Australian Government
Department of Health

Australia Future Health Workforce Series

Physicians Workforce

Endocrine Society of Australia
Australian Diabetes Society

Meeting Agenda

7 DECEMBER 2017

2.10PM – 3.10PM

Royal Australasian College of Physicians,
Jamison Room, Level 5, 70 Philip Street, Sydney

	PRESENTER
1. Welcome and background	Ms Maureen McCarty
2. Preliminary modelling	Ms Maureen McCarty
3. Baseline and pipeline	Ms Maureen McCarty
4. Changes to clinical practice into the future i.e.: a. New treatments b. Treatments that will be superseded c. Predicted task substitution	Dr Susan Wearne
5. Discussion of key issues for Endocrinology workforce: a. Supervisory capacity requirements b. Non-workforce based requirements and limitations c. Training capacity	Dr Susan Wearne
6. Any other business	Ms Maureen McCarty
7. Next Steps	Ms Maureen McCarty

Attendees:
Ms Maureen McCarty (Director Workforce Data Analysis)
Dr Susan Wearne (Senior Medical Advisor)

The Department of Health

Australia's Future Health Workforce Physicians

5 December 2017

Contents

Overview

The Australia's Future Health Workforce – Doctors (AFHW – Doctors) report published in December 2014 indicated that Australia's health workforce is under pressure and must undergo significant transformation to meet future demands for healthcare.

Despite the projected overall position of oversupply, imbalances within the medical specialty workforces currently exist and are projected to continue.

The medical workforce is a national resource; a resource that is valuable to the community both in terms of the cost of training, which is substantially borne by the taxpayer, and in terms of the benefit derived by the community from a well-trained health workforce.

In the past, uncoordinated decision making in the absence of an active workforce planning mechanism has seen a "boom and bust" cycle in medical training and resulting doctor numbers. This has been a cost to the community.

The AFHW - Doctors report shows there are three key factors that underpin the importance of national workforce planning for doctors. First, there is an immediate need to deal with the significant increase in domestic medical students that has occurred over the last ten years. This presents an opportunity to influence further training for medical students, to encourage doctors to move into the locations and specialties that will be needed in the future.

Second, due to the age demographic of the medical workforce, a number of doctors will retire from 2025. The length of time it takes to train a doctor means that short term changes in training levels are not an effective response to short term imbalances between supply and demand. This re-enforces the need to plan over a medium term time horizon and to minimise short term movements in medical intakes, which could be better dealt with using temporary migration.

Third, the report states there is a lack of coordination across the medical training pipeline. Between governments, universities, medical colleges and the various employers of doctors, there are hundreds of individuals making decisions on how many doctors and what type of doctors are trained in Australia. Ensuring these individual decisions are aligned to what Australia needs from doctors in the future is essential.

The development of the AFHW – Doctors report was guided by the expert input of the National Medical Training Advisory Network (NMTAN) that has representation from all the key stakeholder groups in medical education, training and employment.

The report makes recommendations for future work including:

- updates to the workforce modelling results to determine requirements for future adjustments every two years; and
- prioritisation of future policy work to gain a better understanding of the prevocational years and overall capacity for and distribution of vocational medical training.

Background

The establishment of the NMTAN was approved on 10 August 2012 by the then Standing Council on Health (SCOH) as a mechanism to enable a nationally coordinated medical training system in Australia. The NMTAN was established under the auspices of the former Health Workforce Australia (HWA) and held its first meeting in February 2014. Since August 2014, support to the NMTAN has been provided by the Australian Government Department of Health (Health).

The NMTAN provides guidance in the development of a series of medical training reports to inform government, health and education sectors. In addition, the NMTAN provides policy advice about the planning and coordination of medical training in Australia, in collaboration with other networks involved in the medical training space.

The NMTAN currently has two subcommittees that explore different aspects of medical training to inform future workforce planning:

- the 'employment patterns and intentions of prevocational doctors' subcommittee aims to improve the modelling undertaken for the prevocational years in medicine and use this improved modelling to better inform career planning for junior doctors. The subcommittee has developed an internal report that provides a snapshot of the existing prevocational doctor workforce in Australia. This information will be used to develop a series of fact sheets on each of the medical specialties, to be made available on the Health website; and
- the 'capacity for and distribution of medical training' subcommittee makes recommendations to the NMTAN Executive Committee on changes to policy and practices that could improve geographic distribution of medical training to produce the number and proportion of medical specialists needed to provide specialist healthcare to Australians. Members have identified a priority list of specialties to be modelled, with the focus initially on a small number of specialties seen to be at risk of workforce shortage or oversupply, and where there is capacity to address these issues with training.

