediatrician, there is a 12 month peer review period.

Upon satisfactory completion of requirements, applicants are eligible for specialist recognition and fellowship.

### What issues have stakeholders identified for the paediatrician workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in

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<sup>57</sup> <http://www.racp.edu.au/>

<sup>58</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Neonatology was specifically mentioned as a workforce in shortage – it is highly specialised, the workforce is older, and experience is doctors in the specialty burn out due to requirements for long hours at work. Trainee requirements are high and there is an emerging mismatch between the number of trainees required and the number of consultant specialists required (that is, there are more trainees required than consultant specialists). This makes it unattractive to potential trainees.

### What were the medical college views?

The college indicated the statement above from jurisdictions in relation to neonatology being in shortage was not consistent with their experience that consultants are finding it difficult getting employment.

The college highlighted a number of changes in relation to service delivery that may impact the future workforce, including:

- a move to create additional specialties and sub-specialties, for example young adult medicine and genetics;
- changes in the transition from child to adult services, with paediatricians increasingly looking after older patients in private practice (consequently influencing demand for services);
- recent increases in staff specialist positions compared with private practice specialists – potentially a result of the training model which is focused in acute care settings/hospitals;
- for paediatric emergency, a trend towards employment in non-tertiary emergency departments;
- increased demands for consultant support for trainees because of the move to 24 hour specialist in-house cover, particularly in paediatric emergency medicine, neonatology and general paediatrics; and
- a potential mismatch in some sub-specialties between the number of trainees required to provide services and the number of consultants required. That is, the trainees are required to provide services, however not all are currently required as consultants.



In relation to training, the college advised the specialty training program has boosted training numbers in the non-tertiary and non hospital settings ( eg.community settings), and the majority of trainees are now female. This is expected to impact on average working hours and also increase the duration of training.

The college also advised 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. This extends the time taken to enter the workforce.

Considerations highlighted in relation to paediatrics sub-specialty training included:

- long waiting lists and largely tertiary public hospital based positions;
- variable funding for training positions from year to year, creating considerable uncertainty in training pathways. This has led to some trainees completing training requirements overseas; as well as calls for the development of better coordinated national training programs for paediatric sub-specialties;
- competition for procedural aspects of training (such as endobronchial ultrasound in respiratory) limiting training opportunities. Simulation training was highlighted as potentially expanding (but not fully replacing) available opportunities; and
- the need to examine alternative training programs (such as diplomas) to allow training of IMGs in service positions with the expectation they will return to their country of origin. This would reduce the number of trainees achieving full-fellowship, consequently assisting with the potential imbalance of trainees required to provide services versus consultant positions needed.

There are significant issues with the geographic distribution of the paediatric workforce. Particularly highlighted was an existing workforce gap in general paediatrics and an ageing workforce in regional centres. The paediatric division of the RACP is seeking to improve this through integrating rural placements into the training program.

### What other considerations may influence paediatrics and child health workforce projections?

There is a view there is an existing unmet need in community child health, in particular in developmental paediatrics, public health and child protection. The introduction of the national disability insurance scheme is likely to further increase demand.

Data issues raised affecting workforce projection results were:

- the significant number of dual trainees in paediatrics, and consequent difficulties in accurately determining the training pipeline / new fellows; and
- expressed workforce demand is not adequately captured through existing data sources. Examples provided were:

- community paediatrics demand, where services in areas like child protection are not captured; and
- paediatric sub-specialties providing services in public outpatient departments, which is not adequately captured by Diagnosis Related Groups (DRGs) or Medicare data.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The paediatrics and child health existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For paediatrics and child health, there is little change in the workforce dynamics indicators from 2012 to 2025. The only indicator to move to the next rating is the replacement rate. However the rating in 2025 still indicates the projected number of new fellows entering the workforce that year exceeds the projected number of exits. Much of the feedback from the profession related to the training pathway, if these issues affect the number of new fellows this indicator may be further affected.

**Table 19.1: Paediatrics and child health – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 19.2 presents the workforce projection scenario results for paediatrics and child health. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

For paediatrics and child health, there is a small positive movement from the existing workforce position by 2025, that is, growth in workforce supply exceeds growth in expressed demand. Consultation highlighted a reliance on registrars for service provision in paediatrics and child health. This is reflected in the registrar work value scenario result, which has a substantial positive impact relative to the comparison scenario.

**Table 19.2: Paediatrics and child health, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,995	1,969	<b>26</b>	2,501	2,462	<b>39</b>
Service and workforce reform	1,995	1,782	<b>213</b>	2,501	2,122	<b>379</b>
Registrar work value	2,274	1,969	<b>305</b>	2,800	2,462	<b>338</b>
Medium self-sufficiency	1,951	1,969	<b>-18</b>	2,371	2,462	<b>-91</b>
Capped working hours	1,911	1,969	<b>-58</b>	2,382	2,462	<b>-80</b>

**Table 19.3: Paediatrics and child health, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,296</b>	<b>1,526</b>	<b>1,995</b>	<b>2,501</b>
New fellows	87	75	97	111
Permanent migration	29	29	29	29
Temporary migration	13	13	13	13
Exits (%)	1.83%	1.85%	2.17%	3.62%
<b>Expressed demand</b>	<b>1,296</b>	<b>1,537</b>	<b>1,969</b>	<b>2,462</b>
<b>Positive/negative movement</b>		<b>-11</b>	<b>26</b>	<b>39</b>

**Table 19.4: Paediatrics and child health, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,296</b>	<b>1,526</b>	<b>1,995</b>	<b>2,501</b>
New fellows	87	75	97	111
Permanent migration	29	29	29	29
Temporary migration	13	13	13	13
Exits (%)	1.83%	1.85%	2.17%	3.62%
<b>Expressed demand</b>	<b>1,296</b>	<b>1,476</b>	<b>1,782</b>	<b>2,122</b>
<b>Positive/negative movement</b>		<b>50</b>	<b>213</b>	<b>379</b>

**Table 19.5: Paediatrics and child health, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,296</b>	<b>1,704</b>	<b>2,274</b>	<b>2,800</b>
New fellows	87	75	97	111
Permanent migration	29	29	29	29
Temporary migration	13	13	13	13
Exits (%)	1.83%	1.85%	2.17%	3.62%
<b>Expressed demand</b>	<b>1,296</b>	<b>1,537</b>	<b>1,969</b>	<b>2,462</b>
<b>Positive/negative movement</b>		<b>167</b>	<b>305</b>	<b>338</b>

**Table 19.6: Paediatrics and child health, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,296</b>	<b>1,519</b>	<b>1,951</b>	<b>2,371</b>
<i>New fellows</i>	87	75	97	111
<i>Permanent migration</i>	29	26	21	15
<i>Temporary migration</i>	13	12	9	7
<i>Exits (%)</i>	1.83%	1.85%	2.22%	3.82%
<b>Expressed demand</b>	<b>1,296</b>	<b>1,537</b>	<b>1,969</b>	<b>2,462</b>
<b>Positive/negative movement</b>		<b>-18</b>	<b>-18</b>	<b>-91</b>

**Table 19.7: Paediatrics and child health, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,296</b>	<b>1,469</b>	<b>1,911</b>	<b>2,382</b>
<i>New fellows</i>	87	75	97	111
<i>Permanent migration</i>	29	29	29	29
<i>Temporary migration</i>	13	13	13	13
<i>Exits (%)</i>	1.83%	1.85%	2.17%	3.62%
<b>Expressed demand</b>	<b>1,296</b>	<b>1,537</b>	<b>1,969</b>	<b>2,462</b>
<b>Positive/negative movement</b>		<b>-68</b>	<b>-58</b>	<b>-80</b>

## What is included in the projections?

### Workforce stock

The base paediatric and child health workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified paediatrics and child health as their main field of specialty. In 2009, there were 1,296 active paediatric and child health physicians in Australia. Within this:

- paediatric and child health physicians had an average age of 48 years;
- they worked an average of 44 hours per week; and
- 29 percent were aged 55 years or over.

**Table 19.8: Paediatric and child health workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	41	40.4	31	44.6	72
35-39	137	34.4	93	49.6	230
40-44	154	37.0	92	47.2	246
45-49	99	37.7	124	48.5	223
50-54	58	42.8	95	53.0	153
55-59	19	41.6	126	51.4	145
60-64	17	46.0	115	50.0	132
65-69	4	34.3	55	42.2	59
70-74	0	-	22	28.1	22
75+	0	-	14	35.8	14
<b>Total</b>	<b>529</b>	<b>37.8</b>	<b>767</b>	<b>48.3</b>	<b>1,296</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

Expressed workforce demand for paediatrics and child health is estimated to grow at 5.6 percent per annum. This was based on a combination of hospital separations and Medicare data. Hospital separations were identified on the basis of Service Related Groups (SRGs) which were mapped to relevant Diagnosis Related Groups (DRGs) per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000

population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Hospital separations data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

The lack of outpatient data impacts on expressed demand for the paediatric and child health workforce. HWA will continue to work with the college to ascertain the size of this impact.

## Workforce inflows

### New fellows

Table 19.9 shows paediatric and child health new fellows by sub-specialty. Over the period 2008 to 2010, total paediatric and child health new fellow numbers have fallen, from 96 to 60. In 2009, the number of paediatric and child health was 82 – this formed the basis for new fellow inflows in the workforce projections.

**Table 19.9: Paediatric and child health new fellows<sup>(a)</sup> by sub-specialty, 2005 to 2010**

Paediatric and child health sub-specialty	2005	2006	2007	2008	2009	2010
Cardiology	2	0	2	2	2	3
Clinical Genetics	0	1	1	1	2	1
Clinical Pharmacology	0	0	0	0	0	0
Community Child Health	0	3	2	4	2	4
Community Child Health/General Paediatrics	0	1	0	0	0	0
Endocrinology	0	0	0	2	4	5
Gastroenterology	0	0	0	2	3	0
General Paediatrics	53	26	26	53	38	32
Haematology	0	0	0	1	1	1
Immunology and Allergy	0	0	0	3	3	1
Infectious Disease	2	0	0	0	2	1
Intensive Care Medicine	0	0	0	0	0	0
Medical Oncology	4	3	6	2	6	0
Neonatal/Perinatal Medicine	2	0	5	10	8	3
Nephrology	3	0	1	1	0	1



Paediatric and child health sub-specialty	2005	2006	2007	2008	2009	2010
Neurology	0	0	1	0	2	2
Nuclear Medicine	0	0	0	0	0	0
Paediatric Emergency Medicine	4	1	2	9	4	4
Palliative Medicine	0	0	1	0	0	0
Respiratory and Sleep Medicine	3	1	0	3	0	0
Rheumatology	1	0	0	0	5	2
Board of Censors <sup>(b)</sup>	-	18	-	-	-	-
Committee for Paediatric Physician training <sup>(b)</sup>	-	19	-	-	-	-
<b>Total</b>	<b>74</b>	<b>73</b>	<b>47</b>	<b>93</b>	<b>82</b>	<b>60</b>

(a) Does not include overseas trained specialists.

(b) These categories were included in the Medical Training Review Panel Eleventh Report with no further breakdown.

Source: Medical Training Review Panel Tenth to Fifteenth Reports

## Immigration

The MTRP Fifteenth Report showed 29 permanent migrants entered the paediatrics and child health workforce in 2010. This was held constant across the projection period. This was consistent with DIAC data (showing 28 permanent migrants).

DIAC data apportioned to paediatric and child health indicated 13 temporary migrants in the workforce in 2009. This was held constant across the projection period.

## Trainees

MTRP data on the number of advanced vocational trainees, which was used in the modelling, is shown in the table below.

**Table 19.10: Paediatric and child health advanced trainees, 2009 to 2011**

	2009	2010	2011
Total advanced trainees	571	618	640

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## 20 Psychiatry

### What is a psychiatrist?

A psychiatrist is a qualified medical doctor who has obtained additional qualifications to become a specialist in the diagnosis, treatment and prevention of mental illness and emotional problems. Psychiatrists are trained to recognise and treat the effects of emotional disturbances on the body as a whole, and the effects of physical conditions on the mind.<sup>59</sup>

### How are psychiatrists trained?<sup>60</sup>

The Royal Australian and New Zealand College of Psychiatrists (RANZCP) is responsible for the training and examination of psychiatrists in Australia and New Zealand. RANZCP provides a five-year psychiatry training program, comprising three years of basic training and two years of advanced training.

Advanced training for generalist fellowship can commence upon satisfactory completion of all basic training requirements, other than the trainee clinical examination. To be eligible to commence an advanced training sub-specialty program, trainees must successfully complete all the basic training requirements including the clinical examination.

Successful completion of the RANZCP vocational program enables admission to fellowship of the RANZCP.

### What is the assessment for international graduates?<sup>61</sup>

Within the RANZCP, the Committee for Specialist International Medical Graduate Education assesses applications from SIMGs seeking exemption from RANZCP training and assessment requirements for admission to fellowship.

Requirements for SIMGs whose training is assessed as partially comparable may include: observed interviews; consultancy exercises; some basic and advanced training; NGO experience; formal assessment such as a written exam; and a final exemption exam.

SIMGs whose training is assessed as substantially comparable will have workplace based assessment requirements, including: a minimum 12 month placement; supervisor reports; case based discussions; 360 degree feedback; and may also include NGO experience, Indigenous experience and some advanced training.

Upon completing all requirements, the SIMG is eligible to apply for fellowship of the college.

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<sup>59</sup> <http://www.ranzcp.org/about-us/about-psychiatry.html>

<sup>60</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

<sup>61</sup> <http://www.ranzcp.org>

## What issues have stakeholders identified for the psychiatry workforce?

### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

### What were the jurisdiction views?

Jurisdiction advice was workforce shortages for psychiatry are focused in the public sector, with acute psychiatry and adolescent psychiatry particular areas of concern. There are also issues with the distribution of the psychiatry workforce, evidenced by a high reliance on IMGs in regional areas.

### What were the medical college views?

The RANZCP provided a range of considerations that may impact the future psychiatry workforce. Factors raised that may potentially influence future supply were:

- workforce demographic trends, specifically:
  - high proportions of female trainees;
  - increasing incidence of part-time work (for both male and female trainees); and
  - high average age (a suggested reason for this was many doctors train in psychiatry as a second specialty).
- high proportions (and consequent reliance) on SIMGs in the existing psychiatry workforce;
- challenges in attracting Australian-trained graduates to the profession;
- the under-utilisation of the private sector for training purposes (although the specialty training program has recently positively affected this); and
- 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.

Service redesign was also highlighted as potentially affecting future workforce demand. Examples included:

- development of shared care models, for example with GPs the college is intending to develop a Diploma qualification that may support shared care models;
- changed emergency department models of care, with earlier psychiatric (or registrar or mental health nurse) consultant involvement; and
- improved access to psychiatric services through further development of telehealth models financed through Medicare.

The geographic maldistribution of the psychiatry profession was noted as an ongoing issue. It was suggested that well supported training opportunities in regional facilities could improve distribution. There has been some improvement in distribution through the high uptake of the Medical Specialists Outreach Program.

### What other considerations may influence psychiatry workforce projections?

Common feedback from all stakeholders was the view there is current unmet demand for psychiatrist services. The introduction of mental health reforms in recent years is also expected to increase demand for services beyond historical rates.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The psychiatry existing workforce position was assessed as **red**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

The only indicator assessed at the lowest rate for psychiatry was the replacement rate. This indicates there are currently more new fellows entering the profession than leaving. This is consistent with MTRP data which showed almost a doubling of the number of new fellows from 2005 (85) to 2010 (154). Despite this, average age is projected to increase by 2025 and dependence on SIMGs is rated at the highest level of concern in 2012 and 2025. These results suggest concern for the future psychiatry workforce (in the absence of any changes).

**Table 20.1: Psychiatry – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 20.2 presents the workforce projection scenario results for psychiatry. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment was that the psychiatry workforce is perceived to be in shortage. The comparison scenario indicates this will worsen if recent trends in supply and expressed demand continue. The service and workforce reform scenario has the greatest impact on the psychiatry workforce projections. The projected undersupply is likely to vary in different areas of psychiatry e.g. in child and adolescent psychiatry and psychogeriatrics. Stakeholders indicated developments such as shared care models and further developing telehealth are potential workforce reforms that may influence productivity.

The medium self-sufficiency scenario results highlight the reliance on immigration in the psychiatry workforce.

**Table 20.2: Psychiatry, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	4,041	4,175	<b>-134</b>	4,699	5,151	<b>-452</b>
Service and workforce reform	4,041	3,770	<b>271</b>	4,699	4,378	<b>321</b>
Registrar work value	4,120	4,175	<b>-55</b>	4,777	5,151	<b>-374</b>
Medium self-sufficiency	3,925	4,175	<b>-250</b>	4,367	5,151	<b>-784</b>
Capped working hours	4,005	4,175	<b>-170</b>	4,653	5,151	<b>-498</b>

Tables 20.3 to 20.7 below provide the results of each of the scenarios.

**Table 20.3: Psychiatry, comparison scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>2,981</b>	<b>3,356</b>	<b>4,041</b>	<b>4,699</b>
New fellows	67	102	77	77
Permanent migration	72	72	72	72
Temporary migration	52	52	52	52
Exits (%)	0.89%	0.98%	1.12%	1.39%
<b>Expressed demand</b>	<b>2,981</b>	<b>3,376</b>	<b>4,175</b>	<b>5,151</b>
<b>Positive/negative movement</b>		<b>-20</b>	<b>-134</b>	<b>-452</b>

**Table 20.4: Psychiatry, service and workforce reform scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>2,981</b>	<b>3,356</b>	<b>4,041</b>	<b>4,699</b>
New fellows	67	102	77	77
Permanent migration	72	72	72	72
Temporary migration	52	52	52	52
Exits (%)	0.89%	0.98%	1.12%	1.39%
<b>Expressed demand</b>	<b>2,981</b>	<b>3,247</b>	<b>3,770</b>	<b>4,378</b>
<b>Positive/negative movement</b>		<b>109</b>	<b>271</b>	<b>321</b>

**Table 20.5: Psychiatry, registrar work value scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>2,981</b>	<b>3,438</b>	<b>4,120</b>	<b>4,777</b>
New fellows	67	102	77	77
Permanent migration	72	72	72	72
Temporary migration	52	52	52	52
Exits (%)	0.89%	0.98%	1.12%	1.39%
<b>Expressed demand</b>	<b>2,981</b>	<b>3,376</b>	<b>4,175</b>	<b>5,151</b>
<b>Positive/negative movement</b>		<b>62</b>	<b>-55</b>	<b>-374</b>

**Table 20.6: Psychiatry, medium self-sufficiency scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>2,981</b>	<b>3,338</b>	<b>3,925</b>	<b>4,367</b>
New fellows	67	102	77	77
Permanent migration	72	65	52	36
Temporary migration	52	47	37	26
Exits (%)	0.89%	0.98%	1.16%	1.50%
<b>Expressed demand</b>	<b>2,981</b>	<b>3,376</b>	<b>4,175</b>	<b>5,151</b>
<b>Positive/negative movement</b>		<b>-38</b>	<b>-250</b>	<b>-784</b>

**Table 20.7: Psychiatry, capped working hours scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>2,981</b>	<b>3,329</b>	<b>4,005</b>	<b>4,653</b>
New fellows	67	102	77	77
Permanent migration	72	72	72	72
Temporary migration	52	52	52	52
Exits (%)	0.89%	0.98%	1.12%	1.39%
<b>Expressed demand</b>	<b>2,981</b>	<b>3,376</b>	<b>4,175</b>	<b>5,151</b>
<b>Positive/negative movement</b>		<b>-47</b>	<b>-170</b>	<b>-498</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the psychiatrist workforce supply and demand estimates.

### Workforce stock

The base psychiatrist workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified psychiatry as their main field of specialty. In 2009, there were 2,981 active psychiatrists in Australia. Within this:

- psychiatrists had an average age of 52 years;
- they worked an average of 40 hours per week; and
- approximately 39 percent were aged 55 years or over.

**Table 20.8: Psychiatry workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
<b>30-34</b>	53	38.7	63	39.9	116
<b>35-39</b>	94	29.6	188	42.1	282
<b>40-44</b>	187	34.3	317	45.7	504
<b>45-49</b>	155	33.6	283	45.2	438
<b>50-54</b>	158	34.9	325	46.8	483
<b>55-59</b>	133	36.1	273	45.5	406
<b>60-64</b>	76	31.9	259	40.3	335
<b>65-69</b>	48	26.7	180	36.2	228
<b>70-74</b>	19	30.6	90	26.5	109
<b>75+</b>	7	31.6	73	26.7	80
<b>Total</b>	<b>930</b>	<b>33.6</b>	<b>2,051</b>	<b>42.2</b>	<b>2,981</b>

Source: 2009 AIHW Medical Labour Force Survey



## Expressed workforce demand

The expressed workforce demand for psychiatry is estimated to grow at 4.1 percent per annum. This was based on a combination of utilisation data and Medicare data. Utilisation data were identified on the basis of mental health presentations and community health contacts per 100,000 population. Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data were used to calculate an overall utilisation rate (by age and sex).

Utilisation data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medical labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

## Workforce inflows

### New fellows

Table 20.9 shows psychiatry new fellows over the period 2005 to 2010. The number of new fellows increased substantially over the period, in particular between 2007 and 2008 (doubling from 72 to 147), with higher numbers sustained in both 2009 (125) and 2010 (154).

The MTRP Fifteenth Report included a split between Australian-trained and overseas-trained new fellows for 2010. For the workforce projections, this proportion was backcast to identify Australian-trained new fellows in 2009 (which was 67). This formed the basis for domestic new fellows in the projections.

**Table 20.9: Psychiatry new fellows<sup>(a)</sup>, 2005 to 2010**

New Fellows	2005	2006	2007	2008	2009	2010
Australian trained	..	..	..	..	..	82
Overseas trained	..	..	..	..	..	72
<b>TOTAL</b>	<b>85</b>	<b>90</b>	<b>72</b>	<b>147</b>	<b>125</b>	<b>154</b>

.. data not available

(a) Includes SIMGs

Source: Medical Training Review Panel Fifteenth Report

### Immigration

Data provided by the RANZCP for the MTRP Fifteenth Report indicated there were 72 permanent migrants into the psychiatry workforce in 2010 (Table 20.9). This was held constant across the projection period.

DIAC data was used for temporary migration, which showed 52 temporary migrants entering the psychiatry workforce in 2009 (also held constant across the projection period).

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections. Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 20.10), and data supplied by the RANZCP (Table 20.11), which provided information on the number of trainees by training year.

**Table 20.10: Psychiatry advanced vocational training positions/trainees<sup>(a)</sup> by year of training, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	99	129	112
<b>Advanced total</b>	<b>322</b>	<b>350</b>	<b>368</b>

(a) Includes Australian fellows undertaking sub-specialty training.

Source: Medical Training Review Panel Fifteenth Report

**Table 20.11: Psychiatry active number of advanced trainees by year of training, 2010 and 2011**

Training year	2010		2011	
	Full-time	Part-time	Full-time	Part-time
Advanced year 1	70	5	98	9
Advanced year 2	98	4	199	105
<b>Total</b>	<b>168</b>	<b>9</b>	<b>297</b>	<b>114</b>

Source: RANZCP

## 21 Diagnostic radiology and radiation oncology

### What are radiologists and radiation oncologists?

Diagnostic radiology is central to the clinical practice of medicine across a wide range of disciplines. It is the best practical way to diagnose, monitor treatment and detect progression or relapse of many diseases in a minimally invasive and anatomically precise manner.

The specialty of radiation oncology focuses on the use of radiation to treat cancer and other diseases.<sup>62</sup>

The Royal Australian and New Zealand College of Radiologists (RANZCR) sets, promotes and continuously improves the standards of training and practice in diagnostic radiology and radiation oncology in Australia and New Zealand.

### How are radiologists and radiation oncologists trained?<sup>63</sup>

The RANZCR advanced training program for diagnostic radiology and radiation oncology is of five years duration. There is no basic training. RANZCR allow for both part-time and interrupted training (total training time must equate to five years full-time equivalent).

The aims of the training programs are:

- for diagnostic radiology, to provide broadly-based experience in all current imaging modalities and body systems; and
- for radiation oncology, to provide broadly based experience in the clinical management and use of radiation to treat cancer.

To be eligible for entry into the specialty training programs, applicants must have at least 24 months of general hospital training, that is, they have completed PGY1 and PGY2.

### What is the assessment for international graduates?

The RANZCR currently has four pathways to specialist recognition and the assessment steps depend on pathway taken.

If an applicant's training is assessed as substantially comparable and the eligibility criteria have been met, the applicant must take up appointment in a specialist position under supervision, and undertake a peer-assessment in the workplace.

If an applicant's training is found partially comparable, the applicant is required to either:

- undertake a prescribed period of supervised training in an accredited training site not exceeding two years, and to sit and pass the college Part II examinations; or

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<sup>62</sup> <http://www.ranzcr.edu.au/radiology/>

<sup>63</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

- sit and pass the college Part II examinations without additional training.

If successful in either passing the exam or completing the requirements of the peer review, the applicant is eligible for recognition as a diagnostic radiology or radiation oncology specialist, and for admission to fellowship of the college.

## Diagnostic radiology

Diagnostic radiologists are trained to assist other doctors and specialists to treat their patients by diagnosing and providing treatment using medical imaging. Radiologists can understand and explain medical problems or symptoms through the images or pictures that are taken of various parts of the body.<sup>64</sup>

Diagnostic radiologists can work in various sub-specialties such as breast imaging, interventional radiology, musculoskeletal imaging, cardiac imaging, or paediatric (children's) imaging.

### What issues have stakeholders identified for the diagnostic radiology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

Jurisdiction advice was there are shortages of this workforce in regional areas. This specialty is dominated by the private sector, making it difficult to recruit to the public sector due to pay parity and service models.

#### What were the medical college views?

RANZCR highlighted a number of factors that may influence future workforce supply and demand.

- Increasing female participation in the radiology training program and the consequent potential impact on hours worked;
- Limitations on training capacity from restricted availability of training places in the private sector. Training capacity limitations may be exacerbated by the trend for outsourcing public radiology services;

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<sup>64</sup> <http://www.ranzcr.edu.au/radiology/>

- The replacement of after hours on-call services by on-site provision of services; and
- Flow on effects from the implementation of target turnaround times in emergency departments.

Geographic distribution of the diagnostic radiology workforce was raised as a critical future workforce requirement. Areas highlighted to improve this were:

- further expansion of radiology training in regional centres;
- focus on recruitment and retention of rural origin medical graduates; and
- new models of care including tele-radiology and electronic health records.

New technology is expected to drive change within diagnostic radiology, for example, the further development of distance reporting models (tele-radiology) and the use of electronic health records.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The radiology existing workforce position was assessed as **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

Diagnostic radiology is one of the few medical specialties that did not receive the lowest rating for the replacement rate indicator in 2012. In 2025, this indicator also substantially changed rating, to the level of highest concern. This indicates workforce exits are projected to exceed new fellows in 2025. Consultation highlighted limited training capacity as a future consideration, which may exacerbate this area of concern.

There is also a high reliance on SIMGs in diagnostic radiology (assessed at highest level of concern in 2012 and 2025). This result is consistent with 2010 data which showed more SIMG new fellows than Australian-trained new fellows (Table 21.9).

The replacement rate and dependence on SIMG ratings in 2025, combined with a projected increase in average age suggest concerns for the future diagnostic radiology workforce.

**Table 21.1: Diagnostic radiology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age	Yellow	Orange
Replacement rate	Yellow	Red
Dependence on SIMGs	Red	Red
Duration of training program	Orange	Orange

### What are our projections for the future?

Table 21.2 presents the workforce projection scenario results for diagnostic radiology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

For diagnostic radiology, there is a substantial negative movement from the existing workforce position by 2025, that is, growth in expressed demand exceeds growth in supply if recent trends in supply and demand continue. The service and workforce reform scenario provides the largest positive movement relative to the comparison scenario, indicating this would have the greatest impact on reducing a perceived existing gap between supply and demand. Technology was highlighted as a key driver of reform, however the future workforce impact of technological change was unknown. Experience has shown that while it can create efficiencies such as faster throughput on machines, in some cases it has added complexities (for example increased MRI and CT usage has added complexities to reporting requirements), offsetting efficiencies gained.

The medium self-sufficiency scenario has the greatest negative movement relative to the comparison scenario. This reflects the high reliance on overseas-trained specialists in the diagnostic radiology workforce, and is consistent with the workforce dynamics indicator assessment and data from 2010 (which showed two-thirds of new fellows were SIMGs, Table 21.6).

**Table 21.2: Diagnostic radiology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,825	2,013	<b>-188</b>	2,070	2,436	<b>-366</b>
Service and workforce reform	1,825	1,822	<b>3</b>	2,070	2,068	<b>2</b>
Registrar work value	1,904	2,013	<b>-109</b>	2,149	2,436	<b>-287</b>
Medium self-sufficiency	1,763	2,013	<b>-250</b>	1,896	2,436	<b>-540</b>
Capped working hours	1,807	2,013	<b>-206</b>	2,047	2,436	<b>-389</b>

**Table 21.3: Diagnostic radiology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,478</b>	<b>1,569</b>	<b>1,825</b>	<b>2,070</b>
New fellows	15	30	62	62
Permanent migration	36	36	36	36
Temporary migration	42	42	42	42
Exits (%)	2.31%	1.54%	2.68%	4.89%
<b>Expressed demand</b>	<b>1,478</b>	<b>1,652</b>	<b>2,013</b>	<b>2,436</b>
<b>Positive/negative movement</b>		<b>-83</b>	<b>-188</b>	<b>-366</b>

**Table 21.4: Diagnostic radiology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,478</b>	<b>1,569</b>	<b>1,825</b>	<b>2,070</b>
New fellows	15	30	62	62
Permanent migration	36	36	36	36
Temporary migration	42	42	42	42
Exits (%)	2.31%	1.54%	2.68%	4.89%
<b>Expressed demand</b>	<b>1,478</b>	<b>1,592</b>	<b>1,822</b>	<b>2,068</b>
<b>Positive/negative movement</b>		<b>-23</b>	<b>3</b>	<b>2</b>

**Table 21.5: Diagnostic radiology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,478</b>	<b>1,627</b>	<b>1,904</b>	<b>2,149</b>
New fellows	15	30	62	62
Permanent migration	36	36	36	36
Temporary migration	42	42	42	42
Exits (%)	2.31%	1.54%	2.68%	4.89%
<b>Expressed demand</b>	<b>1,478</b>	<b>1,652</b>	<b>2,013</b>	<b>2,436</b>
<b>Positive/negative movement</b>		<b>-25</b>	<b>-109</b>	<b>-287</b>

**Table 21.6: Diagnostic radiology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,478</b>	<b>1,558</b>	<b>1,763</b>	<b>1,896</b>
New fellows	15	30	62	62
Permanent migration	36	33	26	18
Temporary migration	42	38	30	21
Exits (%)	2.31%	1.56%	2.78%	5.34%
<b>Expressed demand</b>	<b>1,478</b>	<b>1,652</b>	<b>2,013</b>	<b>2,436</b>
<b>Positive/negative movement</b>		<b>-94</b>	<b>-250</b>	<b>-540</b>

**Table 21.7: Diagnostic radiology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,478</b>	<b>1,552</b>	<b>1,807</b>	<b>2,047</b>
New fellows	15	30	62	62
Permanent migration	36	36	36	36
Temporary migration	42	42	42	42
Exits (%)	2.31%	1.54%	2.68%	4.89%
<b>Expressed demand</b>	<b>1,478</b>	<b>1,652</b>	<b>2,013</b>	<b>2,436</b>
<b>Positive/negative movement</b>		<b>-100</b>	<b>-206</b>	<b>-389</b>



## What is included in the projections?

Information in this section broadly outlines the data used to generate the diagnostic radiology workforce supply and expressed demand estimates.

### Workforce stock

The base diagnostic radiology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified diagnostic radiology as their main field of specialty. In 2009, there were 1,478 active diagnostic radiologists in Australia. Within this:

- diagnostic radiologists had an average age of 49 years;
- they worked an average of 41 hours per week; and
- approximately 29 percent were aged 55 years and over.

**Table 21.8: Diagnostic radiology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	36	47.3	36	40.4	72
35-39	96	33.4	158	43.3	254
40-44	86	37.1	173	44.9	259
45-49	40	39.4	229	46.0	269
50-54	30	38.3	161	43.4	191
55-59	33	33.1	155	44.6	188
60-64	9	34.9	106	40.0	115
65-69	16	24.2	80	31.3	96
70-74	1	42.0	23	31.3	24
75+	2	18.4	8	21.1	10
<b>Total</b>	<b>349</b>	<b>36.4</b>	<b>1,129</b>	<b>42.6</b>	<b>1,478</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for diagnostic radiology is estimated to grow at 3.8 percent per annum. This is based on Medicare data identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

HWA recognises data is unavailable for diagnostics services provided in public hospitals and outpatient services (not billed through Medicare). As a result, expressed demand for diagnostic radiology is likely to be underestimated.

## Workforce inflows

### New fellows

Table 21.9 shows diagnostic radiology new fellows over the period 2005 to 2010. After reaching a high 74 in 2006, there have been approximately 50 new fellows each year.

The MTRP Fifteenth Report included a split between Australian-trained and overseas-trained new fellows for 2010. For the workforce projections, this proportion was backcast to identify Australian-trained new fellows in 2009 (which was 15). This formed the basis for domestic new fellows in the model.

**Table 21.9: Diagnostic radiology new fellows<sup>(a)</sup>, 2005 to 2010**

New fellows	2005	2006	2007	2008	2009	2010
Australian trained	..	..	..	..	..	18
Specialist international medical graduates	..	..	..	..	..	36
<b>Total</b>	<b>39</b>	<b>74</b>	<b>54</b>	<b>54</b>	<b>44</b>	<b>54</b>

..data not available

(a) Includes SIMGs

Source: Medical Training Review Panel Fifteenth Report

## Immigration

Data provided by the RANZCR for the MTRP Fifteenth Report indicated there were 36 permanent migrants into the diagnostic radiology workforce in 2010 (Table 21.9). This was held constant across the projection period.

DIAC data was used for temporary migration, with 42 temporary migrants in the diagnostic radiology workforce in 2009 (also held constant across the projection period).

## Trainees

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the workforce projections.

Training data was used in this, in particular to calculate transition rates (rates which show the percentage of trainees completing the specialty program in the prescribed time).

Two key data sources were used for training data – the MTRP report, which provided the total number of advanced vocational trainees in the program (Table 21.10), and data supplied by the RANZCR (Table 21.11), which provided information on the number of trainees by training year.

**Table 21.10: MTRP – Advanced vocational training positions/trainees by year of training for 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	47	56	96
<b>Advanced total</b>	<b>328</b>	<b>333</b>	<b>366</b>

Source: Medical Training Review Panel Reports Fourteen and Fifteen

**Table 21.11: Diagnostic radiology active number of advanced trainees, 2010 and 2011**

Training year	2010		2011	
	Full-time	Part-time	Full-time	Part-time
Advanced radiology year 1	81	1	66	1
Advanced radiology year 2	65	1	82	1
<b>Total</b>	<b>146</b>	<b>2</b>	<b>148</b>	<b>2</b>

Source: RANZCR

## Radiation oncology

Radiation oncology focuses on the use of radiation to treat cancer and other diseases. A radiation oncologist is a medical specialist with specific postgraduate training in managing patients with cancer. This particularly involves the use of radiation therapy (also called radiotherapy). They also have expertise in the treatment of non-malignant conditions with radiation therapy. Radiation oncologists work closely with other medical specialists, especially surgeons, medical oncologists and palliative care physicians, as part of a multidisciplinary team caring for patients with cancer.<sup>65</sup>

### What issues have stakeholders identified for the radiation oncology workforce?

#### Key stakeholder views

The workforce projections generated for HW 2025 are based on observed historical trends. Considerations that may impact future workforce supply or demand are therefore important in providing a real world context for interpreting the workforce projections. Consultation was conducted with employers and the profession to obtain their views on such considerations, which are summarised below (noting these do not necessarily represent the views of HWA). Future workforce projections may be adapted as more is known about any such considerations.

#### What were the jurisdiction views?

All jurisdictions agreed the demand for this workforce will grow at greater than historical rates, driven by the increasing incidence of cancer and the impact of new cancer centres. The placement of cancer centres in regional areas has implications for the distribution of this workforce. Jurisdictions also advised of the flow-on effects of cancer centres to other medical specialties. For example, now there is a cancer centre in the Northern Territory, there is an increased need for other specialties and infrastructure for rehabilitation or palliative physicians.

#### What were the medical college views?

RANZCOR highlighted the training pathway is a primary factor influencing future supply, specifically:

- availability of training places in the private sector, where there have been increases in the number of private radiation oncology facilities;
- availability of linear accelerators. The dependence on the availability of linear accelerators was highlighted as a barrier to innovation and reform. Linear accelerators are both expensive and limited, and their placement dictates where the workforce operates;
- availability of supervision; and

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<sup>65</sup> <http://www.ranzcr.edu.au/radiology/>

- availability of related workforces such as radiation oncology medical physicists and radiation therapists.

In terms of demand, RANZCOR highlighted the implementation of regional cancer centres will increase demand for services.

The geographic distribution of the radiation oncology workforce is a current focus of the college. Recruitment and retention is a challenge, with sustainable rosters and levels of activity important factors in attraction and retention of the regional radiation oncologist workforce.

There are also reports of a lack of effective coordination between workforce, resources and infrastructure planning, which is hindering the efficient delivery of radiation oncology services.

#### What other considerations may influence radiation oncology workforce projections?

An issue raised for consideration for the current and future workforce is the professions' view that existing workforce supply is insufficient to meet the demands for radiation oncology. This is based on the current use of radiation in relation to the incidence of cancer being below the target optimal utilisation rate of 52.3 percent<sup>66</sup> of new cancer patients in 2012 (and projected for 2022).

#### HWA's assessment of this workforce

##### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The radiation oncology existing workforce position was assessed as **red**.

##### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

<sup>66</sup> Baume P. A Vision for Radiotherapy. Report of the Radiation Oncology Inquiry. Canberra: Department of Health and Ageing, June 2002



### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For radiation oncology, there is little change in the workforce dynamics indicators from 2012 to 2025. Average age is projected to increase, reflected by the rating moving to the next level. All other ratings remain at the same in both 2012 and 2025.

**Table 21.12: Radiation oncology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 21.13 presents the workforce projection scenario results for radiation oncology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment was that the radiation oncology workforce is perceived to be in shortage. The comparison scenario indicates if recent trends in supply and demand were to continue, this position would worsen. Exacerbating this, consultation suggested demand will grow at greater than historical rates, due to increasing incidence of cancer.

The service and reform scenario has the greatest impact on reducing an existing gap between supply and expressed demand, however the dependence on the availability of linear accelerators was highlighted as an existing barrier to significant workforce reform.

The capped working hours scenario resulted in the largest negative movement relative to the comparison scenario, suggesting a number of radiation oncologists work more than 50 hours per week.

An overriding concern also highlighted in consultation is that the expressed demand rate is underestimated due to the lack of outpatient data. Any increase in demand would extend the amount demand increases relative to supply.

**Table 21.13: Radiation oncology, summary of workforce supply and demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	399	429	<b>-30</b>	515	572	<b>-57</b>
Service and workforce reform	399	386	<b>13</b>	515	490	<b>25</b>
Registrar work value	426	429	<b>-3</b>	542	572	<b>-30</b>
Medium self-sufficiency	397	429	<b>-32</b>	507	572	<b>-65</b>
Capped working hours	374	429	<b>-55</b>	481	572	<b>-91</b>

**Table 21.14: Radiation oncology, comparison scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>245</b>	<b>293</b>	<b>399</b>	<b>515</b>
New fellows	19	17	19	19
Permanent migration	2	2	2	2
Exits (%)	0.44%	0.75%	0.78%	1.01%
<b>Expressed demand</b>	<b>245</b>	<b>314</b>	<b>429</b>	<b>572</b>
<b>Positive/negative movement</b>		<b>-21</b>	<b>-30</b>	<b>-57</b>

**Table 21.15: Radiation oncology, service and workforce reform scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>245</b>	<b>293</b>	<b>399</b>	<b>515</b>
New fellows	19	17	19	19
Permanent migration	2	2	2	2
Exits (%)	0.44%	0.75%	0.78%	1.01%
<b>Expressed demand</b>	<b>245</b>	<b>292</b>	<b>386</b>	<b>490</b>
<b>Positive/negative movement</b>		<b>1</b>	<b>13</b>	<b>25</b>



**Table 21.16: Radiation oncology, registrar work value scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>245</b>	<b>320</b>	<b>426</b>	<b>542</b>
<i>New fellows</i>	19	17	19	19
<i>Permanent migration</i>	2	2	2	2
<i>Exits (%)</i>	0.44%	0.75%	0.78%	1.01%
<b>Expressed demand</b>	<b>245</b>	<b>314</b>	<b>429</b>	<b>572</b>
<b>Positive/negative movement</b>		<b>6</b>	<b>-3</b>	<b>-30</b>

**Table 21.17: Radiation oncology, medium self-sufficiency scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>245</b>	<b>293</b>	<b>397</b>	<b>507</b>
<i>New fellows</i>	19	17	19	19
<i>Permanent migration</i>	2	2	1	1
<i>Exits (%)</i>	0.44%	0.75%	0.78%	1.03%
<b>Expressed demand</b>	<b>245</b>	<b>314</b>	<b>429</b>	<b>572</b>
<b>Positive/negative movement</b>		<b>-21</b>	<b>-32</b>	<b>-65</b>

**Table 21.18: Radiation oncology, capped working hours scenario projections, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>245</b>	<b>282</b>	<b>374</b>	<b>481</b>
<i>New fellows</i>	19	17	19	19
<i>Permanent migration</i>	2	2	2	2
<i>Exits (%)</i>	0.44%	0.75%	0.78%	1.01%
<b>Expressed demand</b>	<b>245</b>	<b>314</b>	<b>429</b>	<b>572</b>
<b>Positive/negative movement</b>		<b>-32</b>	<b>-55</b>	<b>-91</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the radiation oncology workforce supply and expressed demand estimates.

### Workforce stock

The base radiation oncology workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified radiation oncology as their main field of specialty. In 2009, there were 245 active radiation oncologists in Australia. Within this:

- radiation oncologists had an average age of 48 years;
- they worked an average of 45 hours per week; and
- less than a quarter (22 percent) were aged 55 years and over.

**Table 21.19: Radiation oncology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	4	38.3	13	52.2	17
35-39	23	41.1	16	53.4	39
40-44	21	34.3	35	49.6	56
45-49	14	51.8	17	50.4	31
50-54	17	53.0	30	49.7	47
55-59	7	50.3	9	51.4	16
60-64	7	18.9	13	48.2	20
65-69	5	42.2	7	21.3	12
70-74	0	-	-	-	-
75+	0	-	7	12.3	7
<b>Total</b>	<b>98</b>	<b>42.3</b>	<b>147</b>	<b>47.2</b>	<b>245</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

Expressed workforce demand for radiation oncology is estimated to grow at 7.7 percent per annum. This is based on Medicare data identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population.

HWA originally included hospital utilisation data in expressed demand calculations. However there was minimal growth in the data, likely due to separations not being captured because many services are administered as outpatient services. Consequently, only Medicare utilisation data was used.

It is acknowledged the lack of outpatient data and accurate hospital separations data affects the overall expressed demand rate. HWA will continue to work to ascertain the size of this effect. It is also important to note that while many studies make reference to the number of new cases, radiation oncologists, and the linear accelerator to specialist ratio for public and private, this method has not been applied in HW 2025.

## Workforce inflows

### New fellows

Over the period 2005 to 2010, there have been less than 20 radiation oncology new fellows each year (Table 21.20). The number of new fellows in 2009 formed the starting point for new fellow inflows in the modelling.

**Table 21.20: Radiation oncology new fellows, 2005 to 2010**

2005	2006	2007	2008	2009	2010
19	9	12	11	18	13

Source: Medical Training Review Panel Fifteenth Report

## Immigration

Data provided by the RANZCR for the MTRP Fifteenth Report indicated there were no permanent migrants into the radiation oncology workforce in 2010. Data for 2009 indicated five radiation oncologist specialists had their training assessed as substantially comparable. As the 2010 migration figure is held constant across the projection period, it was considered more appropriate to average the two figures (weighted towards the 2010 figure of zero). This generated an estimate of two permanent migrants per year.

DIAC data was used for temporary migration, with no temporary migrants in the radiation oncology workforce. Consequently the temporary migrant line is not shown in the workforce projection results tables below.

## Trainees

MTRP data on the number of advanced vocational training positions/trainees used in the workforce projections is shown in Table 21.21.

**Table 21.21: MTRP – Advanced vocational training positions/trainees, 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	24	15	27
<b>Advanced total</b>	<b>101</b>	<b>110</b>	<b>137</b>

Source: Medical Training Review Panel Reports Fourteen and Fifteen

## 22 Surgery

### What is a surgeon?

Surgery is the branch of medicine concerned with the treatment of disease, injury and deformity by operation or manipulation. It is often the only solution to prevent disabilities and death from conditions resulting from road traffic accidents, falls, burns, disasters, domestic violence, pregnancy related complications, infections and congenital defects.<sup>67</sup>

### How are surgeons trained?<sup>68,69</sup>

The Royal Australasian College of Surgeons' (RACS) Surgical Education and Training (SET) program requires five to six years of specialist surgical training in one of nine specialty training areas. Of the nine areas, training is required in Australia and New Zealand for the following five:

- Cardiothoracic surgery
- Neurosurgery
- Paediatric surgery
- Urology surgery
- Vascular surgery

The remaining four specialty areas (below) conduct separate programs in Australia and New Zealand:

- General surgery
- Orthopaedic surgery
- Otolaryngology – head and neck surgery
- Plastic and reconstructive surgery

The earliest point at which a doctor may apply to enter the RACS SET program is during their second postgraduate year (PGY2) after university. Trainees are selected directly into one of the nine specialty training programs. Selection is a competitive process where applications are scored and applicants with the highest scores are offered places. A trainee becomes a fellow of the RACS following successful completion of SET.

### What is the assessment for international graduates?<sup>70</sup>

The college specialist assessment assesses an overseas-trained surgeon's qualifications and experience to determine whether their surgical education, training and clinical practice is comparable to that of a surgeon who has trained in Australia or New Zealand. The three outcomes are:

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<sup>67</sup> <http://www.who.int/topics/surgery/en/>

<sup>68</sup> Medical Training Review Panel Fifteenth Report

<sup>69</sup> Royal Australasian College of Surgeons 2011 End of Year Activities Report

<sup>70</sup> <http://www.surgeons.org/becoming-a-surgeon/international-medical-graduates.aspx>

- Not comparable – the SIMGs experience is not comparable and they do not proceed any further in the specialist assessment process;
- Partially comparable – the SIMG is usually required to undergo 24 months of clinical assessment under supervision, satisfactorily complete all other requirements stipulated in the recommendation, and pass the fellowship; and
- Substantially comparable – the SIMG is usually required to undergo 12 to 24 months of clinical assessment under supervision. They are not required to sit the fellowship exam and upon satisfactory completion of their clinical assessment and any other requirements, are eligible to apply for fellowship.

In the workforce projections, the assessment of a SIMG (as substantially, partially or not comparable), in combination with DIAC data and IMG data from the *RACS Activities Report, 2010*, is used to align migrant workforce flows into each sub-specialty where required.

## What issues have stakeholders identified for the surgery workforce?

### Key stakeholder views

Consultation was conducted in relation possible future workforce requirements for surgery. This was done to provide a real world overlay on the workforce projections provided in this report. Consultation was conducted with the profession and employers. The points outlined below are a summary from the consultations and do not necessarily represent the views of HWA. Key issues included:

#### What were the jurisdiction views?

For most surgical specialties, jurisdiction advice was there are sufficient workforce numbers however maldistribution is an issue. Other issues raised for specific surgical specialties were:

- the need for general surgeons in regional areas, with jurisdictions advising they are unable to recruit into such areas;
- the existing workforce shortage in paediatric surgery; and
- the difficulty in recruiting plastic surgeons into the public sector, with most plastic surgery conducted within the private sector.

#### What were the medical college views?

Consultation only occurred with the RACS national office. RACS raised a number of considerations that may influence the future surgical workforce. In relation to training, issues raised included:

- the effect safe working hours is having on achieving activity levels required for fellowship;
- private hospitals are increasingly playing a role in training, and this is a real opportunity to expand training capacity;
- simulation learning improves the skill outcomes of trainees; and

- increasing trends in sub-specialisation.

In relation to geographic distribution, the larger prosperous regional centres are considered relatively well supplied, however challenges remain in attracting surgeons due to issues around the provision of support, professional cover, leave and the local facilities ability to support surgical activity.

Telehealth may also play a role in the future in relation to the provision of advice and follow-up of patients in regional and rural areas.

## RACS workforce projections

In 2011, RACS generated their own surgical workforce projections<sup>71</sup>. The RACS projection results differ to those produced by HWA, due to the different methodology employed, as well as differences in planning scenarios, underpinning assumptions and data sources used.

### Methodology

As described in Appendix 2, HWA's supply projections use a dynamic stock and flow model, and demand projections the utilisation method, to project the relationship of supply and demand in future periods. The utilisation method accounts for future population change, by projecting current service utilisation patterns by age and gender against future population age and gender cohorts (based on ABS population projections).