In addition to the policy-focussed subcommittee, a third subcommittee – the data subcommittee – is responsible to support the production of an annual report of medical education and training, including undergraduate, postgraduate and vocational training projects. The functions of this subcommittee were transferred from the Medical Training Review Panel to the NMTAN in 2015.

This Physicians report is part of the first segment of analysis under the capacity and distribution subcommittee work. It involves updating the supply and demand projections previously completed by the former HWA and published in HW 2025 – Medical Specialists Volume 3.

This work has been guided by the input of the NMTAN and has been completed in two stages:

- Stage 1: review and analysis of supply and demand through the modelling of the physician's workforce with projections to 2030 and analysis of current training capacity and identification of pipeline issues. This resulted in the development of an interim report for targeted consultation with NMTAN and relevant stakeholders/experts.
- Stage 2: consolidation of the feedback on the interim report to identify issues to develop training target ranges (including capacity in aggregation and by location) and policy recommendations for physician specialties.

Determining the Future Capacity for Training Needs

Australia's medical training system is delivered through a complex interconnection of funding and organisation channels that span Commonwealth and state and territory governments, as well as private and non-government agencies. The cross-sectional nature of delivering and funding medical training in Australia makes workforce planning difficult for any particular agency or sector to deliver in isolation. There is also a risk there will be an ongoing mismatch

between the medical workforce that is trained and that is required to deliver necessary services.

The pathway to independent practice as a vocationally recognised specialist is long and there are multiple layers of investment in the training from university entrance to the completion of specialist vocational training. At the same time, there are numerous players involved in the training pathway, from universities to public and private hospitals and private medical practices.

The recent growth in the medical workforce is important in the calculated supply and demand for health services over the time period covered by the workforce modelling.

This increase in the number of medical students and graduates demonstrates a large increase in the inflows into the medical workforce over a short space of time. This has implications for clinical training capacity, initially at the university level but extending into the prevocational and vocational training years. This pressure has already been seen in the availability of intern training places, which to date has largely kept pace with the increasing number of graduates.

This pressure is now beginning to move into the next stages of the training pipeline. There has been an increase of over 30 per cent in vocational training positions with 15,478 in 2011 moving to 20,069 by 2015 with unclear links to future workforce requirements. Previous workforce modelling demonstrates an emerging mismatch between the number of trainees seeking a vocational training place and the availability of places based on community need. This mismatch emerges from around 2017 in the most recent modelling presented in the AFHW – Doctors report and extends to approximately 1,000 places by 2030.

Introduction

A physician is a qualified medical specialist in internal medicine who diagnoses and manages complex medical problems.

Physician sub-specialities

The following physician subspecialities will have supply and demand projections conducted based on the size of the workforce (greater than 300), the size of the training program and the age structure of the sub-speciality:

1. Cardiology
2. Endocrinology
3. Gastroenterology and Hepatology
4. General Medicine
5. Geriatric Medicine
6. Haematology
7. Infectious diseases
8. Medical oncology
9. Nephrology
10. Neurology
11. Respiratory and sleep medicine
12. Rheumatology
13. General Paediatrics
14. Rehabilitation medicine (faculty training program)
15. Total adult medicine

16. Total paediatric medicine

The following sub-specialities due to their smaller workforce size will only have demographic information on the current workforce and vocational trainees.

17. Clinical genetics
18. Clinical pharmacology
19. Immunology and allergy
20. Nuclear medicine
21. Neonatal and perinatal medicine
22. Combined remaining paediatric subspecialities

The following subspecialities are administered through the chapter and faculty training programs and also due to their smaller workforce size will also only have demographic information of the current workforce and vocational trainees:

- Chapter training programs
  23. Addiction Medicine
  24. Palliative Medicine
  25. Sexual Health Medicine
- Faculty training programs
  26. Occupational and environmental Medicine
  27. Public Health Medicine

Structure of the report

The report is structured to discuss physicians as a whole and to consider the basic trainees in the first instance and pipelining them into each of the advanced training programs as a percentage from basic to advanced training. Each subspecialty that is either modelled or profiled will be discussed in an individual section to follow.