RACS have employed the benchmarking (ratio) method, where they have applied the existing ratio of surgeons to population into the future (based on ABS population projections).

RACS generated three levels of projections, based on the ratio of:

- surgeons to total population;
- surgeons to population aged 50 or more; and
- surgeons to population aged 65 or more.

### Planning scenarios and assumptions

In addition to the three projections outlined above, RACS also produced workforce projections for the following planning scenarios:

- retirement at 65 – where surgeons aged 65 and over are excluded from the initial ratio calculation;
- retirement at 70 – where surgeons aged 70 and over are excluded from the initial ratio calculation;

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<sup>71</sup> RACS 2011: Surgical Workforce Projection to 2025 (for Australia)

- work-life balance – two scenarios were modelled, one with a reduction of five working hours per week, the other with ten working hours per week; and
- self-sufficiency – reducing reliance on IMGs by 25 percent.

The assumption that the maintenance of the existing ratio of surgeons to population is optimal or providing effective health care underpins all the scenarios.

### Data sources

RACS projections are based entirely on RACS data.

HWA uses a number of data sources to generate the workforce projections, including:

- AIHW medical labour force survey data;
- RACS data (for trainee numbers, new fellows and international medical graduates); and
- DIAC data (for temporary migration).

## Surgery sub-specialties

### Sub-specialties being modelled

The surgical specialties that had workforce projections generated were:

- General surgery
- Orthopaedic surgery
- Otolaryngology – head and neck surgery
- Plastic surgery

### Other surgical sub-specialties

An 'other surgery' group was created for workforce projection purposes, due to the small workforce numbers of the remaining surgical specialties. The other surgery group includes:

- Cardiothoracic surgery
- Neurosurgery
- Paediatric surgery
- Urology
- Vascular surgery



Information is also presented on each of the above specialties, to show existing workforce characteristics and numbers of new fellows and trainees by year of training.

## Expressed demand methodology

The expressed demand rate for each of the surgical specialties is based on a combination of hospital separations and Medicare data. Hospital separations were identified on the basis of Service Related Groups (SRGs) which were mapped to relevant Diagnosis Related Groups (DRGs) per 100,000 population (and confirmed by RACS). Medicare data was identified on the basis of utilisation rates from peer groups and related specialties from 2005 to 2009 per 100,000 population. Together, these data formed the basis for calculating an overall utilisation rate (by age and sex).

Hospital separations data was assumed to form the public component of activity and Medicare data the private component. The overall utilisation rate was calculated based on a weighting factor derived from the 2009 AIHW medial labour force survey, detailing public and private average hours worked. This rate was then projected into the future based on population projections from ABS population series B (ABS Cat No. 3222.0, Population Projections, Australia).

Consultation highlighted a number of data sources not currently included that would improve expressed demand rate calculations for the surgical specialties. These include:

- outpatient data;
- Department of Veteran's Affairs data;
- Transport Accident Commission data;
- elective surgery waiting list data;
- WorkCover data; and
- Medico-legal data.

HWA will continue to investigate the effect these sources may have on expressed demand rate calculations.

## Training pipeline methodology

The training pipeline analysis was conducted to project future postgraduate vocational trainee numbers, as a basis for predicting the number of domestic new fellows in the model. For surgery, a number of decisions were made in relation to data treatments for the training pipeline, outlined below.

- The number of trainees that commenced the SET program under the membership type SET from 2006 to 2010 was used to determine the throughput rate (that is, the rate at which doctors commencing the SET Program obtained fellowship).

- The minimum training time (as outlined in the *Guide to Surgical Education and Training*) for when trainees are first eligible to sit the fellowship exam was used for each of the surgical sub-specialties.
- The initial throughput rate was calculated by comparing the number of trainees eligible to sit the fellowship exam in 2010-2011 (from those commencing in 2006) to those that obtained fellowship (sourced from RACS data). This rate was then calculated for another five/six year period. The two rates were then averaged, to obtain the throughput rate used in the workforce projections.
- The final throughput rate was applied to first year SET trainees, providing (for the projections), the number obtaining fellowship within the minimum timeframe for each surgical sub-specialty modelled.
- The throughput rate does not account for trainees that take longer than the minimum training time to obtain fellowship.
- Projected first year trainee numbers were applied from 2012 onwards. This was based on the average of first year trainees from 2005 to 2011.

## Scenarios

A scenario was modelled for surgery in addition to those described in Chapter 2. This was the 'retirement at 70 years of age' scenario. In this scenario, all surgeons exit the workforce upon reaching 70 years of age.

Consultation with the surgical societies indicated that this scenario is the most likely in the relation to actual operating with fellows aged 70+ do most of their work in medico legal and teaching areas.

## General surgery

### What is a general surgeon?

General surgery is the core specialty within the surgery discipline and is the broadest of the surgical specialties. The general surgeon is a surgical specialist engaged in the comprehensive care of surgical patients, and in some situations may require knowledge of the whole field of surgery.<sup>72</sup>

The SET program in general surgery is structured over a five year curriculum:

- SET 1: satisfactory completion of at least two six month terms; and
- SET 2-5: satisfactory completion of eight, six-month terms in accredited general surgery posts.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The general surgery existing workforce position was assessed as **orange**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

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<sup>72</sup> Royal Australasian College of Surgeon, A guide to Surgical Education and Training

### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

For general surgery, all indicators had the same rating in 2012 and 2025. The only indicator assessed at the lowest rating was the replacement rate. This indicates new fellows entering the profession exceed workforce exits. This result is largely driven by low exit rates in the profession.

The general surgery workforce also received a medium rating for reliance on SIMGs, reflecting the fact 40 percent of new fellows in 2010 were overseas-trained (Table 22.10). A reduction in immigration would impact on the general surgery workforce (as demonstrated by the medium self-sufficiency scenario results).

**Table 22.1: General surgery – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 22.2 presents the workforce projection scenario results for general surgery. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

Given the existing workforce position assessment for general surgery, the comparison scenario results indicate a reducing workforce gap if recent trends in supply and demand were to continue. The service and workforce reform scenario results in the largest positive movement relative to the comparison scenario.

The retire at 70 scenario has the largest negative movement relative to the comparison scenario, suggesting there are a number of general surgeons nearing retirement.

**Table 22.2: General surgery, summary of workforce supply and expressed demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,742	1,438	<b>304</b>	2,112	1,593	<b>519</b>
Service and workforce reform	1,742	1,270	<b>472</b>	2,112	1,283	<b>829</b>
Registrar work value	1,755	1,438	<b>317</b>	2,125	1,593	<b>532</b>
Medium self-sufficiency	1,711	1,438	<b>273</b>	2,023	1,593	<b>430</b>
Capped working hours	1,587	1,438	<b>149</b>	1,889	1,593	<b>296</b>
Retire at age 70	1,529	1,438	<b>91</b>	1,827	1,593	<b>234</b>

**Table 22.3: General surgery, comparison scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,288</b>	<b>1,742</b>	<b>2,112</b>
New fellows	45	40	64	64
Permanent migration	15	19	19	19
Temporary migration	15	15	15	15
Exits (%)	0.88%	0.80%	1.42%	1.64%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,223</b>	<b>1,438</b>	<b>1,593</b>
<b>Positive/negative movement</b>		<b>65</b>	<b>304</b>	<b>519</b>

**Table 22.4: General surgery, service and workforce reform scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,337</b>	<b>1,742</b>	<b>2,112</b>
New fellows	45	63	64	64
Permanent migration	15	19	19	19
Temporary migration	15	15	15	15
Exits (%)	0.88%	0.85%	1.42%	1.64%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,205</b>	<b>1,270</b>	<b>1,283</b>
<b>Positive/negative movement</b>		<b>132</b>	<b>472</b>	<b>829</b>

**Table 22.5: General surgery, registrar work value scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,350</b>	<b>1,755</b>	<b>2,125</b>
New fellows	45	63	64	64
Permanent migration	15	19	19	19
Temporary migration	15	15	15	15
Exits (%)	0.88%	0.85%	1.42%	1.64%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,253</b>	<b>1,438</b>	<b>1,593</b>
<b>Positive/negative movement</b>		<b>97</b>	<b>317</b>	<b>532</b>

**Table 22.6: General surgery, medium self sufficiency scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,332</b>	<b>1,711</b>	<b>2,023</b>
New fellows	45	63	64	64
Permanent migration	15	17	14	10
Temporary migration	15	14	11	8
Exits (%)	0.88%	0.86%	1.45%	1.71%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,253</b>	<b>1,438</b>	<b>1,593</b>
<b>Positive/negative movement</b>		<b>79</b>	<b>273</b>	<b>430</b>

**Table 22.7: General surgery, capped working hours scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,223</b>	<b>1,587</b>	<b>1,889</b>
New fellows	45	63	64	64
Permanent migration	15	19	19	19
Temporary migration	15	15	15	15
Exits (%)	0.88%	0.85%	1.42%	1.64%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,253</b>	<b>1,438</b>	<b>1,593</b>
<b>Positive/negative movement</b>		<b>-30</b>	<b>149</b>	<b>296</b>

**Table 22.8: General surgery, retire at 70 scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,181</b>	<b>1,246</b>	<b>1,529</b>	<b>1,827</b>
New fellows	45	63	64	64
Permanent migration	15	19	19	19
Temporary migration	15	15	15	15
Exits (%)	6.97%	2.17%	2.73%	2.33%
<b>Expressed demand</b>	<b>1,181</b>	<b>1,253</b>	<b>1,438</b>	<b>1,593</b>
<b>Positive/negative movement</b>		<b>-7</b>	<b>91</b>	<b>234</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the general surgery workforce supply and demand estimates.

### Workforce stock

The base general surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified general surgery as their main field of specialty. In 2009, there were 1,181 active general surgeons in Australia. Within this:

- they had an average age of 52 years;
- they worked an average of 47.5 hours per week; and
- approximately 44 percent were aged 55 years and over.

**Table 22.9: General surgery workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	12	39.0	38	44.3	50
35-39	40	51.2	116	55.4	156
40-44	33	51.3	175	50.5	208
45-49	11	50.9	108	52.2	119
50-54	19	61.8	113	53.1	132
55-59	3	46.2	147	55.8	150
60-64	2	40.0	127	44.2	129
65-69	0	-	140	38.1	140
70-74	0	-	51	28.1	51
75+	0	-	46	19.1	46
<b>Total</b>	<b>120</b>	<b>51.4</b>	<b>1,061</b>	<b>47.2</b>	<b>1,181</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

The expressed demand rate for general surgery is estimated to grow at 2.0 percent per annum (also refer to expressed demand methodology section in this chapter).

## Workforce inflows

### New fellows

Table 22.10 shows the number of general surgery new fellows from 2005 to 2011. Over the period the total number of new fellows remained consistent, with a high of 72 new fellows in 2007.

From 2009, RACS was able to separate SET program new fellows, who are those obtaining fellowship domestically, from the IMG pathway. In 2009 there were 45 domestic new fellows. This formed the basis for general surgery domestic new fellow inflows in the workforce projections.

**Table 22.10: General surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	45	41	40
IMG Pathway	..	..	..	..	15	27	19
<b>Total</b>	<b>53</b>	<b>56</b>	<b>72</b>	<b>58</b>	<b>60</b>	<b>68</b>	<b>59</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.10 also shows the number of new fellows that came through the IMG pathway. These represent the permanent migration inflows in the workforce projections. Actual data was used for 2009 to 2011. From 2012 onwards, the average of these three years was held constant across the projection period.

DIAC data was used for temporary migration, with 15 temporary migrants in the general surgery workforce (also held constant across the projection period).

## Trainees

The SET program was introduced in 2007. This program removed the distinction between basic and advanced training that previously existed. Consequently, the Basic Surgical Training Program (BST), which existed prior to the introduction of SET, ceased in December 2010 and took no new additions from 2007. A number of BST trainees transitioned into the SET program over 2007 to 2010.

Due to this complexity, an accurate transition rate (which accounts for the movement of trainees from one year of training to the next, until eligible for fellowship) could not be determined. This resulted in the throughput rate (as described in the training methodology section in this chapter)



being calculated by examining the number of trainees commencing and completing training in the suggested training time.

Table 22.11 shows the number of trainees by year of training from the RACS annual activities report, where the number of SET year 1 trainees was used in the workforce projections.

**Table 22.11: General surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	108	101	116
SET Year 2	190	104	75
SET Year 3	69	150	62
SET Year 4	58	59	129
SET Year 5	16	12	14
SET Year 6	7	7	12

Source: RACS annual activity reports 2009 to 2011

## Orthopaedic surgery

### What is an orthopaedic surgeon?

Orthopaedic surgery focuses on the diagnosis, care and treatment of patients with disorders of the bones, joints, muscles, ligaments, tendons, nerves and skin. Orthopaedic surgeons are involved in all aspects of health care relating to the musculoskeletal system. They use medical, physical and rehabilitative methods as well as surgery.<sup>73</sup>

The minimum period of training for orthopaedic surgery is five years.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The orthopaedic surgery existing workforce position was assessed as **green**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

<sup>73</sup> Royal Australasian College of Surgeons, A guide to Surgical Education and Training

The orthopaedic surgery workforce has the lowest average age rating across the surgical sub-specialties. Over the projection period, average age is projected to increase, resulting in a higher average age assessment in 2025. This is likely a reflection of the demographic characteristics of the workforce – almost all are male and traditionally they stay in the surgery workforce until retirement.

The assessment indicates a reasonably high reliance on SIMGs in the orthopaedic surgery workforce, however as demonstrated in the workforce projection results below, a reduction in working hours would have a greater workforce impact than a reduction in immigration.

**Table 22.12: Orthopaedic surgery, summary of workforce dynamics indicators**

Indicator	2012	2025
Average age	Yellow	Orange
Replacement rate	Green	Green
Dependence on SIMGs	Orange	Orange
Duration of training program	Orange	Orange

#### What were the colleges views?

Maldistribution was raised as the major issue with difficulties in attracting fellows into the public sector, and a tendency for most practitioners, including IMGs to set up practice in the city. Training positions in the public sector are at maximum capacity.

In relation to demand the college indicated that:

- a number of conditions commonly treated conservatively in the past now increasingly involve operative management, e.g. clavical fractures
- there is a trend to perform procedures on patients in older age groups.

#### What are our projections for the future?

Table 22.13 presents the workforce projection scenario results for orthopaedic surgery. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment showed no current perceived shortage in the orthopaedic surgery workforce. The comparison scenario indicates growth in the workforce relative to demand by 2025. Of all scenarios, the retiring at 70 scenario has the greatest negative impact relative to the comparison scenario. This suggests there are a number of orthopaedic surgeons nearing retirement age by 2025.

**Table 22.13: Orthopaedic surgery, summary of workforce supply and expressed demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,596	1,465	<b>131</b>	1,881	1,733	<b>148</b>
Service and Workforce Reform	1,596	1,308	<b>288</b>	1,881	1,437	<b>444</b>
Registrar work value	1,625	1,465	<b>160</b>	1,909	1,733	<b>176</b>
Medium self-sufficiency	1,575	1,465	<b>110</b>	1,823	1,733	<b>90</b>
Capped working hours	1,467	1,465	<b>2</b>	1,740	1,733	<b>7</b>
Retire at age 70	1,462	1,465	<b>-3</b>	1,694	1,733	<b>-39</b>

**Table 22.14: Orthopaedic surgery, comparison scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,302</b>	<b>1,596</b>	<b>1,881</b>
New fellows	37	40	45	45
Permanent migration	15	12	12	12
Temporary migration	15	15	15	15
Exits (%)	0.56%	0.64%	0.77%	1.10%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,262</b>	<b>1,465</b>	<b>1,733</b>
<b>Positive/negative movement</b>		<b>40</b>	<b>131</b>	<b>148</b>

**Table 22.15: Orthopaedic surgery, service and workforce reform scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,302</b>	<b>1,596</b>	<b>1,881</b>
New fellows	37	40	45	45
Permanent migration	15	12	12	12
Temporary migration	15	15	15	15
Exits (%)	0.56%	0.64%	0.77%	1.10%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,213</b>	<b>1,308</b>	<b>1,437</b>
<b>Positive/negative movement</b>		<b>89</b>	<b>288</b>	<b>444</b>

**Table 22.16: Orthopaedic surgery, registrar work value scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,332</b>	<b>1,625</b>	<b>1,909</b>
New fellows	37	40	45	45
Permanent migration	15	12	12	12
Temporary migration	15	15	15	15
Exits (%)	0.56%	0.64%	0.77%	1.10%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,262</b>	<b>1,465</b>	<b>1,733</b>
<b>Positive/negative movement</b>		<b>70</b>	<b>160</b>	<b>176</b>

**Table 22.17: Orthopaedic surgery, medium self sufficiency scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,298</b>	<b>1,575</b>	<b>1,823</b>
New fellows	37	40	45	45
Permanent migration	15	11	9	6
Temporary migration	15	14	11	8
Exits (%)	0.56%	0.64%	0.78%	1.14%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,262</b>	<b>1,465</b>	<b>1,733</b>
<b>Positive/negative movement</b>		<b>36</b>	<b>110</b>	<b>90</b>

**Table 22.18: Orthopaedic surgery, capped working hours scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,186</b>	<b>1,467</b>	<b>1,740</b>
New fellows	37	40	45	45
Permanent migration	15	12	12	12
Temporary migration	15	15	15	15
Exits (%)	0.56%	0.64%	0.77%	1.10%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,262</b>	<b>1,465</b>	<b>1,733</b>
<b>Positive/negative movement</b>		<b>-76</b>	<b>2</b>	<b>7</b>

**Table 22.19: Orthopaedic surgery, retire at 70 scenario, 2009 to 2025**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>1,168</b>	<b>1,238</b>	<b>1,462</b>	<b>1,694</b>
<i>New fellows</i>	37	40	45	45
<i>Permanent migration</i>	15	12	12	12
<i>Temporary migration</i>	15	15	15	15
<i>Exits (%)</i>	4.60%	1.77%	1.78%	1.42%
<b>Expressed demand</b>	<b>1,168</b>	<b>1,262</b>	<b>1,465</b>	<b>1,733</b>
<b>Positive/negative movement</b>		<b>-24</b>	<b>-3</b>	<b>-39</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the orthopaedic surgery supply and demand estimates.

### Workforce stock

The base orthopaedic surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified orthopaedic surgery as their main field of specialty. In 2009, there were 1,168 active orthopaedic surgeons in Australia. Within this:

- they had an average age of 49 years;
- they worked an average of 49.5 hours per week; and
- approximately 28 percent were aged 55 years and over.

**Table 22.20: Orthopaedic surgery workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	3	46.0	51	57.7	54
35-39	14	38.1	157	52.8	171
40-44	9	31.8	243	56.5	252
45-49	8	47.9	203	54.3	211
50-54	6	34.8	150	53.0	156
55-59	0	-	84	47.8	84
60-64	0	-	99	42.9	99
65-69	0	-	74	34.5	74
70-74	0	-	40	21.8	40
75+	0	-	27	23.6	27
<b>Total</b>	<b>40</b>	<b>38.7</b>	<b>1,128</b>	<b>49.9</b>	<b>1,168</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

The expressed demand rate for orthopaedic surgery is estimated to grow at 2.1 percent per annum (also refer to expressed demand methodology section).

### Workforce inflows

#### New fellows

Over the period 2005 to 2011 the total number of orthopaedic new fellows varied greatly – the highest number occurring in 2011 (59) and the lowest in 2006 (35).

The number of domestic new fellows (through the SET program) in 2009 (37) formed the basis for domestic new fellow inflows in the modelling.

**Table 22.21: Orthopaedic surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	37	39	45
IMG Pathway	..	..	..	..	15	8	14
<b>Total</b>	<b>45</b>	<b>41</b>	<b>51</b>	<b>37</b>	<b>52</b>	<b>47</b>	<b>59</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

### Immigration

Table 22.21 also shows the number of new fellows that came through the IMG pathway. These represent the permanent migration inflows in the workforce projections. Actual data was used for 2009 to 2011. From 2012 onwards, the average of these three years was held constant across the projection period.

DIAC data was used for temporary migration, with 15 temporary migrants in the orthopaedic surgery workforce (also held constant across the projection period).

### Trainees

The SET program was introduced in 2007. This program removed the distinction between basic and advanced training that previously existed. Consequently, the Basic Surgical Training Program (BST), which existed prior to the introduction of SET, ceased in December 2010 and took no new additions from 2007. A number of BST trainees transitioned into the SET program over 2007 to 2010.

Due to this complexity, an accurate transition rate (which accounts for the movement of trainees from one year of training to the next, until eligible for fellowship) could not be determined. This resulted in the throughput rate (as described in the training methodology section in this chapter) being calculated by examining the number of trainees commencing and completing training in the suggested training time.

Table 22.22 shows the number of orthopaedic surgery trainees by year of training from the RACS annual activities report, where the number of SET year 1 trainees was used in the modelling.



**Table 22.22: Orthopaedic surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	62	49	51
SET Year 2	62	54	45
SET Year 3	46	58	55
SET Year 4	43	42	60
SET Year 5	1	3	2
SET Year 6	1	2	1

Source: RACS annual activity reports 2009 to 2011

## Otolaryngology – head and neck surgery

### What is an otolaryngologist?

Otolaryngology (head and neck) surgeons investigate and treat conditions of the ear, nose, throat, head and neck. This includes nasal and sinus conditions, snoring and breathing problems, tonsillitis, cancers of the head and neck (including thyroid surgery), voice problems, plastic surgery of the nose and face, hearing difficulties and deafness, and tumours of the head, neck and ears.<sup>74</sup>

The SET otolaryngology program is conducted over a minimum of five years, and includes compulsory six month rotations in paediatric and head and neck surgery.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The otolaryngology surgery existing workforce position was assessed as **green**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

<sup>74</sup> Royal Australasian College of Surgeons, A guide to Surgical Education and Training

For otolaryngology, all assessed indicators retained the same rating in 2012 and 2025. In both years, the replacement rate is at the lowest rating. This indicates more new fellows will enter the workforce than exit, and is a reflection of increased new fellow numbers (Table 22.25) and low exit rates.

**Table 22.23: Otolaryngology – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 22.24 presents the workforce projection scenario results for otolaryngology. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

Given the existing workforce position assessment of no perceived shortage, the comparison scenario results for otolaryngology suggest an increasing number of surgeons beyond expressed demand requirements if recent trends were to continue. The same as the other surgical specialties, the retire at 70 scenario had the largest negative movement relative to the comparison scenario.

**Table 22.24: Otolaryngology, summary of workforce supply and expressed demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	620	507	<b>113</b>	746	566	<b>180</b>
Service and workforce reform	620	488	<b>132</b>	746	517	<b>229</b>
Registrar work value	632	507	<b>125</b>	758	566	<b>192</b>
Medium self-sufficiency	611	507	<b>104</b>	722	566	<b>156</b>
Capped working hours	594	507	<b>87</b>	717	566	<b>151</b>
Retire at age 70	546	507	<b>39</b>	645	566	<b>79</b>

**Table 22.25: Otolaryngology, comparison scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>495</b>	<b>620</b>	<b>746</b>
New fellows	11	16	18	18
Permanent migration	2	5	5	5
Temporary migration	6	6	6	6
Exits (%)	0.27%	0.57%	0.90%	0.68%
<b>Expressed demand</b>	<b>442</b>	<b>475</b>	<b>507</b>	<b>566</b>
<b>Positive/negative movement</b>		<b>20</b>	<b>113</b>	<b>180</b>

**Table 22.26: Otolaryngology, service and workforce reform scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>495</b>	<b>620</b>	<b>746</b>
New fellows	11	16	18	18
Permanent migration	2	5	5	5
Temporary migration	6	6	6	6
Exits (%)	0.27%	0.57%	0.90%	0.68%
<b>Expressed demand</b>	<b>442</b>	<b>457</b>	<b>488</b>	<b>517</b>
<b>Positive/negative movement</b>		<b>38</b>	<b>132</b>	<b>229</b>

**Table 22.27: Otolaryngology, registrar work value scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>507</b>	<b>632</b>	<b>758</b>
New fellows	11	16	18	18
Permanent migration	2	5	5	5
Temporary migration	6	6	6	6
Exits (%)	0.27%	0.57%	0.90%	0.68%
<b>Expressed demand</b>	<b>442</b>	<b>475</b>	<b>507</b>	<b>566</b>
<b>Positive/negative movement</b>		<b>32</b>	<b>125</b>	<b>192</b>

**Table 22.28: Otolaryngology, medium self sufficiency scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>494</b>	<b>611</b>	<b>722</b>
New fellows	11	16	18	18
Permanent migration	2	5	4	3
Temporary migration	6	5	4	3
Exits (%)	0.27%	0.57%	0.91%	0.71%
<b>Expressed demand</b>	<b>442</b>	<b>475</b>	<b>507</b>	<b>566</b>
<b>Positive/negative movement</b>		<b>19</b>	<b>104</b>	<b>156</b>

**Table 22.29: Otolaryngology, capped working hours scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>476</b>	<b>594</b>	<b>717</b>
New fellows	11	16	18	18
Permanent migration	2	5	5	5
Temporary migration	6	6	6	6
Exits (%)	0.27%	0.57%	0.90%	0.68%
<b>Expressed demand</b>	<b>442</b>	<b>475</b>	<b>507</b>	<b>566</b>
<b>Positive/negative movement</b>		<b>1</b>	<b>87</b>	<b>151</b>

**Table 22.30: Otolaryngology, retire at 70 scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>442</b>	<b>458</b>	<b>546</b>	<b>645</b>
New fellows	11	16	18	18
Permanent migration	2	5	5	5
Temporary migration	6	6	6	6
Exits (%)	6.22%	2.53%	2.21%	1.14%
<b>Expressed demand</b>	<b>442</b>	<b>475</b>	<b>507</b>	<b>566</b>
<b>Positive/negative movement</b>		<b>-17</b>	<b>39</b>	<b>79</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the otolaryngology workforce supply and demand estimates.