The appendices will be a separate document in the interim for reference while each subspecialty group reviews their relevant sections with the aim of incorporating into the final report and reduce duplication.

Basic training

Basic Training is the first step in a minimum six-year training program with the RACP to become a Physician. The RACP training program generally includes three years of Basic Training (including the Divisional Written Examination and Divisional Clinical Examination) and is designed to provide trainees with a multi-specialty foundation by introducing and developing the range of core knowledge, skills, attitudes and behaviours required to become a competent physician.

During Basic Training, trainees:

- Experience working in diverse medical specialties with a broad focus in Adult Internal Medicine or Paediatrics & Child Health
- Complete training rotations with a range of hospitals and health services
- Build on the clinical knowledge and skills gained

The Basic Training program includes:

- Rotations across a range of medical specialties and health care settings

- Work-based assessments to monitor a trainee's progress and provide feedback on their training
- The Divisional Written and Clinical Examinations towards the end of training to test a trainee's knowledge and skills and determine if they are eligible to progress to Advanced Training
- Adult Internal Medicine involves the diagnosis and management of complex medical problems of Adult patients.
- Paediatrics & Child Health focuses on the health and medical care of neonates (birth to four weeks) to children of 17 years of age.

Once basic training is completed, trainees transition into advanced training in one of 33 medical specialties.

Training Analysis Pipeline (TAP)

The purpose of the training analysis pipeline is to project future vocational training numbers entering the training program as a basis for forecasting the number of domestic and Specialist Internal Medical Graduate (SIMG) new fellows as inflows into the workforce.

The physician's pipeline has been split into two components:

1. The basic training which everyone undertakes before entering one of the 33 physician specialities.
2. The advanced training which is pipelined separately for each of the modelled specialities to consider the number of new fellows into each subspecialty.

Table 1 shows the predicted movement of trainees from new intake – entering the RACP training program right through to those transitioning from final year basic to first year advanced training depending on the particular subspecialty. This first part of the methodology focuses on those entering basic training as a percentage of the previous year's basic trainees (dynamic). It then uses a transition rate of historical movements calculated using the RACP data of basic trainees moving through the basic training. In the future, when data over more time points have been collected from the RACP, more accurate transition rates can be calculated. The transition rates in Table 1 are data driven and calculated from the changes between three time points (2014 – 2016 RACP data) in particular. These rates are then consistently applied to pipeline trainees. These results are shown in Table 2.

Table 1: TAP transition calculations

Movements	Per cent	Comments
New intake (dynamic)	50.2%	(of previous years basic trainees)
New intake (static)	91.8%	
Basic to Basic	61.4%	
Basic to Advanced	TBA	Depends on the specialty
Retention rate	96.1%	New intake
	99.1%	Basic
	100%	Advanced
Through rate	-	if everyone FT and complete in 72 months
	3%	Actual (incorporates PT, waiting for rotation etc.)

Table 2 below shows the first part of the TAP method for the dynamic new intake each year. This TAP shows an increase of the new intake each year of 50.2 per cent of the previous year's trainees based on the average annual increase in basic trainees observed over the previous years. This results in an average of just under 1,500 new intake per year from 2014 -2030. The basic year 1-3 is used to transition a small proportion into the relevant advanced training programs as have been previously observed and are detailed in the relevant section of particular physician specialities.

Table 2: Dynamic intake scenario TAP, 2010 – 2030

Training pipeline																					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
New intake for All	2,447	2,481	2,861	3,287	910	1,112	1,232	1,147	1,243	1,264	1,319	1,362	1,412	1,462	1,514	1,568	1,624	1,682	1,742	1,804	1,869
Basic (Y1-YR3)					2,387	2,282	2,284	2,387	2,282	2,284	2,476	2,517	2,627	2,712	2,813	2,911	3,016	3,123	3,235	3,351	3,470
MTRP	College data				Calculated						Estimated					Balanced intake/NF					

2. Endocrinology

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Introduction

Endocrinology was selected as a medical specialty to be considered in the first segment of analysis by the NMTAN largely due to concerns identified in HW 2025 Volume 3. Endocrinology was perceived to currently be in adequate supply, and is projected to move towards oversupply by 2025 if recent trends in supply and demand continue. 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.