### Workforce stock

The base otolaryngology surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified otolaryngology surgery as their main field of specialty. In 2009, there were 432 active otolaryngology surgeons in Australia. Within this:

- they had an average age of 49 years;
- they worked an average of 43.9 hours per week; and
- approximately 33 percent were aged 55 years and over

**Table 22.31: Otolaryngology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	4	31.2	20	40.0	24
35-39	12	40.2	76	47.2	88
40-44	13	31.9	78	45.9	91
45-49	10	39.2	39	46.8	49
50-54	0	-	42	46.3	42
55-59	0	-	40	47.5	40
60-64	0	-	37	55.7	37
65-69	0	-	44	34.6	44
70-74	3	35.9	14	27.9	17
<b>Total</b>	<b>42</b>	<b>36.2</b>	<b>390</b>	<b>44.7</b>	<b>432</b>

Source: 2009 AIHW Medical Labour Force Survey

## Expressed workforce demand

The expressed demand rate for otolaryngology is estimated to grow at 1.5 percent per annum (also refer to the expressed demand methodology section in this chapter).

## Workforce inflows

### New fellows

There have generally been small numbers of otolaryngology new fellows over the period 2005 to 2011 (Table 22.32).

From 2009, RACS was able to separate SET program new fellows, who are those obtaining fellowship domestically, from the IMG pathway. In 2009 there were 11 domestic new fellows – this formed the basis for otolaryngology surgery domestic new fellow inflows in the modelling.

**Table 22.32: Otolaryngology surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	11	14	18
IMG Pathway	..	..	..	..	2	7	6
<b>Total</b>	<b>13</b>	<b>13</b>	<b>22</b>	<b>12</b>	<b>13</b>	<b>21</b>	<b>24</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.32 also shows the number of new fellows that came through the IMG pathway. These represent the permanent migration inflows in the workforce projections. Actual data was used for 2009 to 2011. From 2012 onwards, the average of these three years was held constant across the projection period.

DIAC data was used for temporary migration, with six temporary migrants in the otolaryngology workforce (also held constant across the projection period).

## Trainees

The SET program was introduced in 2007. This program removed the distinction between basic and advanced training that previously existed. Consequently, the Basic Surgical Training Program (BST), which existed prior to the introduction of SET, ceased in December 2010 and took no new additions from 2007. A number of BST trainees transitioned into the SET program over 2007 to 2010.

Due to this complexity, an accurate transition rate (which accounts for the movement of trainees from one year of training to the next, until eligible for fellowship) could not be determined. This

resulted in the throughput rate (as described in the training methodology section in this chapter) being calculated by examining the number of trainees commencing and completing training in the suggested training time.

Table 22.33 shows the number of otolaryngology trainees by year of training from the RACS annual activities report, where the number of SET year 1 trainees was used in the modelling.

**Table 22.33: Otolaryngology active trainees by training year**

Training year	2009	2010	2011
SET Year 1	26	15	8
SET Year 2	23	22	17
SET Year 3	17	23	20
SET Year 4	16	15	23
SET Year 5	0	4	6
SET Year 6	0	1	1

Source: RACS annual activity reports 2009 to 2011



## Plastic and reconstructive surgery

### What is a plastic and reconstructive surgeon?

Plastic and reconstructive surgery is a wide-ranging specialty involving manipulation, repair and reconstruction of the skin, soft tissue and bone. Plastic surgery is not restricted to one organ or tissue type. The main emphasis is on maintaining or restoring form and function, often working in a team with other specialties.<sup>75</sup>

Trainees are required to complete five years of the SET program in plastic and reconstructive surgery.

### HWA's assessment of this workforce

#### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

The plastic and reconstructive surgery existing workforce position was assessed as **green**.

#### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact

<sup>75</sup> Royal Australasian College of Surgeons, A guide to Surgical Education and Training

For plastic and reconstructive, all indicators were assessed in the medium range in 2012 and 2025 except for the replacement rate. This received the lowest rating, which is consistent with the other surgical sub-specialty ratings.

**Table 22.34: Plastic surgery – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Table 22.35 presents the workforce projection scenario results for plastic and reconstructive surgery. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

The existing workforce position assessment showed no current perceived shortage in the plastic and reconstructive surgery workforce. If recent trends in supply and demand were to continue, there would also be growth in workforce supply relative to demand by 2025. This result is reversed in the retire at 70 scenario, suggesting a number of plastic and reconstructive surgeons are nearing retirement.

**Table 22.35: Plastic and reconstructive surgery, summary of workforce supply and demand scenario projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	410	362	<b>48</b>	465	395	<b>70</b>
Service and workforce reform	410	342	<b>68</b>	465	361	<b>104</b>
Registrar work value	422	362	<b>60</b>	476	395	<b>81</b>
Medium self-sufficiency	406	362	<b>44</b>	454	395	<b>59</b>
Capped working hours	393	362	<b>31</b>	446	395	<b>51</b>
Retire at age 70	353	362	<b>-9</b>	403	395	<b>8</b>

**Table 22.36: Plastic and reconstructive surgery, comparison scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>336</b>	<b>410</b>	<b>465</b>
New fellows	8	17	13	13
Permanent migration	1	2	2	2
Temporary migration	4	4	4	4
Exits (%)	0.79%	1.01%	1.28%	1.22%
<b>Expressed demand</b>	<b>306</b>	<b>324</b>	<b>362</b>	<b>395</b>
<b>Positive/negative movement</b>		<b>12</b>	<b>48</b>	<b>70</b>

**Table 22.37: Plastic and reconstructive surgery, service and workforce reform scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>336</b>	<b>410</b>	<b>465</b>
New fellows	8	17	13	13
Permanent migration	1	2	2	2
Temporary migration	4	4	4	4
Exits (%)	0.79%	1.01%	1.28%	1.22%
<b>Expressed demand</b>	<b>306</b>	<b>319</b>	<b>342</b>	<b>361</b>
<b>Positive/negative movement</b>		<b>17</b>	<b>68</b>	<b>104</b>

**Table 22.38: Plastic and reconstructive surgery, registrar work value scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>348</b>	<b>422</b>	<b>476</b>
New fellows	8	17	13	13
Permanent migration	1	2	2	2
Temporary migration	4	4	4	4
Exits (%)	0.79%	1.01%	1.28%	1.22%
<b>Expressed demand</b>	<b>306</b>	<b>324</b>	<b>362</b>	<b>395</b>
<b>Positive/negative movement</b>		<b>24</b>	<b>60</b>	<b>81</b>

**Table 22.39: Plastic and reconstructive surgery, medium self sufficiency scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>335</b>	<b>406</b>	<b>454</b>
New fellows	8	17	13	13
Permanent migration	1	2	1	1
Temporary migration	4	4	3	2
Exits (%)	0.79%	1.01%	1.29%	1.25%
<b>Expressed demand</b>	<b>306</b>	<b>324</b>	<b>362</b>	<b>395</b>
<b>Positive/negative movement</b>		<b>11</b>	<b>44</b>	<b>59</b>

**Table 22.40: Plastic and reconstructive surgery, capped working hours scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>322</b>	<b>393</b>	<b>446</b>
New fellows	8	17	13	13
Permanent migration	1	2	2	2
Temporary migration	4	4	4	4
Exits (%)	0.79%	1.01%	1.28%	1.22%
<b>Expressed demand</b>	<b>306</b>	<b>324</b>	<b>362</b>	<b>395</b>
<b>Positive/negative movement</b>		<b>-2</b>	<b>31</b>	<b>51</b>

**Table 22.41: Plastic and reconstructive surgery, retire at 70 scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>306</b>	<b>305</b>	<b>353</b>	<b>403</b>
New fellows	8	17	13	13
Permanent migration	1	2	2	2
Temporary migration	4	4	4	4
Exits (%)	7.90%	2.13%	2.18%	1.93%
<b>Expressed demand</b>	<b>306</b>	<b>324</b>	<b>362</b>	<b>395</b>
<b>Positive/negative movement</b>		<b>-19</b>	<b>-9</b>	<b>8</b>

## What is included in the projections?

Information in this section broadly outlines the data used to generate the plastic and reconstructive surgery workforce supply and demand estimates.

### Workforce stock

The base plastic and reconstructive surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified plastic surgery as their main field of specialty. In 2009, there were 306 active plastic surgeons in Australia. Within this:

- they had an average age of 51 years;
- they worked an average of 46.3 hours per week; and
- approximately 34 percent were aged 55 years and over.

**Table 22.42: Plastic and reconstructive surgery workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	4	46.4	4
35-39	5	37.6	44	51.7	49
40-44	4	61.8	39	50.7	43
45-49	3	40.3	55	51.3	58
50-54	6	54.7	41	47.5	47
55-59	1	44.0	28	45.3	29
60-64	0	-	29	46.2	29
65-69	3	10.0	22	36.9	25
70-74	0	-	6	38.5	6
75+	0	-	16	22.5	16
<b>Total</b>	<b>22</b>	<b>43.5</b>	<b>284</b>	<b>46.5</b>	<b>306</b>

Source: 2009 AIHW Medical Labour Force Survey

### Expressed workforce demand

The expressed demand rate for plastic and reconstructive surgery is estimated to grow at 1.3 percent per annum (also refer to the expressed demand methodology section in this chapter).

## Workforce inflows

### New fellows

The number of plastic and reconstructive surgery new fellows over the period 2005 to 2011 is shown in Table 22.43. For the workforce supply projections, the 2009 number of SET program new fellows (eight) formed the basis for the domestic new fellow inflows.

**Table 22.43: Plastic surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	8	6	14
IMG Pathway	..	..	..	..	1	3	6
<b>Total</b>	<b>15</b>	<b>11</b>	<b>19</b>	<b>18</b>	<b>9</b>	<b>9</b>	<b>20</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

### Immigration

Table 22.43 also shows the number of new fellows that came through the IMG pathway. These represent the permanent migration inflows in the workforce projections. Actual data was used for 2009 to 2011. From 2012 onwards, the average of these three years was held constant across the projection period.

DIAC data was used for temporary migration, with four temporary migrants in the plastic surgery workforce (also held constant across the projection period).

### Trainees

The SET program was introduced in 2007. This program removed the distinction between basic and advanced training that previously existed. Consequently, the Basic Surgical Training Program (BST), which existed prior to the introduction of SET, ceased in December 2010 and took no new additions from 2007. A number of BST trainees transitioned into the SET program over 2007 to 2010.

Due to this complexity, an accurate transition rate (which accounts for the movement of trainees from one year of training to the next, until eligible for fellowship) could not be determined. This resulted in the throughput rate (as described in the training methodology section in this chapter) being calculated by examining the number of trainees commencing and completing training in the suggested training time.

Table 22.44 shows the number of plastic and reconstructive surgery trainees by year of training from the RACS annual activities report, where the number of SET year 1 trainees was used in the modelling.

**Table 22.44: Plastic and reconstructive surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	9	17	17
SET Year 2	30	10	18
SET Year 3	21	27	12
SET Year 4	8	21	27
SET Year 5	1	0	7
SET Year 6	0	1	1

Source: RACS annual activity reports 2009 to 2011

## Other surgery

The other surgery group includes the following sub-specialties:

- cardiothoracic surgery
- neurosurgery
- paediatric surgery
- urology
- vascular surgery

As noted earlier in this chapter, the other surgery group was created for workforce projection purposes only, due to small workforce numbers at the sub-specialty level.

## HWA's assessment of this workforce

### Existing workforce position

The existing workforce position was determined from expert opinion from jurisdictions, private employers and the profession; and an analysis of current vacancies and waiting times (where relevant and available). A traffic light approach was used, with the following assessment scale:

	No current perceived shortage
	Some perceived difficulty in filling positions, either through maldistribution or insufficient workforce
	Perceived current shortage

Overall, the other surgery group existing workforce position was assessed as **green**. Within this, the existing workforce position assessment for paediatric surgery was **orange**.

### Workforce dynamics indicator

The workforce dynamics indicator highlights aspects of the specialty workforce that may be of concern. The assessment is based on data calculated in the **comparison scenario**, except for duration of training, which was taken from the MTRP Fifteenth Report. A summary of the workforce dynamics indicator scale is shown below. For detailed information on the workforce dynamics indicator, see Chapter 2.

#### Workforce dynamics indicator scale

<b>Minimal</b> concern for potential workforce impact				<b>Significant</b> concern for potential workforce impact



In common with the other surgical specialties, the other surgery group has a high number of new fellows entering the workforce compared with exits in 2012, which is projected to be the same in 2025. Dependence on SIMGs received a high rating in 2012, indicating this is an area of concern for this workforce. This rating is projected to reduce slightly in 2025, suggesting the increase in domestic new fellows is at a high enough rate to move the assessment into the lower bracket (as migrants are held constant across the projection period).

**Table 22.45: Other surgery – summary of workforce dynamics indicators**

Indicator	2012	2025
Average age		
Replacement rate		
Dependence on SIMGs		
Duration of training program		

### What are our projections for the future?

Information presented following the workforce projections for other surgery (below) describes each sub-specialty in the other surgery grouping. Altogether, the inputs that formed the basis for the other surgery workforce projections were:

- 866 in the base workforce from the 2009 AIHW medical labour force survey;
- 21 new fellows in 2009 and 26 new fellows in 2010; and
- 10 permanent migrants in 2009 and 17 in 2010.

Table 22.46 presents the workforce projection scenario results for other surgery. It is important to note the scenarios are not predictions of what will happen over the period to 2025, instead, each provides an estimate of a likely outcome given the set of conditions upon which it is based.

In the comparison scenario, there is a positive movement away from the existing workforce position by 2025 for the other surgery group. That is, growth in expressed demand exceeds growth in supply. Of all scenarios, the service and workforce reform scenario has the largest impact relative to the comparison scenario. The capped working hours and retirement at 70 scenarios results in similar sized negative movements from the comparison scenario. These results indicate a large number of surgeons work greater than 50 hours a week and a large number will be nearing the retirement by 2025.

**Table 22.46: Other surgery, summary of workforce supply and expressed demand projections**

Scenario	2018 (Headcount)			2025 (Headcount)		
	Supply	Demand	Movement	Supply	Demand	Movement
Comparison	1,195	1,070	<b>125</b>	1,415	1,236	<b>179</b>
Service and workforce reform	1,195	962	<b>233</b>	1,415	1,031	<b>384</b>
Registrar work value	1,211	1,070	<b>141</b>	1,432	1,236	<b>196</b>
Medium self-sufficiency	1,170	1,070	<b>100</b>	1,347	1,236	<b>111</b>
Capped working hours	1,061	1,070	<b>-9</b>	1,260	1,236	<b>24</b>
Retire at age 70	1,076	1,070	<b>6</b>	1,263	1,236	<b>27</b>

**Table 22.47: Other surgery, comparison scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>957</b>	<b>1,195</b>	<b>1,415</b>
New fellows	30	30	40	40
Permanent migration	10	14	14	14
Temporary migration	17	17	17	17
Exits (%)	1.46%	1.42%	1.51%	1.82%
<b>Expressed demand</b>	<b>866</b>	<b>928</b>	<b>1,070</b>	<b>1,236</b>
<b>Positive/negative movement</b>		<b>29</b>	<b>125</b>	<b>179</b>

**Table 22.48: Other surgery, service and workforce reform scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>957</b>	<b>1,195</b>	<b>1,415</b>
New fellows	30	30	40	40
Permanent migration	10	14	14	14
Temporary migration	17	17	17	17
Exits (%)	1.46%	1.42%	1.51%	1.82%
<b>Expressed demand</b>	<b>866</b>	<b>893</b>	<b>962</b>	<b>1,031</b>
<b>Positive/negative movement</b>		<b>64</b>	<b>233</b>	<b>384</b>

**Table 22.49: Other surgery, registrar work value scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>974</b>	<b>1,211</b>	<b>1,432</b>
New fellows	30	30	40	40
Permanent migration	10	14	14	14
Temporary migration	17	17	17	17
Exits (%)	1.46%	1.42%	1.51%	1.82%
<b>Expressed demand</b>	<b>866</b>	<b>928</b>	<b>1,070</b>	<b>1,236</b>
<b>Positive/negative movement</b>		<b>46</b>	<b>141</b>	<b>196</b>

**Table 22.50: Other surgery, medium self sufficiency scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>952</b>	<b>1,170</b>	<b>1,347</b>
New fellows	30	30	40	40
Permanent migration	10	13	10	7
Temporary migration	17	15	12	9
Exits (%)	1.46%	1.42%	1.54%	1.92%
<b>Expressed demand</b>	<b>866</b>	<b>928</b>	<b>1,070</b>	<b>1,236</b>
<b>Positive/negative movement</b>		<b>24</b>	<b>100</b>	<b>111</b>

**Table 22.51: Other surgery, capped working hours scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>849</b>	<b>1,061</b>	<b>1,260</b>
New fellows	30	30	40	40
Permanent migration	10	14	14	14
Temporary migration	17	17	17	17
Exits (%)	1.46%	1.42%	1.51%	1.82%
<b>Expressed demand</b>	<b>866</b>	<b>928</b>	<b>1,070</b>	<b>1,236</b>
<b>Positive/negative movement</b>		<b>-79</b>	<b>-9</b>	<b>24</b>

**Table 22.52: Other surgery, retirement at 70 scenario, 2005 to 2009**

Headcount	2009	2012	2018	2025
<b>Supply</b>	<b>866</b>	<b>895</b>	<b>1,076</b>	<b>1,263</b>
New fellows	30	30	40	40
Permanent migration	10	14	14	14
Temporary migration	17	17	17	17
Exits (%)	7.53%	2.81%	1.99%	2.70%
<b>Expressed demand</b>	<b>866</b>	<b>928</b>	<b>1,070</b>	<b>1,236</b>
<b>Positive/negative movement</b>		<b>-33</b>	<b>6</b>	<b>27</b>

## What is included in the projections?

The following tables outline the characteristics of the sub-specialties in the other surgery group. This includes those specialists that reported cardiothoracic surgery, neurosurgery, paediatric surgery, urology or vascular surgery as one of their main specialties in the AIHW 2009 medical labour force survey. Altogether, there were 866 surgeons in total in the five specialties. This was the starting workforce in the workforce projections.

## Cardiothoracic surgery

### What is a cardiothoracic surgeon?

Cardiothoracic surgery is devoted to the surgical management of intra-thoracic disease and abnormalities. Cardiothoracic surgeons may perform surgical procedures that involve the lung, heart, and/or the great vessels.<sup>76</sup>

The SET cardiothoracic surgery program is a six year sequential curriculum:

- SET 1: satisfactory completion of at least two six month terms; and
- SET 2-6: five years of satisfactory operative experience in cardiothoracic surgery training.

### Workforce stock

The base cardiothoracic surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified cardiothoracic surgery as their main field of specialty. In 2009, there were 133 active cardiothoracic surgeons in Australia. Within this:

- they had an average age of 48 years;
- they worked an average of 51.5 hours per week; and
- approximately 23 percent were aged 55 years and over.

<sup>76</sup> Royal Australasian College of Surgeon, A guide to Surgical Education and Training

**Table 22.53: Cardiothoracic surgery workforce by gender, age and hours worked, 2009\***

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
35-39	3	63.8	24	51.5	27
40-44	0	-	28	55.5	28
45-49	0	-	26	47.9	26
50-54	1	70.2	21	57.8	22
55-59	0	-	14	47.0	14
60-64	0	-	2	65.0	2
65-69	0	-	12	41.3	12
70-74	0	-	1	26.0	1
75+	0	-	1	25.0	1
<b>Total</b>	<b>4</b>	<b>65.4</b>	<b>129</b>	<b>51.0</b>	<b>133</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 22.54: Cardiothoracic surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	1	0	6
IMG Pathway	..	..	..	..	4	4	4
<b>Total</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>10</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.54 shows the number of new fellows gaining fellowship through the IMG Pathway over the period 2009 to 2011. In two of the three years, IMG pathway new fellow numbers exceeded SET pathway new fellows.

## Trainees

**Table 22.55: Cardiothoracic surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	11	3	8
SET Year 2	4	7	3
SET Year 3	5	4	5
SET Year 4	8	4	4
SET Year 5	4	8	4
SET Year 6	5	5	8

Source: RACS annual activity reports 2009 to 2011

## Neurosurgery

### What is a neurosurgeon?

Neurosurgery provides for the management of disorders that affect the central, peripheral and autonomic nervous system, including their supportive structures and vascular supply. Neurosurgery encompasses disorders of the brain, meninges, skull and their blood supply, including the extracranial carotid and vertebral arteries, disorders of the pituitary gland, disorders of the spinal cord, meninges and spine, including cranial and peripheral nerves.<sup>77</sup>

The SET neurosurgery program is a six year curriculum:

- one basic neurosurgical foundational year (SET 1);
- four specialist neurosurgical clinical years (SET2, SET3, SET5, SET6); and
- one research year (SET4).

<sup>77</sup> Royal Australasian College of Surgeon, A guide to Surgical Education and Training

## Workforce stock

The base neurosurgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified neurosurgery as their main field of specialty. In 2009, there were 174 active neurosurgeons in Australia. Within this:

- they had an average age of 50 years;
- they worked an average of 49.9 hours per week; and
- approximately 31 percent were aged 55 years and over.

**Table 22.56: Neurosurgeon workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	2	80.0	2
35-39	3	46.0	37	47.7	40
40-44	7	47.0	17	62.4	24
45-49	4	55.3	18	60.8	22
50-54	7	31.8	25	48.7	32
55-59	0	-	21	59.8	21
60-64	0	-	7	57.6	7
65-69	0	-	13	48.3	13
70-74	0	-	2	38.8	2
75+	0		11	9.4	11
<b>Total</b>	<b>21</b>	<b>43.4</b>	<b>153</b>	<b>50.7</b>	<b>174</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 22.57: Neurosurgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	6	8	2
IMG Pathway	..	..	..	..	2	4	1
<b>Total</b>	<b>6</b>	<b>9</b>	<b>13</b>	<b>16</b>	<b>8</b>	<b>12</b>	<b>3</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

### Immigration

The number of new fellows coming through the IMG pathway over the period 2009 to 2011 is shown in Table 22.57.

### Trainees

**Table 22.58: Neurosurgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	9	11	10
SET Year 2	19	7	13
SET Year 3	6	18	6
SET Year 4	4	7	15
SET Year 5	7	4	4
SET Year 6	2	2	4

Source: RACS annual activity reports 2009 to 2011



## Paediatric surgery

### What is a paediatric surgeon?

Paediatric surgery includes surgeons who have specialist training in managing children (usually up to the age of 16 years) who have conditions that may require surgery. Specialist paediatric surgeons normally deal with non-cardiac thoracic surgery, general paediatric surgery and paediatric urology. Their responsibilities include involvement in the antenatal management of congenital structural abnormalities, neonatal surgery and oncological surgery for children.<sup>78</sup>

The SET paediatric surgery program is a six year sequential curriculum:

- SET 1-2: 24 months of operative surgery (the surgical jobs have to involve supervised operative work), the most useful specialties being general surgery, urology, vascular surgery and plastic and reconstructive surgery; or 21 months of surgery in general and a three month consecutive period of supervised postgraduate clinical work in paediatric medicine (preferably non-surgical); and
- SET 3-6: four years of paediatric surgery in accredited training posts.

### What were the college view?

The college indicated that the workforce was currently struggling to keep pace with demand. Other medical specialist are focusing on adults only and refer directly to childrens hospitals which is putting significant pressure on these facilities.

### Workforce stock

The base paediatric surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified paediatric surgery as their main field of specialty. In 2009, there were 61 active paediatric surgeons in Australia. Within this:

- they had an average age of 49 years;
- they worked an average of 50 hours per week; and
- approximately 30 percent were aged 55 years and over.

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<sup>78</sup> Royal Australasian College of Surgeon, A guide to Surgical Education and Training

**Table 22.59: Paediatric surgery workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	2	42.0	2
35-39	0	-	5	58.0	5
40-44	3	60.0	4	54.5	7
45-49	3	16.7	18	54.0	21
50-54	2	49.5	6	41.7	8
55-59	0	-	9	54.2	9
60-64	0	-	6	53.0	6
65-69	0	-	3	35.0	3
<b>Total</b>	<b>8</b>	<b>41.1</b>	<b>53</b>	<b>51.4</b>	<b>61</b>

Source: 2009 AIHW Medical Labour Force Survey

[Workforce inflows](#)

[New fellows](#)

**Table 22.60: Paediatric surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	0	2	3
IMG Pathway	..	..	..	..	3	1	1
<b>Total</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.60 shows the number of new fellows gaining fellowship through the IMG Pathway over the period 2009 to 2011.

## Trainees

**Table 22.61: Paediatric surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	7	4	5
SET Year 2	4	7	5
SET Year 3	3	1	7
SET Year 4	3	2	1
SET Year 5	4	3	1
SET Year 6	2	4	2

Source: RACS annual activity reports 2009 to 2011

## Urology

### What is a urologist?

Urology is dedicated to the treatment of the kidneys, bladder, prostate and male reproductive organs. Conditions include cancer, stones, infection, incontinence, sexual dysfunction and pelvic floor problems.<sup>79</sup>

The SET urology program is a six year sequential curriculum:

- SET 1: introduction to surgical training including completion of the surgical science examinations and the clinical examinations ;
- SET 2: surgery in general to acquire more advanced surgical skills; and
- SET 3-6: clinical urology training.

### Workforce stock

The base urology surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified urology as their main field of specialty. In 2009, there were 334 active urology surgeons in Australia. Within this:

<sup>79</sup> Royal Australasian College of Surgeons, A guide to Surgical Education and Training

- they had an average age of 49 years;
- they worked an average of 49 hours per week; and
- approximately 24 percent were aged 55 years and over.

**Table 22.62: Urology workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	4	53.0	14	60.3	18
35-39	10	33.1	49	48.6	59
40-44	14	35.7	80	57.3	94
45-49	2	50.0	47	50.1	49
50-54	0	-	33	57.7	33
55-59	0	-	14	58.6	14
60-64	0	-	28	56.3	28
65-69	0	-	9	42.6	9
70-74	0	-	10	25.5	10
75+	0	-	20	7.9	20
<b>Total</b>	<b>30</b>	<b>38.1</b>	<b>304</b>	<b>50.2</b>	<b>334</b>

Source: 2009 AIHW Medical Labour Force Survey

### Workforce inflows

#### New fellows

**Table 22.63: Urology new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	13	10	13
IMG Pathway	..	..	..	..	2	5	8
<b>Total</b>	<b>8</b>	<b>11</b>	<b>19</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>21</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.63 shows the number of new fellows gaining fellowship through the IMG Pathway over the period 2009 to 2011. In both 2010 and 2011 at least half of total new fellows were through the IMG pathway.

## Trainees

**Table 22.64: Urology active trainees by training year**

Training year	2009	2010	2011
SET Year 1	24	17	24
SET Year 2	40	26	16
SET Year 3	15	37	23
SET Year 4	18	8	41
SET Year 5	4	2	6
SET Year 6	0	0	2

Source: RACS annual activity reports 2009 to 2011

## Vascular surgery

### What is a vascular surgeon?

Vascular surgery is a specialty of surgery in which disease of the vascular system, or arteries and veins are managed by medical therapy, minimally-invasive catheter procedures and surgical reconstruction.

The SET vascular surgery program is a five year sequential curriculum.<sup>80</sup>

### Workforce stock

The base vascular surgery workforce was developed from the 2009 AIHW medical labour force survey, where a survey respondent identified vascular surgery as their main field of specialty. In 2009, there were 164 active vascular surgeons in Australia. Within this:

- they had an average age of 52 years;
- they worked an average of 47.8 hours per week; and
- approximately 41 percent were aged 55 years and over.

<sup>80</sup> Royal Australasian College of Surgeon, A guide to Surgical Education and Training

**Table 22.65: Vascular surgery workforce by gender, age and hours worked, 2009\***

Age group	Female		Male		Persons
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	1	57.6	-	-	1
35-39	14	20.5	11	43.3	25
40-44	0	-	30	39.0	30
45-49	5	45.2	15	64.4	20
50-54	3	45.2	18	53.7	21
55-59	2	45.2	17	31.1	19
60-64	0	-	25	49.5	25
65-69	0	-	13	42.6	13
70-74	0	-	5	32.5	5
75+	0	-	5	52.8	5
<b>Total</b>	<b>25</b>	<b>31.9</b>	<b>139</b>	<b>45.5</b>	<b>164</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 22.66: Vascular surgery new fellows through SET program and IMG pathway**

	2005	2006	2007	2008	2009	2010	2011
SET Program	..	..	..	..	7	2	10
IMG Pathway	..	..	..	..	2	3	2
<b>Total</b>	<b>8</b>	<b>5</b>	<b>11</b>	<b>5</b>	<b>9</b>	<b>5</b>	<b>12</b>

.. data not available

Source: RACS data provided to HWA and the RACS annual activities reports 2005 to 2011

## Immigration

Table 22.66 shows the number of SIMG new fellows through the IMG pathway.

## Trainees

**Table 22.67: Vascular surgery active trainees by training year**

Training year	2009	2010	2011
SET Year 1	14	7	7
SET Year 2	13	11	5
SET Year 3	11	9	12
SET Year 4	5	9	9
SET Year 5	3	3	4
SET Year 6	0	1	1

Source: RACS annual activity reports 2009 to 2011

## 23 Addiction medicine

### What is an addiction medicine physician?

Addiction medicine refers to comprehensive medical care for patients with a wide range of addiction disorders, from drug and alcohol to pharmaceutical dependency. This is a new specialty – it was first recognised in 2009 for inclusion in the AMC list of Australian-recognised medical specialties. The Australasian Chapter of Addiction Medicine (AChAM) of the Royal Australasian College of Physicians is the peak representative and training body for addiction medicine in Australia and New Zealand.<sup>81</sup>

Limited data is available for the workforce because it has only recently been recognised. As such, workforce projections were not generated and information presented in this chapter is limited to a description of the training program, considerations for future workforce requirements and information on the number of new fellows and trainees.

### How are addiction medicine physicians trained?<sup>82</sup>

The AChAM specialist training comprises three years of clinical experience under supervision. Training is at the advanced level, that is, applicants need to have completed the Royal Australasian College of Physician's (RACP) basic training or already hold a fellowship in one of the following specialties:

- Anaesthetics
- Emergency medicine
- General Practice
- Internal medicine
- Paediatrics and child health
- Pain medicine
- Psychiatry
- Public health medicine
- Rehabilitation medicine

The program requires at least 18 months be spent in accredited drug and alcohol positions, and up to 18 months in approved research, medical, psychiatric or public health positions. Exemptions are available for individuals who have completed addiction psychiatry training with the Royal Australian and New Zealand College of Psychiatrists.

Part-time training is permitted and it is possible for training to be interrupted. Training must be completed within seven years.

There is the option to complete a dual fellowship with another sub-specialty with the RACP. Successful completion of the training program results in trainees being awarded a fellowship of the AChAM.

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<sup>81</sup> <http://www.racp.edu.au/page/australasian-chapter-of-addiction-medicine/>

<sup>82</sup> Information sourced from the Medical Training Review Panel Fifteenth Report and [www.racp.org.au](http://www.racp.org.au)



## What is the assessment for international graduates?

As a Chapter within the RACP, AChAM follow the RACP SIMG assessment process. The SIMG assessment is conducted by the Chapter Education Committee, and possible outcomes are:

- if found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review; or
- if found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training;
  - a period of up to 24 months practice under peer review;
  - the written and /or clinical examinations of the Chapter;
  - a practice visit.

Upon successful completion of the specified requirements, the SIMG is eligible to apply for fellowship.

## What issues have stakeholders identified for the addiction medicine physician workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce, this section summarises information obtained during consultation on factors that may influence addiction medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

Overriding all of the considerations raised is that fact that addiction medicine is a new specialty. This means there is little historical evidence upon which to determine demand for the specialty services, or upon which to estimate trends that will influence future workforce supply.

### What were the medical college views?

Current consultant numbers are in shortage, with requirements in the public sector not able to be met, and the current trainee levels not sufficient to cover forthcoming retirements.

Consultation with AChAM provided a range of considerations that may impact future supply of the addiction medicine workforce, including:

- the expectation that services will continue to be predominately provided in the public health system, due to the view the Medicare remuneration model does not adequately match the service provision required; and

- most addiction medicine positions will continue to be salaried and funded by state health departments (although it was noted with funding varies significantly across states and territories).

Attracting trainees to the specialty was a key consideration highlighted to improve future supply. Inhibiting this, is the view there are poor career opportunities due to:

- a lack of positions; and
- sub-optimal Medicare arrangements.

In terms of demand, AChAM highlighted that addiction medicine is a growing field, with demand for services expected to increase in future.

## Workforce profile

This section presents available information about the existing number of addiction medicine specialists, new fellows and trainees.

### Workforce stock

The 2009 AIHW medical labour force survey was used to generate the base workforce for most of the medical specialties presented in this publication. As addiction medicine was only recognised as a specialty in Australia in 2009, it was not included in the survey (NB future surveys contain addiction medicine as a specialty). Therefore AIHW information on this workforce is not available for 2009.

The latest available data on the number of addiction medicine specialists is from AHPRA through the National Registration and Accreditation Scheme. This showed there were 164 addiction medicine specialists registered in Australia as at 30 June 2011, with three-quarters located across three states – New South Wales (40 percent), Victoria (19 percent) and Queensland (16 percent).

**Table 23.1: Health practitioners with Addiction Medicine specialty as at 30 June 2011**

ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia <sup>(a)</sup>
2	65	1	27	13	7	32	14	<b>164</b>

(a) Includes those reporting no principal place of practice

Source: AHPRA Annual Report 2010-11

### Workforce inflows

There are relatively small numbers of new fellows and trainees. Most likely this reflects the newness of the specialty and also the attractiveness of the specialty (as highlighted earlier in this chapter).

## New fellows

**Table 23.2: Addiction medicine new fellows by year and place of training**

New fellows	2009	2010
Australian trained	..	3
Specialist international medical graduates	..	0
<b>Total</b>	<b>6</b>	<b>3</b>

.. data not available

Source: Medical Training Review Panel Fifteenth Report

## Trainees

**Table 23.3: Advanced vocational trainees**

Training year	2009	2010	2011
Advanced year 1	..	2	4
<b>Advanced total</b>	<b>..</b>	<b>11</b>	<b>13</b>

.. data not available (addiction medicine was only recognised as a specialty in 2009)

Source: Medical Training Review Panel Fifteenth Report

## 24 Medical administration

### What is a medical administrator?

Medical administrators are medical practitioners who use their clinical training and specialist medical management training to lead and manage medical services and health systems. The Royal Australasian College of Medical Administrators (RACMA) is the peak standards setting and training body for specialist medical administrators. The RACMA Board defines medical administration as:

*Administration or management utilising the medical and clinical knowledge, skill and judgement of a registered medical practitioner 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 projections were not conducted for this specialty because of limited data availability. Information presented in this chapter is limited to a description of the training program, considerations for future workforce requirements and information on the number of new fellows and trainees.

### How are medical administrators trained?

The RACMA fellowship training program is three years full-time or up to six years part-time. The training program is at the advanced level. There are three components which must be completed to qualify for fellowship of the college.

1. Supervised work experience in medical management in an approved workplace over the equivalent of three years full-time.
2. Theoretical studies in an Australasian, or equivalent, university masters degree program. Required subjects include epidemiology, health law, healthcare financing, healthcare systems, research methods and leadership. These studies highlight the nature of the training program and the developed competencies of the medical administrator.
3. Satisfactory completion of the national RACMA training program, for example workshops, written assessments and the pre-fellowship oral examination.

The college permits interruption of training and part-time training. Once trainees have passed the oral examination and completed all other training requirements, they become graduates of the college and are eligible to apply for fellowship.

The college may take into account extensive medical administration experience and award recognition of prior learning, with a reduction in supervised workplace training time.

RACMA has three training programs: The Standard Pathway to Fellowship, the Accelerated Pathway to Fellowship and the Associate Fellowship training program.

### **Standard Pathway to Fellowship**

Suitably qualified doctors may apply to train to become specialists in medical administration and fellows of the college. To be eligible for this pathway, a doctor must show the following evidence:

- an undergraduate medical degree from a recognised Australian or New Zealand university, or equivalent;
- current medical registration in Australia or New Zealand;
- a minimum of three years full-time clinical experience involving direct patient care; and
- a medical management position for a period of three years. This may be a training post or a substantive position that allows the candidate to develop the appropriate medical management competencies.

### **Accelerated Pathway to Fellowship**

Applicants for the accelerated pathway entry must, at a minimum, meet all the requirements for the standard pathway entry. The additional requirement for entry via the accelerated pathway is demonstrated, relevant existing competencies (advanced standing) which qualify them for entry to a modified training program of 12 months.

### **Associate Fellowship**

Medical practitioners with an interest or involvement in clinical leadership and management are eligible to apply to train in the RACMA non-specialist Associate Fellowship certificate program. This qualification is appropriate for doctors who lead clinical services units/divisions and have doctors reporting to them. RACMA associate fellows have ongoing continuing professional development requirements linked to the standards set by RACMA for doctors in management roles.

## **What is the assessment for international graduates?**

SIMGs wishing to apply for entry to the RACMA fellowship training program, need to first apply to the AMC to have their previous training and experience assessed. The required documentation is then reviewed by the college – and if found to be a suitable candidate – the applicant is interviewed by a college panel chaired by the censor-in-chief. The college determines the extent to which the applicant's experience, skills and knowledge is comparable to an Australian-trained medical administrator and whether the applicant requires any additional training or assessment.

## What issues have stakeholders identified for the medical administrator workforce?

### Key stakeholder views

For most medical specialties in this report, this section provides some context for the interpretation of the modelling results. Modelling was not conducted for medical administrators, however there are still a number of considerations that may influence future workforce supply or demand. The points below summarise the key considerations raised during consultation with the profession and employers (noting these do not necessarily represent the views of HWA).

### What were the jurisdiction views?

Jurisdictions did not raise any concern regarding this workforce.

### What were the medical college views?

RACMA indicated in recent years Queensland (2005) Victoria (2006) and New South Wales (2008) have conducted broad and in depth inquiries into the performance of their public hospitals. All identified the distancing of clinicians from those in health service management as a key contributor to the systems' failings.

Over the last decade there has also been an increased demand for, and focus on clinical governance. Consequently RACMA fellows are leading risk management and clinical services quality improvement, medical staff performance management, professional development and credentialing. With the introduction of middle line management positions in larger hospitals (that is, clinician managers), the specialist medical administrator is now more involved in strategic health service planning, organisational funding and performance.

Factors noted by RACMA as potentially impacting future supply were:

- variation in the number of specialists by jurisdictions – with strong growth in Queensland, and the re-establishment of senior medical administrator positions in South Australia also expecting to result in future growth; and
- more specialists leaving the workforce than trainees entering (while also noting an increase in trainee intakes since 2012).

In terms of demand, RACMA highlighted an expected increasing demand for specialist medical administrators in response to:

- findings from recent public hospital inquiries<sup>83</sup> that the distancing of clinicians from those in health service management was a key contributor to the systems' failings;
- an increased focus on clinical governance in the health care system; and

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<sup>83</sup> Queensland 2005, Victoria 2006 and New South Wales 2008

- recommendations from the 2009 the National Health and Hospitals Health Reform Commission impacting on medical leadership, training and workforce development.

Geographical distribution was not noted as a concern, with RACMA survey data indicating members are distributed between metropolitan, rural and remote locations across Australia, with approximately a quarter working in rural areas.

### What other considerations may influence medical administration workforce?

The extent of unmet demand for specialist medical administrators and clinician managers with RACMA associate fellowship can be quantified using a population-based model and a hospital service delivery model. HWA is aware that RACMA uses both of these methods, and RACMA have provided the model results to HWA.

Presently the college estimates there is an undersupply of specialist medical administrators, particularly in the hospital sector, of the order of 20 percent. In addition, the ageing of the membership and retirement of baby boomers in the next five to ten suggests the undersupply will increase to around 25 percent.

### Workforce profile

Data concerns were highlighted by RACMA, with discrepancies between their data (which showed 323 medical administrators in active practice), and AIHW medical labour force survey data (which showed 165 medical administration specialists). A suggested reason for the discrepancy was that many doctors have medical administration as a second specialty, and report their other specialty as their main field of specialty on the AIHW medical labour force survey.

The following section includes the 2009 AIHW workforce profile along with RACMA 2012 census data.

### Workforce stock

The following tables outlines the characteristics of the medical administration workforce, where a survey respondent identified medical administration as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 165 active medical administrators in Australia. Within this:

- medical administrators had an average age of 55 years;
- they worked an average of 43 hours per week; and
- 40 percent were aged 55 years or over.

**Table 24.1: Medical administration workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
35-39	2	52.5	10	52.5	12
40-44	6	44.2	6	52.2	12
45-49	14	37.0	15	41.9	29
50-54	18	51.3	28	51.5	46
55-59	9	49.1	27	47.5	36
60-64	3	48.3	17	44.8	20
65-69	1	73.4	6	52.5	7
70-74	0	-	3	20.0	3
<b>Total</b>	<b>53</b>	<b>46.7</b>	<b>112</b>	<b>47.6</b>	<b>165</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 24.2: Medical administration new fellows, 2009 to 2012**

New fellows	2009	2010	2011	2012
Australian trained	..	18	12	17
Specialist international medical graduates	..	0	1	0
<b>Total</b>	<b>9</b>	<b>18</b>	<b>13</b>	<b>17</b>

.. data not available

Source: Medical Training Review Panel Reports Fourteen and Fifteen (for 2009 and 2010) and RACMA (for 2011 and 2012)



## Trainees

**Table 24.3: Advanced vocational training positions/trainees by year of training, 2009 to 2012**

Training year	2009	2010	2011	2012
Advanced year 1	32	8	25	31
<b>Advanced total</b>	<b>92</b>	<b>105<sup>(a)</sup></b>	<b>86</b>	<b>118</b>

(a) Includes 15 New Zealand and overseas trainees.

Source: Medical Training Review Panel Reports Thirteen, Fourteen and Fifteen (for 2009 to 2011) and 2012 data from RACMA.

## 2012 RACMA Workforce Census Data

The commentary which follows is based on data held by RACMA about its fellows, associate fellows and candidates, and the medical management model advocated by the college to best meet quality and safety standards for health systems management in Australia.

## Workforce supply

There were 789 members of RACMA in 2012. This comprised 478 qualified specialist medical administrators (fellows) across Australia, New Zealand and Hong Kong. Of these, 323 were in active practice and met college standards for continuing professional development.

The college membership classes are:

- Candidates – doctors completing the fellowship training program via the standard pathway or accelerated pathway;
- Fellow – doctors who have completed the RACMA fellowship training program and who have been awarded full fellowship of the college;
- Associate fellows – doctors awarded AFRACMA after completing a RACMA training program in management;
- Trainees – doctors enrolled in the RACMA training program leading to the award of associate fellowship with RACMA; and
- Affiliate – doctors with an interest in medical management.

**Table 24.4: RACMA census membership results 2012**

Jurisdiction	Fellows	Associate Fellows	Affiliates	Total
ACT	22	8	1	31
NSW	125	27	4	156
NT	5	0	1	6
QLD	100	36	4	140
SA	24	4	0	28
TAS	5	5	0	10
VIC	96	54	1	151
WA	31	13	2	46
<b>Total</b>	<b>408</b>	<b>147</b>	<b>13</b>	<b>568</b>

Source: RACMA Membership data base as at 29 May 2012

**Table 24.5: RACMA census membership results 2012**

Jurisdiction	Candidates via the standard pathway	Candidates via the accelerated pathway	Trainees for Associate Fellowship	Total
ACT	3	2	1	6
NSW	13	7	3	23
NT	1	0	0	1
QLD	28	8	3	39
SA	3	0	2	5
TAS	0	0	1	1
VIC	16	6	4	26
WA	14	1	1	16
<b>Total</b>	<b>78</b>	<b>24</b>	<b>15</b>	<b>117</b>

Source: RACMA Membership data base as at 29 May 2012

### RACMA profile of active workforce within the Australian health care system

Based on the 2012 RACMA workforce Census it is possible to identify how the specialist medical administrator workforce in Australia is distributed across the health sector.

An analysis of the RACMA membership workforce showed two-thirds of specialist medical administrators work in hospitals and the majority of these in hospitals with bed sizes between 201 - >500 beds.

Table 24.6 shows a more detailed breakdown of the workplace by sector and region. This data confirms the public sector as the largest sector for employment of specialist medical administrators.

**Table 24.6: Active fellows by type of workplace and region**

Public Sector	Metro	Region	Rural	Remote	Subtotal
Total	133	54	27	2	<b>216</b>
% distribution	52.6%	21.3%	10.7%	0.8%	<b>85.4%</b>
Private Sector	Metro	Region	Rural	Remote	Subtotal
Totals	34	2	1		<b>37</b>
% distribution	13.4%	0.8%	0.4%	0.0%	<b>14.6%</b>

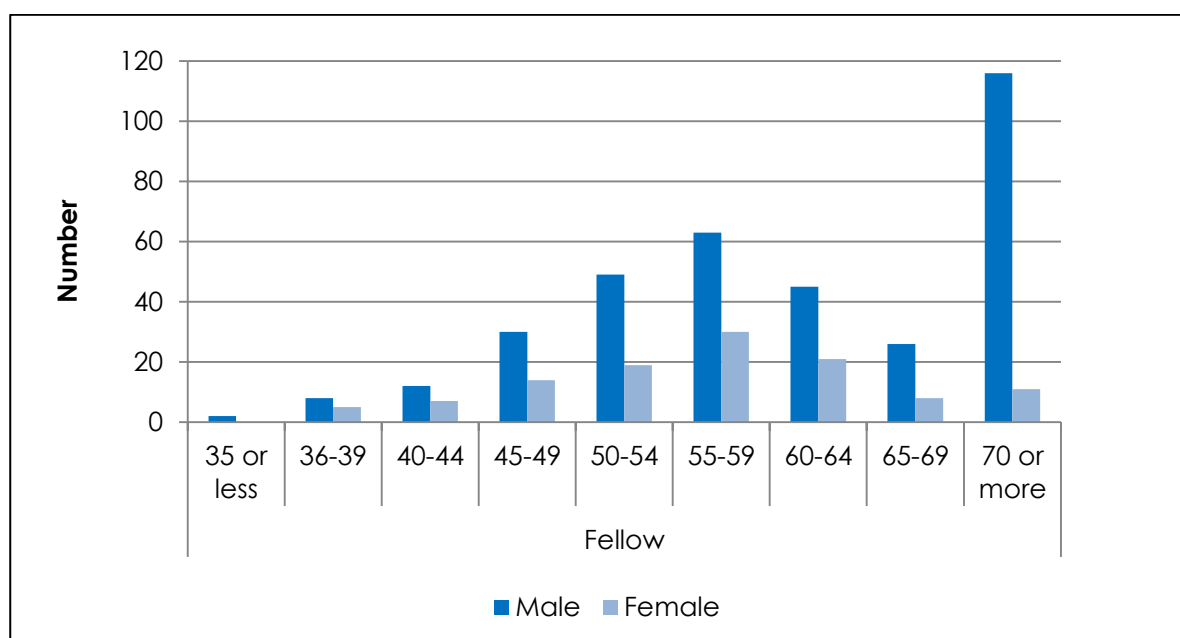
Source: RACMA Membership data base as at 29 May 2012

### RACMA age profile of the fellow workforce

The RACMA membership age profile is shown in the figure below. Of the active medical administrators in the Australian workforce:

- the qualified/specialist medical administrator workforce is ageing;
- The number of specialist medical administrators retiring and leaving full-time employment is accelerating at a rate greater than those completing training; and
- 47 percent of 'active' specialist medical administrators are aged 55 or over.

**Figure 6: Age profile of the RACMA membership**



Source: RACMA Membership data base as at 29 May 2012

## 25 Occupational and environmental medicine

### What is an occupational and environmental medicine physician?

An occupational physician applies high-level medical skills to the interface between a person's work and his or her health. This includes assessing a person's fitness for work, facilitating the return to work of a person after illness or injury, and the inter-relationships between workers, their workplaces and work practices.

### How are occupational and environmental physicians trained?<sup>84</sup>

The Australasian Faculty of Occupational and Environmental Medicine (AFOEM) is a Faculty of the RACP. The AFOEM specialist training program is predominantly community-based, with trainees required to find appropriate jobs and work a minimum of ten hours per week in occupational and environmental medicine.