In the HW 2025 Volume 3 report, stakeholder views agreed that:

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.

The RACP had provided information on considerations that may impact supply or demand:

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 outpatient 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 per cent 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..

A summary of the approved modelling inputs can be found in Appendix 1.

Current workforce status

Registration, accreditation and specialty fields

The Medical Board publishes quarterly statistics on Medical Practitioner Registrant Data[1]. In the September 2016 edition there were 659 registrants with a specialty of Endocrinology.

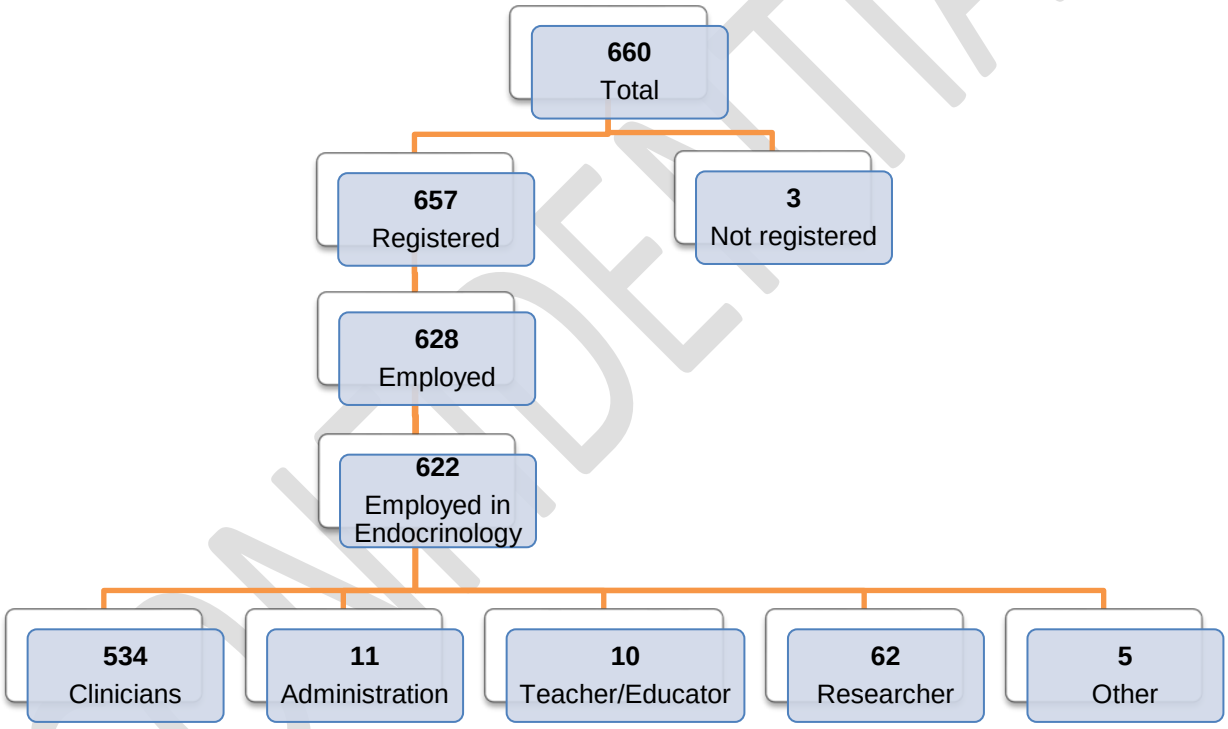
[1] http://www.medicalboard.gov.au/News/Statistics.aspx

According to the National Health Workforce Data Set (NHWDS), in 2016 there were 657 accredited Endocrinology specialists with current medical registration in Australia; one less than reported in the Medical Board data. This is because the NHWDS is a snapshot at a point in time (as at the date of data extraction) and the figures only include medical practitioners with current registration. The Medical Board/AHPRA statistics report an annual figure and include medical practitioners who held a registration at some point in the year but may not have a current registration.

In the NHWDS there was one Endocrinology specialists who did not renew their medical registration in 2016; resulting in a difference of one between the NHWDS and the Medical Board statistics.