The training program has three stages, one stage of basic training (introduced in 2011) and two stages of advanced training.

There is no minimum time duration for AFOEM training as the training is competency, not time based. Part-time and interrupted training is permitted, with trainees required to complete their training within ten years.

### What is the assessment for international graduates?

Overseas medical graduates wishing to apply for the AFOEM training program must have successfully completed the AMC examinations.

As a Faculty within the RACP, AFOEM follow the RACP SIMG assessment process and possible outcomes are:

- if found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review; or
- if found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training;
  - a period of up to 24 months practice under peer review;
  - the written and /or clinical examinations of the Faculty;
  - a practice visit.

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<sup>84</sup> Information sourced from the Medical Training Review Panel Fifteenth Report and [www.racp.edu.au](http://www.racp.edu.au)

Upon successful completion of the specified requirements, the SIMG is eligible to apply for fellowship.

## What issues have stakeholders identified for the occupational and environmental medicine workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce, this section summarises information obtained during consultation on factors that may influence occupation and environmental physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

### What were the jurisdiction views?

No specific issues were highlighted by jurisdictions for the occupational and environmental workforce.

### What were the medical college views?

A trend towards replacing occupational and environmental medicine physicians with other health care professionals, such as nurses and occupational health and safety professionals was highlighted as a major influence on future workforce demand. Shifts have also occurred in employment arrangements for this profession – moving away from large corporations and government agencies towards insurance companies, regulators and specialists practising as private consultants.

The funding and co-ordination of training was highlighted as the biggest challenge to the training pathway because:

- there are no government funded training positions, with the cost of supporting trainees borne by supervisors and employers; and
- there are no accredited sites for training – each training program is individually approved and assessed. However, AFOEM is finalising an accreditation model for adoption in 2013.

### What other considerations may influence the occupation and environmental medicine workforce?

Changes in public policy were highlighted as a significant influence on demand for occupational and environmental physicians, with examples including:

- prevention and management of illness and injury in the workplace;
- vocational rehabilitation aimed at keeping workers in the workplace;
- returning people with disabilities or conditions to the workplace;

- increased support for workforce participation of people with conditions currently often seen as being incompatible with work (through structured programs);
- growing demand for referrals or direct consultations to Occupational Physicians rather than GPs for high level input; and
- Growing need for environmental medicine consultancy. AFOEM investigates environmental impacts on human health where those impacts are derived from industrial activity.

## Workforce profile

### Workforce stock

The following table outlines the characteristics of the occupational and environmental physician workforce, where a survey respondent identified occupational and environmental medicine as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 146 active occupational and environmental physicians in Australia. Within this:

- occupational and environmental physicians had an average age of 54 years;
- they worked an average of 41 hours per week; and
- approximately 50 percent were aged 55 years or over.

**Table 25.1: Occupational and environmental workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	3	41.0	3	43.1	6
35-39	5	32.0	4	53.3	9
40-44	0	-	8	51.2	8
45-49	2	32.5	18	45.7	20
50-54	3	43.3	26	43.5	29
55-59	4	38.5	27	42.8	31
60-64	3	29.7	24	39.4	27
65-69	0	-	7	20.3	7
70-74	0	-	8	29.6	8
75+	0	-	1	19.4	1

<b>Total</b>	<b>20</b>	<b>36.1</b>	<b>126</b>	<b>41.3</b>	<b>146</b>
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Source: 2009 AIHW Medical Labour Force Survey

The AIHW figures contrast with the 2012 electronic records of the AFOEM, which indicated there are 248 active occupational and environmental medicine fellows in Australia, with an average age of 56 years.

## Workforce inflows

### New fellows

**Table 25.2: Occupational and environmental medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
6	6	6	11	11	5

(a) Does not include international medical graduates and New Zealand fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports

## Trainees

**Table 25.3: Occupational and environmental advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	55	69	80

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports



## 26 Pain medicine

### What is a pain medicine physician?

Pain medicine is a multidisciplinary medical practice, recognised in Australia as a medical specialty in 2005. The pain medicine specialist can act as a consultant to other physicians and as the principal treating physician. Care provided by a pain specialist includes prescribing medication, coordinating rehabilitative services, performing pain relieving procedures, counselling patients and families, directing a multidisciplinary team, cooperating with other health care professionals and liaising with public and private agencies.<sup>85</sup> Not all individuals who suffer pain require specialist pain medicine services. Most patients will be managed by health professionals in primary healthcare, or by those working in other medical specialties and healthcare professions. However there are a number of patients who will benefit greatly from care delivered or guided by pain medicine specialists.

Pain is complex, encompassing biological, psychological and socio-environmental factors. Effective pain management can reduce chronic pain and disability, reducing the burden of chronic disease including associated healthcare and social welfare costs.

Due to the small size of the workforce and the short history of the specialty, workforce projections were not generated. This chapter provides a description of the training pathway for pain medicine specialists, and data describing the workforce where available.

### How are they trained?

The fellowship of the Faculty of Pain Medicine – Australian and New Zealand College of Anaesthetists (FPM-ANZCA) is a post-specialisation qualification. Those wishing to enter the field have, or are training towards, a specialist qualification in one of the following specialties (including their faculties or chapters) – anaesthesia, general practice, medicine, surgery, psychiatry or rehabilitation medicine.

FPM-ANZCA training requirements vary from two to three years, depending on the primary specialist qualification, previous experience and exposure to pain medicine.

Trainees must undertake a prospectively approved structured training period of one or two years in a faculty accredited pain medicine program. One further year of additional approved experience of direct relevance to pain medicine is required. There is some provision for retrospective approval by the Assessor of prior experience and training.

The training program provides for part-time training, with a minimum commitment of 50 percent full-time equivalent. There is provision for interrupted training.

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<sup>85</sup> <http://www.fpm.anzca.edu.au/about-fpm/about-pain-medicine>

## What is the assessment for international graduates?<sup>86</sup>

No other country (apart from New Zealand, which is part of FMP-ANZCA) has a comparable governance arrangement or training program in pain medicine

## What issues have stakeholders identified for the pain medicine physician workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence pain medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

### What were the medical college views?

Consultation with FPM-ANZCA highlighted a number of considerations relating to the pain medicine workforce, including:

- the concentration of services in the most populated capital cities, with access in rural and remote areas severely limited;
- the limited number of funded training positions in the public and private hospitals; and
- the view there is significant unmet demand across all jurisdictions with waiting times ranging from three to 12 months. Currently less than one in every ten of the 3 million people who suffer chronic pain, such as back pain or persistent pain after surgery or injury, gets access to effective treatment.<sup>87</sup> This is likely to increase as the population ages.

### What other considerations may influence pain medicine workforce projections?

The following considerations were raised if the specialty were to have workforce projections conducted:

- concerns about measuring the current workforce stock. AIHW data showed approximately 80 pain medicine physicians in Australia. ANZCA data shows approximately 230 active physicians. The discrepancy may be a result of specialists not identifying pain medicine as the main field of practice;
- difficulty in accurately determining demand for services because of significant overlap of scope of practice with other specialties, for example anaesthetists (without specific pain medicine qualifications), GPs and some radiologists; and

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<sup>86</sup> Medical Training Review Panel Fifteenth Report

<sup>87</sup> Access Economics. *The high price of pain: the economic impact of persistent pain in Australia*. November 2007.

- difficulty in identifying a supply stream as pain medicine is a post-specialisation qualification. Supply projections based on the prevocational pool of doctors does not allow prediction of those seeking entry to the program.

## Workforce profile

Data in this section provides a broad profile of the pain medicine physician workforce, including data on new fellows and advanced trainees.

## Workforce stock

The following table outlines the characteristics of the pain medicine workforce, where a survey respondent identified pain medicine as their main field of specialty in the AIHW 2009 medical labour force survey. In 2009, there were 83 pain medicine specialists in Australia. Within this:

- the majority (84 percent) were male;
- they worked an average of 41 hours per week; and
- almost two-thirds (64 percent) were aged 55 years or over.

**Table 26.1: Pain medicine workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	2	43.0	2
35-39	2	37.2	6	41.5	8
40-44	1	37.2	4	56.3	5
45-49	0	-	6	43.0	6
50-54	0	-	9	50.6	9
55-59	4	21.1	18	49.6	22
60-64	0	-	11	26.1	11
65-69	0	-	5	45.0	5
70-74	0	-	14	36.9	14
75+	0	-	1	46.0	1
<b>Total</b>	<b>7</b>	<b>28.0</b>	<b>76</b>	<b>42.6</b>	<b>83</b>

Source: 2009 AIHW Medical Labour Force Survey

As highlighted earlier, FPM-ANZCA records show there are 236 active fellows in Australia. This is significantly higher than the AIHW data. The difference is most likely due to doctors reporting their

first specialty (as pain medicine is a post-specialty qualification) as their main field of specialty on the AIHW survey.

## Workforce inflows

### New fellows

Despite the small numbers of pain medicine new fellows, numbers have generally increased over time, with a substantial increase in 2010 compared with previous years.

**Table 26.2: Pain medicine new fellows, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
New fellows	5	5	7	11	9	17

Source: Medical Training Review Panel Fifteenth Report

During consultation, ANZCA provided revised data showing a higher number of new fellows over 2005 to 2010 (Table 26.3).

**Table 26.3: Pain medicine new fellows, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
New fellows	8	9	10	10	12	17

Source: ANZCA

### Trainees

Table 26.4 shows the number of pain medicine advanced trainees.

**Table 26.4: Pain medicine advanced trainees, 2009 to 2011**

	2007	2008	2009	2010	2011	2012
Advanced trainees – first year positions	20	24	19	22	26	27
<b>Total advanced trainees</b>	<b>49</b>	<b>45</b>	<b>53</b>	<b>51</b>	<b>58</b>	<b>59</b>

Source: Medical Training Review Panel Fifteenth Report and ANZCA

ANZCA provided the following breakdown of current active trainees in 2012.

NSW	Qld	SA	Tas	Vic	WA	ACT	In structured training	Total
24	6	3	2	19	4	1	27	59

Source: ANZCA

## 27 Palliative medicine

### What is a palliative medicine physician?

Palliative medicine is the study and management of patients with active, progressive, far advanced disease, for whom the prognosis is limited and the focus of care is the quality of life. Palliative medicine was recognised as a specialty in 2005.

Palliative medicine specialists are involved in:

- direct care of patients with complex conditions;
- intermittent care of patients needing transient specialist care to manage complex symptoms;
- comprehensive assessments of patients being cared for primarily by GPs and/or other specialists; and
- provision of advice to GPs and other specialists caring for patients at the end of life.

In addition, palliative medicine specialists may be involved in research and teaching.

Due to the small size of the workforce, workforce projections were not generated for palliative medicine specialists. This chapter provides a brief description of the training program, considerations for future workforce requirements and information on the number of new fellows and trainees.

### How are they trained?<sup>88</sup>

The Australasian Chapter of Palliative Medicine (AChPM) is a chapter of the Adult Medicine Division of the Royal Australasian College of Physicians (RACP). AChPM training is a three year program at the advanced level, that is, applicants need to have completed the RACP's basic training or already hold a fellowship in one of the following specialties:

- |                              |                           |
|------------------------------|---------------------------|
| ▪ Anaesthetics               | ▪ Pain medicine           |
| ▪ Rural and remote medicine  | ▪ Psychiatry              |
| ▪ General Practice           | ▪ Radiology               |
| ▪ Intensive care medicine    | ▪ Rehabilitation medicine |
| ▪ Obstetrics and Gynaecology | ▪ Surgery                 |

Training is comprised of 24 months of core training and 12 months of non-core training.

The specialist qualification awarded, FRACP or FACHPM, depends on the pathway of entry.

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<sup>88</sup> The Royal Australian College of Physicians, Advanced Training in Palliative Medicine 2012 Program Requirements Handbook. Available at: <http://www.racp.edu.au/page/specialty/palliative-medicine#Training%20Requirements>

## What is the assessment for international graduates?

As a Chapter within the RACP, AChPM follow the RACP SIMG assessment process. The SIMG assessment is conducted by the Chapter Education Committee, and possible outcomes are:

- if found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review; or
- if found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training;
  - a period of up to 24 months practice under peer review;
  - the written and /or clinical examinations of the Chapter;
  - a practice visit.

Upon successful completion of the specified requirements, the SIMG is eligible to apply for fellowship.

## What issues have stakeholders identified for the palliative medicine physician workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence palliative medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

### What were the medical college views?

AChPM highlighted changes in service delivery may influence the demand for the palliative medicine workforce, including:

- telehealth, by enabling increased service provision to patients cared for by primary health care teams or other specialists; and by potentially improving the ability to provide remote advice and support to regional and rural health professionals providing palliative services; and
- changes in referral patterns to include more patients with non-malignant diagnoses such as organ failure and degenerative neurological diseases (as advocated by Palliative Care Australia and the National Health and Hospitals Reform Commission<sup>89</sup>).

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<sup>89</sup> National Health and Hospital Reform Commission 2009, *A Healthier Future for All Australians*, Final Report June 2009. Canberra: Commonwealth of Australia.

AChPM advice was there is an existing shortage of palliative medicine specialists.

### What other considerations may influence palliative medicine workforce?

The ageing of Australia's population was noted as a likely key driver of increased future demand for services.

The Australasian Chapter of Palliative Medicine (AChPM) also administers a 6 month diploma in palliative medicine with 80 conferred last year which will over time build the non-specialist workforce.

A number of trainees and fellows are dual training with the RACP and a number of fellows are also dual qualified and might not be reflected in the numbers.

### Workforce profile

Data in this section provides a broad profile of the palliative physician workforce, including data on new fellows and advanced trainees.

### Workforce stock

The following table outlines the characteristics of the palliative physician workforce, where a survey respondent identified palliative medicine as their main field of specialty in the AIHW 2009 medical labour force survey. In 2009, there were 162 active palliative physicians in Australia. Within this:

- palliative physicians had an average age of 51 years;
- they worked an average of 39 hours per week; and
- over one-third (39 percent) were aged 55 years or over.

**Table 27.1: Palliative medicine workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	0	-	5	41.1	5
35-39	14	26.7	11	50.2	25
40-44	14	28.9	8	37.2	22
45-49	17	38.5	4	44.4	21
50-54	17	41.3	13	47.7	30
55-59	8	48.0	14	46.9	22
60-64	11	35.1	12	46.8	23
65-69	0	-	7	36.4	7
70-74	0	-	1	41.1	1
75+	6	7.0	0	-	6
<b>Total</b>	<b>87</b>	<b>33.9</b>	<b>75</b>	<b>44.9</b>	<b>162</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

Palliative medicine is a small specialty which is reflected in the small number of new fellows each year – with less than ten new palliative medicine fellows across the period 2005 to 2010.

**Table 27.2: Palliative medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
3	2	1	1	8	6

(a) Does not include specialist international medical graduates and New Zealand fellows.

Source: Medical Training Review Panel Eleventh and Fifteenth Report

### Trainees

**Table 27.3: Palliative medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees – first year positions	..	41	11
<b>Total advanced trainees</b>	<b>35</b>	<b>58</b>	<b>71</b>

.. data not available

Source: Medical Training Review Panel Fifteenth Report



## 28 Public health medicine

### What is a public health medicine physician?

Public health medicine is primarily concerned with the health and care of populations. It covers the promotion of health and the prevention of disease, illness and injury, the assessment of a community's health needs, and the provision of services to communities in general and to specific groups within them and to co-ordinated public policy action to address the social determinants of health and reduce health inequalities.

### How are public health physicians trained?<sup>90</sup>

The Australasian Faculty of Public Health Medicine (AFPHM) specialist training program comprises three years supervised experience in public health medicine. Specialists in public health medicine are trained in both clinical medicine and public health.

Trainees must source appropriate employment in a public health medicine role and have their proposed training plan accredited by the AFPHM.

Applicants need to be a fully registered medical practitioner with at least three years medical experience, and need to have completed, or be enrolled in, a Master of Public Health degree which includes the Faculty's core discipline areas:

- Epidemiology
- Health protection
- Health policy, planning or management
- Biostatistics
- Health promotion

Training may be undertaken part-time, however it must be completed within seven years. Training in public health medicine may be undertaken concurrently with another specialty.

### What is the assessment for international graduates?

As a Faculty within the RACP, AFPHM follow the RACP SIMG assessment process. The SIMG assessment is conducted by the Chapter Education Committee, and possible outcomes are:

- if found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review; or
- if found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training;

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<sup>90</sup> Information sourced from the Medical Training Review Panel Fifteenth Report and [www.racp.org.au](http://www.racp.org.au)

- a period of up to 24 months practice under peer review;
- the written and /or clinical examinations of the Faculty;
- a practice visit.

Upon successful completion of the specified requirements, the SIMG is eligible to apply for fellowship.

## What issues have stakeholders identified for the public health medicine physician workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence public health physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

### What were the jurisdiction views?

Public health physicians were highlighted as being in shortage in the Northern Territory, Tasmania and Western Australia, and are a critical component of the medical service delivery workforce.

### What were the medical college views?

The profession highlighted the role of the public health physician is expanding beyond established roles (in health protection, health promotion, population-level disease prevention, and epidemiology). It now encompasses leading clinical strategies to meet current and emerging health challenges, such as chronic disease management, health system planning and whole system leadership and management (with bodies such as Medicare Locals and the National Preventive Health Agency). This expanded role may have consequent impacts on workforce supply and demand.

In relation to the training pathway, the specialty training program has improved training opportunities, and greater numbers of trainees are expected to be attracted to public health medicine through increasing opportunities to work in global health settings.

All training positions are funded through the STP program.

### What other considerations may influence public health workforce?

Data issues were highlighted as impacting on the ability to conduct workforce demand projections, specifically data sources such as hospital utilisation rates and Medicare data do not capture public health physician activity.

In terms of supply the number of fellows will be under represented as a number of consultants are dual qualified and will not have indicated public health as their main speciality.

## Workforce profile

### Workforce stock

The following table outlines the characteristics of the public health medical workforce, where a survey respondent identified public health medicine as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 118 active public health physicians in Australia. Within this:

- public health physicians had an average age of 51 years
- they worked an average of 42 hours per week
- over one-third (36 percent) were aged 55 years or over.

**Table 28.1: Public health physician workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	1	69.0	2	55.0	3
35-39	7	38.9	0	-	7
40-44	15	37.6	3	60.0	18
45-49	10	31.7	17	40.4	27
50-54	8	41.8	13	47.2	21
55-59	7	44.3	23	46.2	30
60-64	1	45.0	2	34.5	3
65-69	2	41.5	4	34.3	6
70-74	0	-	2	39.0	2
75+	0	-	1	0.0	1
<b>Total</b>	<b>51</b>	<b>39.1</b>	<b>67</b>	<b>43.8</b>	<b>118</b>

Source: 2009 AIHW Medical Labour Force Survey

The Australian Faculty of Public Health Medicine (AFPHM) records show a significant difference in the number of public health medicine specialists compared with the AIHW data. AFPHM data from 2012 showed nearly 600 active fellows and trainees in Australia. A possible reason for the variation is fellows report a different main field of specialty on AIHW medical labour force survey.

**Table 28.2: Public health physicians and trainees, Australia 2012**

	Male	Female	Persons
Fellows	379	219	598
Trainees	29	57	86
Inactive Fellows <sup>(a)</sup>	119	43	162
<b>Total</b>	<b>527</b>	<b>319</b>	<b>846</b>

(a) Inactive fellows are those who do not identify as being in active practice  
Source: AFPHM database, 2012

## Workforce inflows

### New fellows

**Table 28.3: Number of public health medicine new fellows<sup>(a)</sup>, 2005 to 2010**

	2005	2006	2007	2008	2009	2010
New fellows	4	13	15	13	12	15

(a) Includes international medical graduates  
Source: Medical Training Review Panel Tenth to Fifteenth Reports

## Trainees

**Table 28.4: Public health medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	61	60	52

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

## 29 Rehabilitation medicine

### What is a rehabilitation medicine physician?

Rehabilitation medicine is involved with the: prevention and reduction of functional loss, activity limitation and participation restriction arising from impairments; management of disability in physical, psychosocial and vocational dimensions; and improvement of function.

The Australian Faculty of Rehabilitation's advanced training program is a minimum of four years.

### What issues have stakeholders identified for the rehabilitation medicine workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence rehabilitation medicine workforce supply or demand (noting these do not necessarily represent the views of HWA).

#### What were the jurisdiction views?

Jurisdiction advice was demand for rehabilitation medicine physicians is expected to grow at a greater rate than historical levels. For some states and territories this would require extra training places to cover the increase in demand.

#### What were the medical college views?

New models of care and the rehabilitation medicine physician's role within these were highlighted as likely impacting on demand for services in the future. This included increasing roles in:

- acute hospital units for early rehabilitation interventions;
- community based health maintenance/hospital avoidance programmes;
- home/community based rehabilitation programmes; and
- the use of telehealth (with 17 percent of fellows currently participating in telehealth and 64 percent expecting it to enhance their practice in the future).<sup>91</sup>

An increasing trend for part-time work and increasing competing demands between clinical and non-clinical tasks were noted as likely impacts on future supply. This may be partially offset by the expected continuation of low exit rates (from the specialty being relatively young, combined with the fact it can be practised for longer).

There have been significant increases in trainee numbers, with demand for training positions now exceeding positions available. Training capacity is particularly limited by the supervisory capacity of the existing workforce.

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<sup>91</sup> Australasian Faculty of Rehabilitation Medicine 2011 workforce survey of fellows and trainees.

The college advised the existing geographic distribution of the rehabilitation medicine workforce is expected to continue, with considerations raised including:

- a lack of trainees in rural and remote areas (Australasian Faculty of Rehabilitation Medicine workforce survey indicated approximately 90 percent of trainees expected to complete their training programme in metropolitan or outer metropolitan settings)<sup>92</sup>
- a lack of specialists in rural and remote areas with 83 percent of fellows working most hours in metropolitan or outer metropolitan settings<sup>93</sup>, and
- significant differences in the number of rehabilitation physicians between jurisdictions.

#### What other considerations may influence the rehabilitation physician workforce?

Difficulties in capturing expressed demand for rehabilitation physicians were noted as impacting the ability to conduct workforce projections. Rehabilitation services are provided within a multidisciplinary and ambulatory model, and a significant proportion of work is conducted in public hospital outpatient departments. Such services are not well reflected in the primary demand data sources of inpatient separations and Medicare data.

There is also an expected increasing demand for rehabilitation physician service resulting from:

- the introduction of the National Disability Insurance Scheme, particularly for areas such as disability needs assessment, equipment prescription, and participation on advisory panels;
- the increased demand for regional/rural local services; and
- the changing demographics and disease patterns of the population, including
  - increasing chronic disease burden and disability load;
  - increasing complexity of the disabled population, that is, increasing co-morbidities and multiple disabilities;
  - improved survival rates of severely ill/injured persons with increased resultant disabilities; and
  - the role of rehabilitation on the ageing population, on average patients demographic are in the late 70's.

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<sup>92</sup> Ibid

<sup>93</sup> Ibid

## Workforce profile

### Workforce stock

The following table outlines the characteristics of the rehabilitation medicine workforce, where a survey respondent identified rehabilitation medicine as their main field of specialty in the 2009 AIHW medical labour force survey. In 2009, there were 342 active rehabilitation medicine physicians in Australia. Within this:

- rehabilitation medicine physicians had an average age of 47 years;
- they worked an average of 49 hours per week; and
- approximately 22 percent were aged 55 years or over.

**Table 29.1: Rehabilitation medicine workforce by gender, age and hours worked, 2009**

Age group	Female		Male		Total
	Headcount	Average hours	Headcount	Average hours	Headcount
30-34	37	36.7	12	44.4	49
35-39	50	31.9	14	41.7	64
40-44	23	30.6	30	43.9	53
45-49	15	45.9	36	45.1	51
50-54	25	34.9	26	53.5	51
55-59	6	41.9	28	48.5	34
60-64	4	27.2	10	35.1	14
65-69	0	-	6	32.3	6
70-74	2	17.1	8	31.7	10
75+	0	-	10	22.5	10
<b>Total</b>	<b>162</b>	<b>34.7</b>	<b>180</b>	<b>43.5</b>	<b>342</b>

Source: 2009 AIHW Medical Labour Force Survey

## Workforce inflows

### New fellows

**Table 29.2: Number of rehabilitation medicine new fellows<sup>(a)</sup>, 2005 to 2010**

2005	2006	2007	2008	2009	2010
13	19	24	21	13	22

(a) Does not include international medical graduates and New Zealand Fellows

Source: Medical Training Review Panel Tenth to Fifteenth Reports and RACP

### Trainees

**Table 29.3: Rehabilitation medicine advanced trainees, 2009 to 2011**

	2009	2010	2011
Advanced trainees	138	143	162

Source: Medical Training Review Panel Fifteenth Report



## 30 Sexual health medicine

### What is a sexual health medicine physician?

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. It encompasses the individual, population, social, cultural, interpersonal, microbial and immunological factors that contribute to STIs, sexual assault, sexual dysfunction and fertility regulation<sup>94</sup>.