As can be seen in Figure 1, of the 657 accredited endocrinology specialists with current medical registration, 628 (95.4 per cent) were employed in the medical workforce. While the majority (622) worked in Endocrinology, six did not work in endocrinology. Those who did work in endocrinology were mostly clinicians (81 per cent) with the remainder working as administrators, teachers/educators and researchers.

Figure 1: Endocrinology workforce by job role

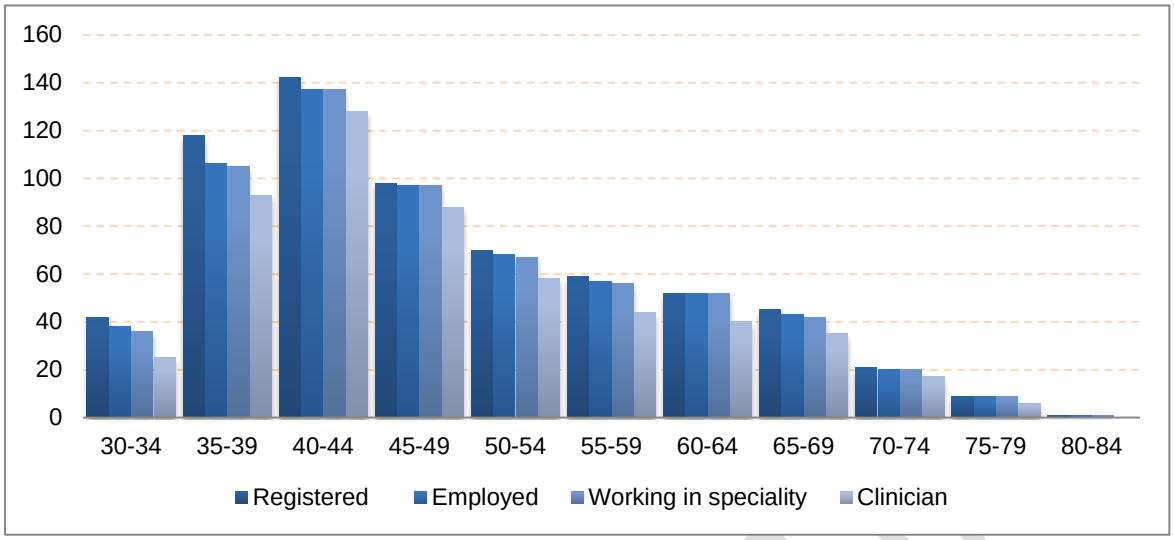


Source: NHWDS, Medical Practitioner 2016

Aged and Gender

The age distribution of specialist endocrinologists in Australia (Figure 2) show the majority are in the 35- 49 year age groups for registered, employed, clinicians and those working in endocrinology. There are fewer endocrinologist between 25-34years, as at this age most have yet to complete training (see Table 4: 54 per cent of trainees are aged 30-34 years). The proportion of the registered, employed, clinicians and those working in endocrinology were similar within each of these age groups. The largest age group for specialist endocrinologist is 40-44 years with the numbers in the workforce reducing significantly beyond 69 years of age