Sexual health medicine is concerned with the promotion of the sexual health of the community by identifying and minimising the impact of the above problems through education, behaviour change, advocacy, targeted medical and laboratory screening, diagnostic testing, clinical service provision, surveillance, and research.<sup>95</sup>

The Australasian Chapter of Sexual Health Medicine (AChSHM) sits within the adult medicine division of the RACP. It is a new specialty – it was recognised in 2009 as a medical specialty for inclusion in the AMC list of Australian-recognised medical specialties.<sup>96</sup>

Limited data is available for the workforce. As such, workforce projections were not generated and information presented in this chapter is limited to a description of the training program, considerations for future workforce requirements and information on the number of new fellows and trainees.

### How are they trained?<sup>97</sup>

The AChSHM specialist training is generally a three year vocational training program at the advanced level. To be eligible for entry into the training program, applicants must have completed the RACP basic training or already hold a fellowship in one of the following colleges or faculties:

- Dermatology
- Emergency medicine
- General Practice
- Obstetrics and Gynaecology
- Pathology
- Physicians – Adult Internal Medicine or Paediatrics and Child Health
- Psychiatry
- Public Health Medicine
- Surgery – Urology

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<sup>94</sup><http://www.mcnz.org.nz/get-registered/scopes-of-practice/vocational-registration/types-of-vocational-scope/sexual-health-medicine>

<sup>95</sup> Ibid

<sup>96</sup> <http://www.racp.edu.au/page/australasian-chapter-of-sexual-health-medicine/>

<sup>97</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

Trainees who hold fellowship of an approved college may be granted up to 12 months retrospective accreditation. This is assessed on an individual basis upon entry to the training program.

Part-time training is permitted and training must be completed within seven years.

### What is the assessment for international graduates?

As a Chapter within the RACP, AChSHM follow the RACP SIMG assessment process. The SIMG assessment is conducted by the Chapter Education Committee, and possible outcomes are:

- if found substantially comparable – the SIMG is required to complete 12 months supervised practice under peer review,
- if found partially comparable – the SIMG is required to complete any combination of the following:
  - a period of top-up training
  - a period of up to 24 months practice under peer review
  - the written and /or clinical examinations of the Chapter
  - a practice visit.

Upon successful completion of the specified requirements, the SIMG is eligible to apply for fellowship.

### What issues have stakeholders identified for the sexual health medicine physician workforce?

#### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence sexual health medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

Overriding all of the considerations raised is that fact that sexual health medicine is a new specialty. This means there is little historical evidence upon which to determine demand for the specialty services or to estimate trends that will potentially influence future workforce supply.

### What were the medical college views?

The AChSHM highlighted the following considerations as influencing the sexual health medicine workforce:

- a high proportion of the workforce aged over 50, which is expected to continue due to the small size of the specialty and the low number of trainees and new fellows;
- large female workforce due to the nature of the work;
- 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, and financial models favouring public sector work; and
- attracting trainees to the specialty is inhibited by the limited availability of public health positions, and private practice not being financially viable.

The AChSHM highlighted that increasing rates of STI's and HIV will impact demand as will multi drug resistance diseases. It was also noted that deaths from HIV are less common, but there is an increasing need to manage chronic conditions that result from the disease.

### What other considerations may influence sexual health medicine workforce projections?

If workforce projections were to be conducted, data issues would be encountered, with sexual health medicine overlapping with other specialties such as infectious disease physicians and GPs (which will affect expressed demand calculations through the attribution of services).

The AChSHM also highlighted moves towards using one super clinic per jurisdiction with increasing use of telemedicine as the preferred model. Team based care is also in use with clinical nurse specialists better at delivering care than doctors in many settings.

## Workforce profile

This section presents available information on the existing number of sexual health medicine specialists, new fellows and trainees.

### Workforce stock

The 2009 AIHW medical labour force survey was used to generate the base workforce for most of the medical specialties presented in this publication. Sexual health medicine was only recognised as a specialty in Australia in 2009, so it was not included in the survey (NB future surveys contain the specialty).

The most recent data available on the number of sexual health medicine specialists is from AHPRA through the National Registration and Accreditation Scheme. This showed 106 sexual health medicine specialists registered in Australia as at 30 June 2011.

**Table 30.1: Health practitioners with Sexual Health Medicine specialty as at 30 June 2011**

ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia <sup>(a)</sup>
5	48	1	18	4	1	23	5	<b>106</b>

(a) Includes those reporting no principal place of practice

Source: AHPRA Annual Report 2010-11

## Workforce inflows

There are small numbers of both new fellows and trainees, most likely a reflection of the newness, and attractiveness of the specialty (as highlighted earlier in this chapter).

### New fellows

**Table 30.2: MTRP – New fellows, Australian and overseas trained, 2009 and 2010**

	2009	2010
Australian trained	..	1
Specialist international medical graduates	..	0
<b>Total</b>	<b>1</b>	<b>1</b>

.. data not available

Source: Medical Training Review Panel Report 15

### Trainees

**Table 30.3: Vocational training positions/trainees by year of training for 2009 to 2011**

Training year	2010	2011
Advanced year 1	1	1
<b>Advanced total</b>	<b>19</b>	<b>7</b>

Source: Medical Training Review Panel Fourteenth and Fifteenth Reports

ACHSHM provided the number of trainees for sexual health medicine for 2010 to 2012.

**Table 30.4: Sexual health medicine active number of advanced trainees, 2010 to 2012<sup>(a)</sup>**

Training year	2010	2011	2012
Advanced Year 1	6	4	0
<b>Advanced total</b>	<b>19</b>	<b>24</b>	<b>14</b>

(a) These updated figures only include registered, paid-up trainees. This includes trainees who have applied for continuation or interruption and those actively training. However, trainees that have not contacted RACP are not included.

Source: AChSHM data

## 31 Sports and exercise medicine

### What is a sports and exercise medicine physician?

Sport and Exercise Medicine (SEM) involves the care of people who exercise at all levels and of all ages. It encompasses:

- 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 illness.

Team care, at both an elite and community level, is also commonly performed by SEM physicians.

SEM is a new specialty. While the Australian College of Sports Physicians (ACSP) was first founded in 1985, SEM was only recognised as a full medical specialty Australia in 2009.

Limited data is available for the SEM workforce. As such, workforce projections were not generated for the specialty. Information presented in this chapter is limited to a description of the training program, considerations for future workforce requirements and information on the number of new fellows and trainees.

### How are they trained?<sup>99</sup>

The ACSP advanced training program is of four years duration, three years of which are fully supervised. The fourth year can comprise continued supervised training or be structured as an elective year.

Trainees undergo a selection process to enter the ACSP advanced training program, and must have completed the equivalent of three years general medical and surgical experience (since graduation from their undergraduate medical degree) in posts recognised by the college. The ACSP's advanced training program is conducted almost exclusively in the private practice environment.

The fellowship examination is an exit examination, taken after completion of all supervised training, usually in the final year of training.

### What is the assessment for international graduates?

For SIMGs seeking fellowship of the ACSP, the college conducts an assessment in line with that recommended by the Australian Medical Council. Key assessment tools are the applicant's curriculum vitae, followed by response to any specific questions raised by the college.<sup>100</sup>

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<sup>98</sup> <http://www.acsp.org.au/>

<sup>99</sup> Information sourced from the Medical Training Review Panel Fifteenth Report

## What issues have stakeholders identified for the sports and exercise medicine physician workforce?

### Key stakeholder views

Although workforce projections were not generated for this workforce individually, this section summarises information obtained during consultation on factors that may influence sports and exercise medicine physician workforce supply or demand (noting these do not necessarily represent the views of HWA).

Overriding all of the considerations raised is that fact that SEM is a new specialty. This means there is little historical evidence upon which to determine demand for the specialty services or estimate trends that will potentially influence future workforce supply.

### What were the medical college views?

College advice was SEM physicians work almost exclusively in the private sector, with the vast majority of work supported by Medicare billing. Reflecting this, the advanced training pathway is also almost exclusively conducted in the private practice environment and the SEM physician workforce is almost entirely based in major metropolitan centres.

It was noted there are no funding streams supporting SEM training, although the specialist training program initiative could potentially support training in private practice as it does for a number of other specialties.

The college thought that with specialist recognition and a clear career pathway, the SEM specialty is likely to be more attractive to trainees. They also advised there is an existing level of undersupply for SEM services, evidenced by long waiting lists for consultations.

Overlaps occur in the scope of practice of SEM physicians with other specialties including orthopaedics and general practice.

### Workforce profile

This section presents information available on the existing number of SEM specialists, SEM new fellows and trainees.

### Workforce stock

The 2009 AIHW medical labour force survey was used to generate the base workforce for most of the medical specialties presented in this publication. SEM was only recognised as a specialty in Australia in 2009 so it was not included in the survey (NB future surveys contain SEM as a specialty).

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<sup>100</sup> Medical Training Review Panel Fifteenth Report

The latest available data on the number of SEM physicians is from AHPRA through the National Registration and Accreditation Scheme. This showed 104 SEM physicians registered in Australia as at 30 June 2011, with almost two-thirds located in New South Wales and Victoria.

**Table 31.1: Health practitioners with Sports and Exercise Medicine specialty as at 30 June 2011**

ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
8	37	1	12	5	2	32	7	<b>104</b>

Source: AHPRA Annual Report 2010-11

## Workforce inflows

### New fellows

Over the period 2005 to 2010, there have been small numbers of new fellows each year. The highest number of new fellows over this period occurred in 2006 (7).

**Table 31.2: Sports and exercise medicine new fellows, 2005 to 2010**

2005	2006	2007	2008	2009	2010
..	7	3	5	1	1

.. data not available

Sources: Medical Training Review Panel Fifteenth Report

The ACSP provided data on the number of graduations from their training program for 2005 to 2010. There are greater numbers of graduations prior to recognition of specialty status in 2009.

**Table 31.3: Sports and exercise medicine graduations from their training program, 2005 to 2010**

2005	2006	2007	2008	2009	2010
5	7	6	8	1	2

Source: ACSP data.

### Trainees

**Table 31.4: MTRP – Advanced vocational training positions/trainees by year of training for 2009 to 2011**

Training year	2009	2010	2011
Advanced year 1	..	..	8
<b>Advanced total</b>	..	..	<b>27</b>

.. data not available. Source: Medical Training Review Panel Reports Fourteen and Fifteen



## Glossary

**Advanced trainee** – A medical practitioner undertaking a period of defined and structured education and training in a particular specialty that, when complete, will be eligible to apply for fellowship of that specialist medical college. In relation to the **registrar work value scenario** an advanced trainee is referred to as a medical practitioner in the last two years of advanced training or the last two years of training, if advanced training does not exist within a particular specialty.

**Basic trainee** – A medical practitioner undertaking a period of basic training prior to commencing an advanced training program.

**Capped working hours** – The capped hours scenario was created by reducing the working hours of any individual who reported working in excess of 50 hours per week to 50. The working hours of individuals who reported working 50 hours or less per week were left unchanged. As this approach does not directly impact headcount (which the model results are reported on), the effective reduction in headcount based on changes to the full-time equivalent induced by this change is reported.

**Career Medical Officer (CMO)** – In the overarching medical modelling, the CMO category includes doctors who mainly work in a hospital setting after completing all professional entry training. They may be referred to using different nomenclature across varying jurisdictions, such as hospitalists.

**Comparison Scenario** – A scenario where current trends are assumed to continue into the future. This is compared with a range of alternative scenarios.

**Fellow** – A trainee, who has been granted fellowship of the college through completion of a college training program or by other mechanism.

**Full-time equivalent (FTE)** – The model calculates FTE on a per specialty/area of practice basis based on the initial headcount in those groups multiplied by their reported clinical hours worked (based on an average calculated on a per gender and per age group basis). This is then divided by a standardised assumption about what constitutes a single FTE across the workforces modelled (40 hours per week for the medical workforce and 38 hours per week for the nursing workforce) to generate the FTE quantity.

**Generalist** – Refers to the primary care GP workforce, the rural generalist workforce (a subset of the GP workforce) and generalist specialists, specifically general physicians, general surgeons and general pathologists.

**General Practice (GP) Proceduralist** – A doctor that provides non-referred services, normally in a hospital theatre, maternity care setting or appropriately equipped facility, which in urban areas are typically the province of a specific referral-based specialty. Common services provided by GP Proceduralists are anaesthetics, obstetrics and surgical and emergency services.



**Headcount** – The initial headcount in the model is based on actual AIHW 2009 Labour Force Survey numbers, grouped according to the relevant medical specialty or nursing area of practice being modelled. Individuals in non-clinical roles are out of scope. Each individual record contains a specialty/area of practice, gender, age and hours worked data item.

**Hours worked** – are calculated and applied separately for each age/sex cohort within each specialty. The data from which hours worked is taken is from the AIHW labour force survey for 2009, as those reported as clinical hours.

**International Students (medical)** – Private or sponsored students in an Australian medical school who are not Australian citizens, permanent residents or New Zealand citizens. In the modelling contained within this report, 70 percent of international students are assumed to remain in Australia following completion of their medical degree.

**International Medical Graduates (IMG)** – Doctors whose basic medical qualifications were acquired in a country other than Australia (includes IMG's who have applied and whose qualification have been assessed as suitable for entering into a specialist training program to allow them eligibility for fellowship to the college).

**New fellow** – A trainee/fellow that has been admitted to the specialist college for fellowship.

**Overseas Trained Specialists (OTS)** – Doctors whose specialist training qualifications were acquired in a country other than Australia. They require Australian Medical Council certification before working in Australia and depending on the assessment of their skills, may require further training in programs run by medical colleges.

**Postgraduate Year 1 (PGY1)** – Medical graduates who are in their intern year.

**Postgraduate Year 2 (PGY2)** – Medical graduates who have completed their intern year and are in their second year of postgraduate training. In the overarching medical modelling, PGY2s are capable of moving to vocational training (in either a basic or advanced specialist program) or becoming (temporarily or permanently) a CMO.

**Registrar work value** – A scenario where registrars are assigned a work value of 50 percent (unless otherwise specified) in their last two or three years of training.

**Self-sufficiency** – In the context of the modelling, self-sufficiency scenarios represent a reduction in the temporary and permanent migration input into the health workforce as well as a reduction in the IMG component in the medical workforce.

**Service and workforce reform** – A scenario that was created by lowering demand by 0.38 percent per annum to 2025, in addition to a one percent reduction in demand below the comparison estimate. This scenario is a combination of the productivity and low demand scenarios provided in Volume 1.

## Appendix 1 – Medical specialty mapping procedure

Field of medical specialty	HW 2025 Specialty	Sub-specialty
Anaesthesia	Anaesthesia	Anaesthesia
Dermatology	Dermatology	Dermatology
Emergency Medicine	Emergency Medicine	Emergency Medicine
General Practice	General Practice	General Practice
Intensive Care	Intensive Care	Intensive care medicine
		Intensive care physician
Obstetrics and Gynaecology	Obstetrics and Gynaecology	Obstetrics and Gynaecology
Ophthalmology	Ophthalmology	Ophthalmology
Paediatrics and Child Health	Paediatrics and Child Health	Paediatrics and Child Health
Pain Medicine	Pain Medicine	Pain Medicine
Palliative Medicine	Palliative Medicine	Palliative Medicine
Public Health Medicine	Public Health Medicine	Public Health Medicine
Occupational & Environmental Medicine	Occupational & Environmental Medicine	Occupational & Environmental Medicine
Medical Administration	Medical Administration	Medical Administration
Pathology	Anatomical Pathology (incl Cytopathology)	Anatomical Pathology (incl Cytopathology)
	Other (clinical) pathology	General Pathology
		Haematology
		Immunology
		Microbiology
		Chemical pathology
	Forensic Pathology	Forensic Pathology
Physician	Cardiology	Cardiology
	Endocrinology	Endocrinology
	Gastroenterology and Hepatology	Gastroenterology and Hepatology
	General Medicine	General Medicine
	Geriatric Medicine	Geriatric Medicine
	Medical Oncology	Medical Oncology
	Nephrology	Nephrology
	Neurology	Neurology

Field of medical specialty	HW 2025 Specialty	Sub-specialty
	Other physicians	Clinical Genetics
		Clinical Pharmacology
		Haematology
		Immunology and Allergy
		Infectious Disease
		Nuclear Medicine
		Respiratory and Sleep Medicine
		Rheumatology
		Thoracic medicine
		Psychiatry
Psychiatry	Psychiatry	Psychiatry
Radiation Oncology	Radiation Oncology	Radiation Oncology
Radiology	Radiology	Diagnostic Radiology
Surgery	General Surgery	General Surgery
	Orthopaedic Surgery	Orthopaedic Surgery
	Otolaryngology	Otolaryngology
	Plastic Surgery	Plastic Surgery
	Other surgery	Cardiothoracic Surgery
		Neurosurgery
		Paediatric Surgery
		Urology
		Vascular Surgery
Sports Medicine	Sports Medicine	Sports Medicine
Sexual Health Medicine	Sexual Health Medicine	Sexual Health Medicine

## Appendix 2 – Demand methodology

### Measuring future health workforce demand

Measuring demand for health services is more complex than measuring demand in other sectors of the economy. Generally, demand for goods or services are driven by price, income and individual preference. While these factors also apply in the health sector, their influence on demand is not straightforward. In particular, decision making in relation to demand for health care is not clear – with consumer preferences not clearly driving demand (as occurs in other sectors). This is a result of:

- universal access to health care, so income levels only indirectly impact individual demand for public health services;
- the mixed-market status (that is, strong government oversight) of the health care sector adding complexity to the role prices plays in determining demand; and
- the immediate service supplier (in most instances, a doctor) having more information about the appropriate level of service provision than the consumer.

As a result, in the health sector, the amount of a particular health service demanded is influenced by any or all of the consumer, doctor, government (through regulatory or funding arrangements) or health insurance companies.

Translating demand for health services into a demand for a medical workforce adds an additional element of complexity. The medical workforce is just one part of the total health system – demand can also be influenced by other health service providers substituting for the medical workforce (within regulatory structures), as well as non-workforce elements such as pharmaceuticals, funding allocation, technology and service models.

### Alternative demand measures

Despite the complexities of measuring demand for health services, and consequently the health workforce that provides those services, multiple methods are available to construct a demand measure for workforce modelling. The main methods are:

- **Burden of disease (needs-based) method** – This approach examines the burden of disease on the community. It measures the health of the community, not just those seeking medical services, and requires significant information on the incidence, prevalence and disability states for virtually all diseases and conditions. Ideally, this information is required by age and gender to map it appropriately to future demographic changes. The primary limitation of this approach is that it requires significant amounts of data that do not often exist in a consistent format.
- **Utilisation method** – This approach measures expressed demand, and is based on service utilisation patterns as they currently exist. It makes no assumptions about potential demand,

it uses medical services data (that is Medicare services) and hospital separations data matched against age and gender cohorts. Once mapped, this is then projected against future demographic structures.

The utilisation approach suffers from data limitations, for example, outpatient data is often incomplete and it is a narrower measure than the needs-based approach. However in the context of modelling demand for the medical workforce (where the aim is to understand demand for workforce rather than the health status of the population), it is arguably the most relevant.

- **Economic estimation method** – This method links demand for the health workforce to variables presumed to contribute to demand for health services. For example, literature indicates a consistent link between demand for health services and national income levels, where demand for health services increases at a greater rate than income. Therefore a specific assumed relationship between national income and demand for health services can be built into the forecasting equation. Limitations of the economic estimation method include: it moves away from the underlying composition of the health workforce; it takes a 'top down' approach versus the 'bottom up' approach of the needs-based and utilisation methods; and it also suffers from data quality limitations.
- **Benchmarking method (ratios)** – This method involves comparing a workforce-to-population ratio (benchmark) in particular regions or health care systems with the ratios in the locality of interest. This approach treats the benchmarks as a goal, and assumes the benchmark being used is optimal for providing effective health care, when it could represent over-servicing, historical legacies or other idiosyncratic location of health services.<sup>101</sup> However this method requires minimal data and is easily used.

Each method also either ignores or makes assumptions about future changes in patterns of disease, treatment technologies and changes in workforce configuration and role substitution.

### Demand measure used in HW 2025 Volume 3

While each demand measure has strengths and weaknesses, HW 2025 used the utilisation method (or expressed demand) to calculate demand. This was determined to be most suited to modelling a workforce comprised of a large number of specialties and sub-specialties.

The measure is calculated on service utilisation for each gender and five-year age cohort, so the expressed demand measure arising captures changes in population composition. For example, if a particular set of services is associated with 35-39 year old females and their share of the overall population increases, then demand for the medical workforces associated with the provision of those services will grow greater than the rate of the overall population.

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<sup>101</sup> Goodman D, the Committee on Pediatric Workforce. The pediatrician workforce: current status and future prospects. *Pediatrics* 2005;116(1):156-173.

To generate the age and gender specific set of services, the utilisation measure examined both Medicare services data and hospital separations. These data sources were also used to estimate a public/private split of hours worked by medical specialists. Service Related Groups (SRGs) were mapped to Diagnosis Related Groups (DRGs) and to Enhanced Service Related Groups (ESRGs,) and this was used to assign particular medical services to specific medical workforce specialties and sub-specialties. In this way, a unique demand measure was calculated for each medical specialty.

In generating the expressed demand measures, HWA is aware of the data limitations involved with this method. In particular, consultation consistently highlighted the increasing shift from inpatient to outpatient service provision, with the lack of outpatient data in the expressed demand calculation a specific issue. However it is currently not possible to include outpatient data in expressed demand calculations, as presently there is:

- no standardised classification of data across jurisdictions to enable the identification of clinical time spent by medical specialists on outpatients; and
- differences in admission practices and in the types of facilities offering outpatient services.

### Factors affecting demand

There are a variety of factors that influence demand for the medical workforce. Some of the significant factors are:

- Demographic change – Although often taken to mean the ageing of the population, other demographic changes impact on the medical workforce – for example, recent increases in the fertility rate. Literature indicates demographic change is a smaller component in long-term change in health services demand than often assumed. In addition, a growing overall population will generally exert an upward demand on health services.
- Institutional and regulatory settings – The introduction of workforce reforms and increasing substitutability is likely to increase demand for some health workforces and reduce it for others, even if other demand factors remained unchanged. The net workforce effect of such reforms cannot be estimated until sufficient data exists to quantify the impacts.
- Economic growth – The demand for health services at the national level will to some extent be determined by the rate of future economic growth. Indirectly, the strong role played by governments in funding health care will also be influenced by prevailing economic conditions.
- Supplier induced demand – The specialised nature of many health services introduces the element where the service supplier knows more about the appropriate quantity of health services to provide than the consumer. The decision about an appropriate amount of health service provision can therefore be driven by factors such as delivery mechanism, activity levels and individual treatment philosophies of health care professionals.

- Supply induced demand – This is related to the increase in servicing associated with a larger pool of available health care professionals. As health care access in Australia is often determined by time-based rationing rather than price signals, a larger health workforce (particularly in primary care) has been associated with a greater level of demand.
- Consumer tastes, education levels and preferences – Basic improvements in living conditions (for example, sewerage systems through to immunisation programs and increased public education levels) can result in decreases in demand for health services. Equally, increases in public education levels and awareness of disease risk factors can increase demand for health services, for example screening.
- Inherent lack of predictability in diseases and their treatment – There is no way to fully predict the emergence of new diseases or scientific advances that radically alter treatment methods for a range of conditions. These changes may result in a system wide raising or lowering of demand or cause a significant shift in demand between particular groups of health service providers.
- Large shifts in demand – The construction of major new health facilities (for example major hospitals) or significant public policy initiatives (such as in mental health sector) introduce concentrated changes in demand for health services (and the associated workforces).

While several of these factors cannot be accounted for in a projection exercise, others can be modelled once sufficient data exists from which assumptions about the impact of the factor can be made. For example, the impact of new workplace configurations as a result of workforce substitution and role reform can be modelled once data exists on the impact of those configurations.



## Appendix 3 – Demand rates by medical specialty

Specialty	Sub specialty	Expressed demand Rate	Data sources
Physician	Cardiology	2.00%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>Utilisation – Age/Sex adjusted</li> <li>ABS Series B population projections</li> <li>AIHW Labour Force Survey</li> </ul>
	Physician	2.00%	
	Endocrinology	2.28%	
	Gastroenterology and Hepatology	2.20%	
	General Medicine	2.00%	
	Medical Oncology	4.52%	
	Neurology	1.50%	
	Nephrology	4.33%	
	Geriatric Medicine	5.50%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>Utilisation – Age/Sex adjusted</li> <li>ABS Series B population projections (aged 60 years and over)</li> <li>AIHW Labour Force Survey</li> </ul>
Intensive care	Intensive care Medicine	5.43%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ANZICS utilisation – Age/Sex adjusted</li> <li>ABS Series B population projections</li> <li>AIHW Labour Force Survey</li> </ul>
Paediatrics and Child Health	Paediatrics and Child Health	5.62%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>Utilisation – Age/Sex adjusted</li> <li>AIHW Public hospital outpatient occasions of service</li> <li>ABS Series B population projections (aged 0-18 years)</li> <li>AIHW Labour Force Survey</li> </ul>
Surgery	Surgery	2.05%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>Utilisation – Age/Sex adjusted</li> <li>ABS Series B population</li> </ul>
	General Surgery	2.00%	
	Orthopaedic Surgery	2.10%	



Specialty	Sub specialty	Expressed demand Rate	Data sources
	Otolaryngology - Head & Neck Surgery	1.50%	<ul style="list-style-type: none"> <li>projections</li> <li>AIHW Labour Force Survey</li> </ul>
	Plastic Surgery	1.33%	
	Ophthalmology	2.00%	
Anaesthesia	Anaesthesia	3.10%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
Dermatology	Dermatology	4.20%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
Radiology	Diagnostic Radiology	3.80%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
Radiation Oncology	Radiation Oncology	7.70%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
Emergency Medicine	Emergency Medicine	5.40%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>AIHW utilisation – Age/Sex adjusted (emergency department presentations)</li> <li>ABS Series B population projections</li> <li>AIHW Labour Force Survey</li> </ul>
Obstetrics and Gynaecology	Obstetrics and Gynaecology	2.60%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>AIHW utilisation – Age/Sex adjusted</li> <li>ABS Series B population projections (females only)</li> <li>AIHW Labour Force Survey</li> </ul>
Psychiatry	Psychiatry	4.10%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>AIHW utilisation – Age/Sex adjusted (mental health presentations and community health contacts)</li> <li>ABS Series B population</li> </ul>

Specialty	Sub specialty	Expressed demand Rate	Data sources
			projections <ul style="list-style-type: none"> <li>AIHW Labour Force Survey</li> </ul>
General Practice	General Practice	3.20%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
Pathology	Anatomical Pathology	5.00%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>
	Other clinical pathology	6.30%	<ul style="list-style-type: none"> <li>Medicare utilisation data</li> <li>ABS Series B population projections</li> </ul>

## Appendix 4 – Supply methodology

### Alternative supply measures

There are two primary methods for measuring workforce supply for workforce planning projections. These are:

**Time series analysis method** – This method applies statistical techniques to historical data to derive trends, which are then projected into the future as an estimate of workforce supply. All factors that have influenced the shape and magnitude of a longitudinal data set are reflected in the historical data, so time series analysis assumes these influencing factors remain the same into the future. The choice of statistical technique is based on the structure of the data, and how well it minimises the error between expected and observed data.

**Stock and flow method** – This method involves identifying the size and activity of the current workforce (stock) and sources of inflows and outflows from the stock, as well as looking at trends or influences on the stock and flows. To project future supply, the initial stock is moved forward based on expected inflows and outflows, allowing for the impact of trends and influences in the stock.

### Supply measure used in HW 2025 Volume 3

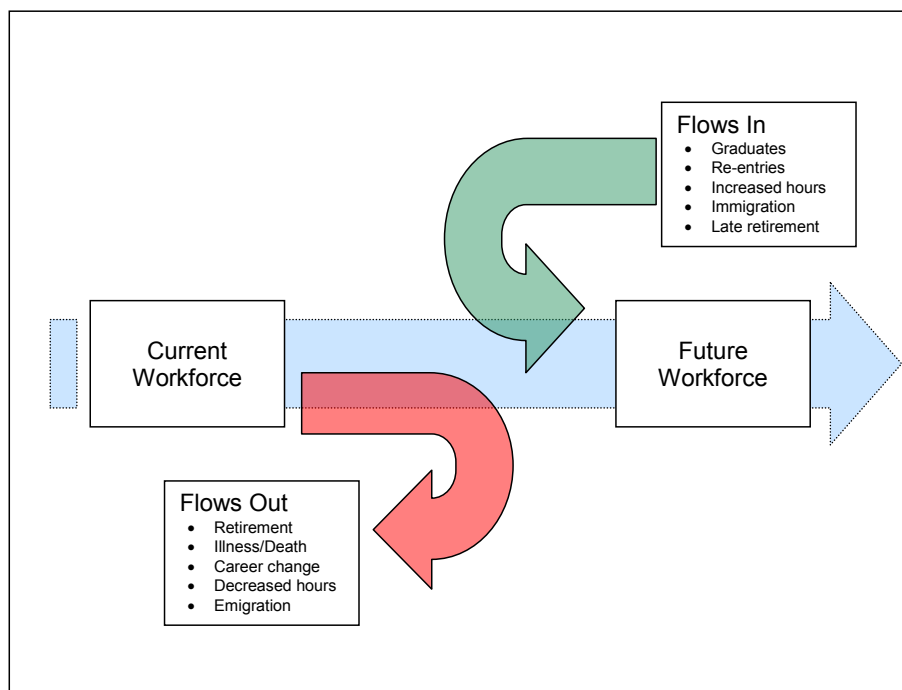
HW 2025 Volume 3 used a dynamic version of the stock and flow approach. The four key inputs in the stock and flow model were:

- Workforce stock;
- Domestic fellows;
- Migration (permanent and temporary); and
- Net exits, which includes all permanent and temporary flows out of the workforce.

Information on the data sources for each of these components, along with the underpinning assumptions and discussion of data limitations is contained in Appendix 4.

In a dynamic stock and flow calculation, the stock of the workforce is affected by inflows and outflows to adjacent age cohorts within the stock, as well as external inflows and outflows. That is, each age and gender cohort receives inflows not just from fellows and migration (external flows), but also from people ageing within the model that move from one age cohort into the next. For example, someone moves from the 30 to 34 cohort into the 35 to 39 cohort. Similarly, each age and gender cohort has exits applied – exits as people leave the workforce altogether, and exits as a person moves into the next age cohort. This is an iterative calculation in each year over the projection period, and provides for a more realistic representation of labour dynamics.

The stock and flow process is represented in Figure 10-1, where people entering and exiting the workforce (the flows) periodically adjust the initial number in the workforce stock to project future supply.



**Figure 31-1: Stock and flow process**

## Factors affecting supply

A number of factors influence supply of the medical workforce in the real world, with three main factors outlined below.

- **Duration of training** – This impacts supply because of the time it takes to train a replacement workforce. This is particularly important for workforces that may be in, or moving to, a position of shortage as the longer the training duration, the more limited the capacity of the system to respond in a timely manner. Extensive education and training is required to become a medical specialist – assuming a consecutive progression through the training pathway, it can still take up to 15 years. This time can be further extended by people undertaking training part-time, interrupting training, or moving from one vocational training program to another. In terms of future workforce supply, this means significant lead time is required for the flow through effects of changes in medical training intakes to be realised.
- **Immigration** – Unlike the duration of medical training, immigration (particularly temporary migration) can impact almost immediately on workforce supply. Consequently immigration can be an effective short-term measure for managing fluctuations in the supply of health professionals. Immigration intakes are strongly influenced by immigration policy, exchange

rates and accreditation standards and processes. In relation to policy, medical practitioner occupations have appeared on the general skilled migration list for a number of years, to facilitate the migration of this group of professionals. Temporary visa options also exist for international medical graduates and are a particularly responsive short-term mechanism for influencing supply.

- Retention – HW 2025 Volume 1 highlighted the impact that retention can have on workforce supply through the nursing workforce projections. For nursing, the maintenance of a high retention rate (and consequently a low workforce exit rate) had the greatest impact in reducing the projected workforce gap between supply and demand over the projection period. However unlike nurses, doctors traditionally have high retention rates, and rather than leaving the workforce, doctors nearing retirement tend to reduce their work hours. This transition minimises the impact on workforce supply, however any change in this pattern would influence future workforce supply.

All the factors are interrelated – higher retention rates mean fewer new entrants are required through training or immigration (assuming new entrants are not required to redress a workforce shortage). To the extent these factors are reflected in historical trends, they are reflected in the workforce supply projections. However any future change in these factors would impact on the accuracy of the workforce supply projections presented.

### How does HWA measure workforce stock?

The 2009 AIHW Medical Labour Force Survey was the data source used to measure the starting workforce stock for each medical specialty in HW 2025 Volume 3. Survey data was subset to:

- i. Identify those doctors working in Australia at the time of the survey, that is, doctors were excluded who reported they:
  - were not working in medicine; or
  - were working in medicine overseas.
- ii. Then from (i), identify those doctors who practised as a specialist or a GP, that is, doctors were excluded who reported they:
  - were a specialist-in-training;
  - were a hospital non-specialist; or
  - were in a non-clinical role such as a teacher or educator, or researcher.
- iii. Then from (ii), develop each medical specialty workforce stock from those doctors reporting the relevant specialty as their main field of specialty.

Each medical specialty workforce was then split by five year age groups and gender, and average hours worked calculated for each age and gender co-hort.

## What assumptions underpin the workforce stock?

A number of assumptions were made that underpin each component of the workforce supply projections. The assumptions are important – they affect the interpretation of the model results as the projections provide likely outcomes given the assumptions on which they are based. The assumptions specific to the workforce stock component of the supply projections were:

- all medical specialists were assumed to remain in the workforce, even in situations of oversupply. That is, exit rates were not adjusted to take account of possible movements away from a medical specialty in an oversupply situation; and
- medical specialists were retired from the workforce at 75 years.

## What limitations exist with the workforce stock data?

As HW 2025 is a national model, all input data needed to be sourced from nationally comparable datasets. As a result, the range of data from which national modelling can be conducted is quite limited. While the AIHW Medical Labour Force Survey is national in scope and comprehensive in terms of coverage, a number of limitations exist with it for the purposes of workforce planning, outlined below.

- The survey is voluntary and response rates are variable;
- The data is self-reported. This means the information is dependent on individuals' understanding of the questions asked and on their ability to recall items like hours worked; and
- The survey is a general purpose one, and the questions asked are not specifically tailored to the needs of workforce planning.

These limitations are important to recognise, as any inaccuracies that may exist in the input data directly impacts on projection results.

## What is planned to improve workforce stock data for future modelling?

The next iteration of HW 2025 will rely on workforce data from AHPRA. The creation of AHPRA to manage annual health profession registration at a national level provides the opportunity to develop more advanced analysis behind model parameters and the workforce in general through its recording of unique id (de-identified) and potential for longitudinal tracking. AHPRA registration data will inform workforce headcounts, registration status, registration type, age, jurisdiction, and specialty.

HWA is also responsible for managing and developing the content of the workforce survey. HWA will work with AHPRA and the registration boards to bring about improvements in the data collected for workforce modelling. The improvements HWA are targeting will bring the survey in line

with the national minimum dataset as endorsed by the Australian Health Ministers Advisory Committee (AHMAC) in 2009.

### How does HWA measure domestic fellows?

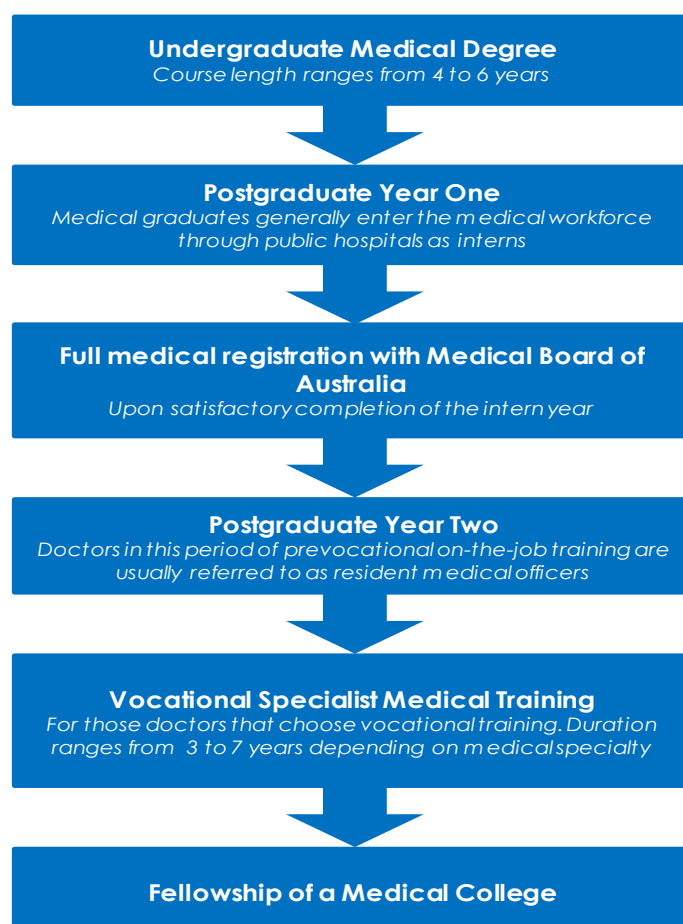
There were two bases upon which domestic new fellows data was included in the workforce supply projections:

- i. Actual data on the number of new fellows by medical specialty was obtained from the Medical Training Review Panel (MTRP) Fifteenth Report for 2009 and 2010; and
- ii. A training pipeline analysis was conducted to determine the number of postgraduate vocational trainees by medical specialty, which was then used to predict the inflow of fellows by specialty over the remainder of the projection period.

### How do medical specialists get trained?

To provide a context for the training pipeline analysis methodology, it is useful to understand how medical specialists are trained in Australia. To become a medical specialist in Australia, extensive education and training is required. The figure below depicts the Australian education pathway to become a medical specialist – from tertiary education through to registration, to specialist training and fellowship – a process that can take up to 15 years.

## Medical education pathway in Australia



To become a medical specialist, doctors must complete vocational, or specialist training. Most specialist medical training is provided in the state and territory health systems, with some partly funded by the Australian Government (general practice placements and some specialist training placements in the private and community sector). Each medical specialty has its own training requirements – training is provided through specialist medical colleges, training programs are accredited by the Australian Medical Council (AMC) and the length of training can range from three to seven years.

While the figure above depicts becoming a medical specialist as a consecutive pathway, this is not necessarily the case. Few doctors progress straight from postgraduate year one into a vocational training program. There is also no single entry point to vocational training. Specialty training programs start in either the second or third postgraduate year, and not all who enter specialist training do so at the earliest opportunity. For many, this is because entry into a specialist training program is a competitive process, with doctors competing for a fixed number of accredited training positions or places. In addition, the number of trainee positions can also vary depending on the health services' capacity to accept trainees.



Training programs also differ across specialties: some differentiate their vocational training programs into basic and advanced components; program length varies across specialties; and some programs allow dual fellowship with other colleges (a brief overview of each specialist training program is provided in each medical specialty chapter). Successful completion of a vocational training program then enables a doctor to be eligible as a fellow of the relevant college.

### How was the number of new fellows calculated (medical specialist training pipeline methodology)?

As outlined above, the pathway to become a medical specialist is complex. To predict the number of domestic new fellows produced through the relevant specialist training pathway for the years beyond which actual data was available, the training pipeline analysis needed to reflect this real world training complexity. The steps described below outline the method created.

- Individual specialty training pipelines were developed for each medical specialty through building a model of effective transition rates through each year of training program. That is, a model was developed that represented doctors' progression from year to year through each specialty training program. These were built with the assistance of training data and capacity information provided by medical colleges.
- Historical data contained in the MTRP on vocational training places and progression rates through the training programs was aligned with the step above (where possible) to build more robust transition patterns within specialty programs, particularly where college data was either non-existent or not comprehensive enough to develop year-on-year transition rates.
- The opening values of trainees for known years (and where available, forthcoming increases in trainee intakes) were used to project forward the flow through of new fellows as trainees pass through the training programs.

### What limitations exist with the new fellow projections (and medical specialist training pipeline)?

The most significant limitation in projecting the number of new fellows using the medical specialist training pipeline was the substantial data required. Such requirements included:

- the size, characteristics and location within the training pipeline of all current trainees;
- transition rates for each year of each medical specialty program – separately identifying the proportion in each year who: advance; stay at their current level; defer; shift status from full- to part-time; and those who leave the program; and
- an accurate assessment of the training capacity required for a given number of trainees.

## What is planned to improve new fellows projections in future modelling?

As noted above, the MTRP is the data source used for the actual number of new fellows by medical specialty, as well as providing information annually on medical specialty training. HWA required data in addition to that reported in the MTRP for accurate medical specialty pipeline analysis and consequently visited each of the colleges to obtain that data. In order to minimise duplication of effort between HWA and the MTRP collection, as well as reduce the administrative burden on the specialty colleges responding to multiple data requests, HWA will work with MTRP to streamline this process with the ongoing annual MTRP collection.

## How does HWA measure immigration?

As highlighted in HW 2025 Volume 1, Australia is highly reliant on overseas-trained doctors. The identification and measurement of the impact of specialist international medical graduates (SIMGs) has increased in importance as the populations being modelled have reduced in size in HW 2025 Volume 3.

There are two immigration components in the workforce supply projections in HW 2025 – temporary migration and permanent migration. Temporary migration information was sourced from the Department of Immigration and Citizenship (DIAC).

Permanent migration was sourced from a combination of DIAC data and data contained in the MTRP Fifteenth Report (as reported by medical colleges). Each medical specialty chapter within this publication contains details of the permanent migration data used in the workforce supply projections.

## How do immigrants get assessed?

To gain an insight into the different data sources that exist for the permanent immigration of medical specialists into Australia, it is useful to understand the immigration pathway of medical specialists. It is a complex process for doctors to immigrate to Australia, with four steps existing at the broad level:

1. Skills recognition through an AMC assessment process (including English proficiency).
2. Apply to the Australian Health Practitioners Regulation Agency for registration.
3. Arrange a pre-employment structured clinical interview (if required).
4. Apply to DIAC for a visa.

Many requirements sit behind each step, in particular steps 1 and 4.

## Skills recognition

There are four pathways doctors wishing to migrate to Australia can be assessed through:

- the competent authority pathway;

- the standard pathways (AMC examination);
- the standard pathway (workplace based assessment); and
- the specialist pathway.

Most doctors wishing to migrate to Australia as a medical specialist are assessed through the AMC specialist pathway. The exception to this is doctors practising as GPs – not all general practice services are delivered by specialist GPs<sup>102</sup>, and international medical graduates can enter through the standard or competent authority pathway and provide general practice services.

Otherwise, the medical specialist pathway is for doctors who have completed all required education and training and are recognised as a specialist in their country of training. SIMGs are assessed on their comparability to Australian standards, with the assessment conducted by the relevant specialist college. There are three possible outcomes of this assessment:

- not comparable to a Australian-trained medical specialist – which means the applicant is not permitted to register to practice as a specialist;
- partially comparable to an Australian-trained medical specialist; and
- substantially comparable to an Australian-trained medical specialist.

Each college has their own assessment process and requirements for SIMGs assessed as partially or substantially comparable, along with their own recording process. Each chapter contains information on college requirements for SIMGs found partially or substantially comparable (where available).

It should be noted an 'area of need' specialist pathway also exists, which is a fast-track for processing applications for SIMGs going to work in areas of need specialist positions. In this process, the college assesses qualifications and experiences against the specified requirements of a particular area of need position – not against comparability with training and experience of Australian trained specialist.

## Visa application through DIAC

The other key data source for measuring immigration is obtained from the visa application step in the immigration process. Temporary visas are the usual immigration pathway – to be eligible for a temporary visa, a doctor must be employer sponsored (that is, have a job offer). Permanent visa options exist for overseas trained doctors who hold full medical registration in Australia. Doctors holding full medical registration may apply for permanent residence under an employer sponsored visa (subclasses 856 and 857), labour agreements or an independent visa (general skilled migration).

Data from both the college assessments of comparability and visa outcomes are used in the workforce supply projections to assign migrant flows into the medical specialties.

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<sup>102</sup> Defined as fellows of the Royal Australian College of General Practitioners and/or Australian College of Rural and Remote Medicine and registered with the Medical Board of Australia as a specialist GP.



## What assumptions underpin immigration in the projections?

There were a number of assumptions made that underpin the immigration component of the HW 2025 workforce supply projections, specifically:

- internationally trained health professionals enter the model through either the temporary or permanent migration streams;
- immigration numbers are held constant across the projection period from 2010;
- temporary migrants are modelled as a constant pool in the workforce, with the inflows that replenish this pool progressively reduced under the self-sufficiency scenario; and
- new permanent migrants are added each year to the workforce and inherit the general characteristics of the medical specialty workforce, for example hours worked, likelihood of exit in a given year.

## What limitations exist with immigration data?

In common with the limitations that exist for new fellow projections, data availability and accuracy are the limiting factors with immigration information. As highlighted above, it is a complex process for doctors to immigrate to Australia with multiple data points existing – the AMC, the medical colleges and DIAC. Limitations as a result of these multiple data points included:

- the inconsistent treatment of SIMGs between colleges in their data sets;
- the difficulty in reconciling DIAC data with AMC data;
- the limited number of medical specialist occupations that DIAC code visa applicants to; and
- the multiple pathways by which some medical practitioners can enter specialist practice – this is particularly the case for general practice.

## What is planned improve immigration data in future modelling?

DIAC data will continue to drive the immigration component of the workforce supply projections, however in future iterations it will be supplemented with AHPRA survey data which reports visa status.

## How does HWA measure net workforce exits?

Net workforce exits, which include all permanent and temporary flows out of the workforce, are derived from the AIHW Medical Labour Force Survey data over the period 2007 to 2009. Exit rates were calculated on a unique basis for each medical specialty for each five year age and sex cohort. They were calculated by carrying forward the current distribution of ages of the workforces and assuming the same distribution in the future. The rates were based on observed exits over recent years, not on retirement intentions.

### What limitations exist with the net workforce exit calculation?

The AIHW Medical Labour Force Survey is not longitudinal in nature and it is not possible to track individual practitioners between years. This means that exit rates, which are a critical model input, have to be measured as net changes (accounting for graduate and migration inflows) to the workforce at a medical specialty level (by sex and five year age group).

### What is planned to improve net exit rates in future modelling?

AHPRA registration data assigns a unique identification to each medical practitioner that is retained by that practitioner. By using AHPRA registration data as a longitudinal dataset, HWA will be able to generate highly specific permanent and temporary exits rates for modelling by sub-population, for example by medical specialty, gender, visa status, age. It should be noted that this will not be able to occur until at least two data points are available from AHPRA, so will not be available for use in the next iteration of HW 2025.

## Appendix 5 – The use of productivity as a measure of service and workforce reform

A key part of building a sustainable health workforce is service and workforce reform to deliver health services more efficiently. The question is how to effectively measure productivity in the health workforce, to identify historical trends and to determine the impact of reforms designed to improve productivity. Productivity can refer to producing the same output with fewer inputs, or producing more with the same inputs. There are two main measures of productivity.

- Labour productivity measure – This is generally expressed as the amount of (gross) output produced per unit of labour used. While relatively simple to calculate, labour productivity suffers as a measure because it is influenced by factors beyond the practices of the individuals in the workforce themselves, including the amount of capital equipment available, management practices and technological change. This is particularly important in the context of the health workforce, which is diverse in its relative reliance on other productive factors. For example, capital equipment and technical change is likely to play a larger part in determining the labour productivity of radiologists and pathologists than it might in the case of a GP. The GP, in turn, may be more likely to have their overall productivity influenced by factors relating to perceived quality of care received and their ability to address complex health problems.
- Multifactor productivity measure (or total factor productivity) – This measures the ratio of output produced relative to the total inputs of labour and capital. This requires significantly more data to calculate and is often thought to provide a proxy for calculating technical change (after accounting for all identifiable input increases). However the observed residual after other inputs (such as labour and capital) have been accounted for can represent factors other than technical change, such as a simple process change that delivers greater productivity. A primary weakness of this measure is the difficulty in accurately measuring inputs, as any errors will over-or understate productivity change associated with technology or organisational change.

The productivity methods above show that a simplistic examination of the change in the number of doctors over a certain period compared with the number of services provided over that same period would provide a misleading view of productivity performance. A productivity measure for the health workforce would therefore need to consider:

- The health workforce primarily delivers services rather than more easily measured goods (and therefore introduces a more intangible element to calculations, particularly in the context of quality assessment).
- Estimating and comparing inputs and outputs on a consistent basis given the prevalence of non-market exchanges (and therefore prices which are either non-existent or reflect factors other than market outcomes) in a mixed public-private health system, as exists in Australia.

- Changes in models of care, such as growth in multi-disciplinary team approaches to delivering services, which complicates the identification of the appropriate inputs and outputs to be included in the calculation.

Productivity should also not be the only focus in measuring the performance of the health workforce, with other indicators such as quality of service and patient outcomes also important.