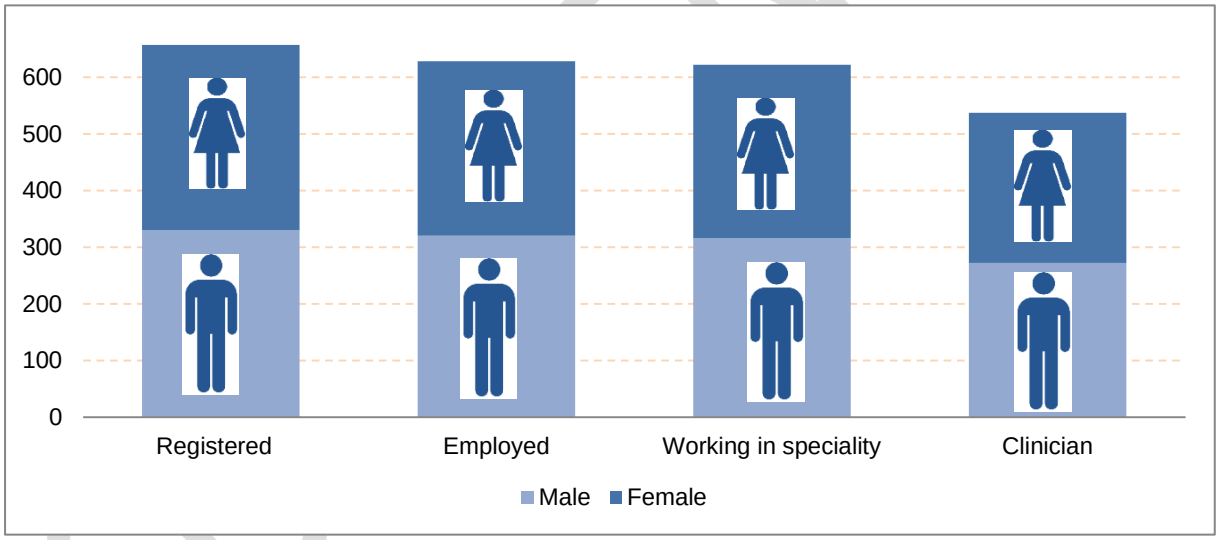
Figure 2: Comparison of specialist endocrinologist that are registered, employed, working in endocrinology, clinicians (headcount) by age group



Source: NHWDS, Medical Practitioner 2016

The gender distribution of the endocrinology workforce (Figure 3) shows an equal distribution across all groups: registered, employed, clinicians and those working in the field.

Figure 3: Gender distribution of endocrinology workforce

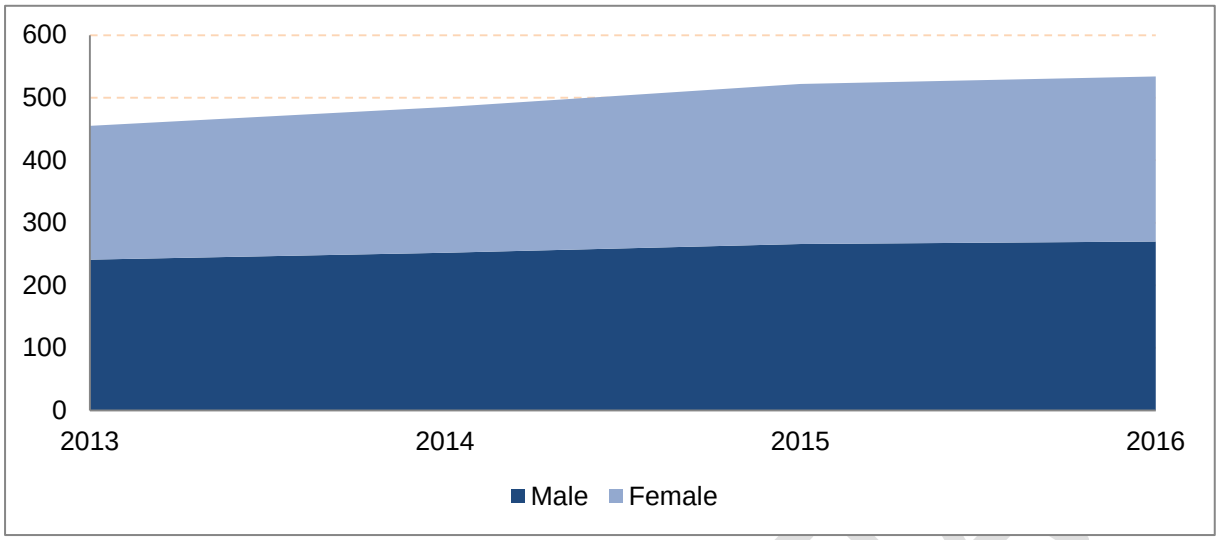


Source: NHWDS, Medical Practitioner 2016

Growth

Figure 4 shows that the number of employed specialist endocrinologist has grown over the four year period from 2011 to 2016 (average annual growth of 5.5 per cent), with female specialist endocrinologist experiencing the largest growth during this period at an average annual rate of 7.2 per cent, while males have only increased by 3.9 per cent (average annual growth). The proportion of females has increased from 47 per cent in 2013 to 49 per cent in 2016.

Figure 4: Employed specialist endocrinologist by gender, 2013 to 2016

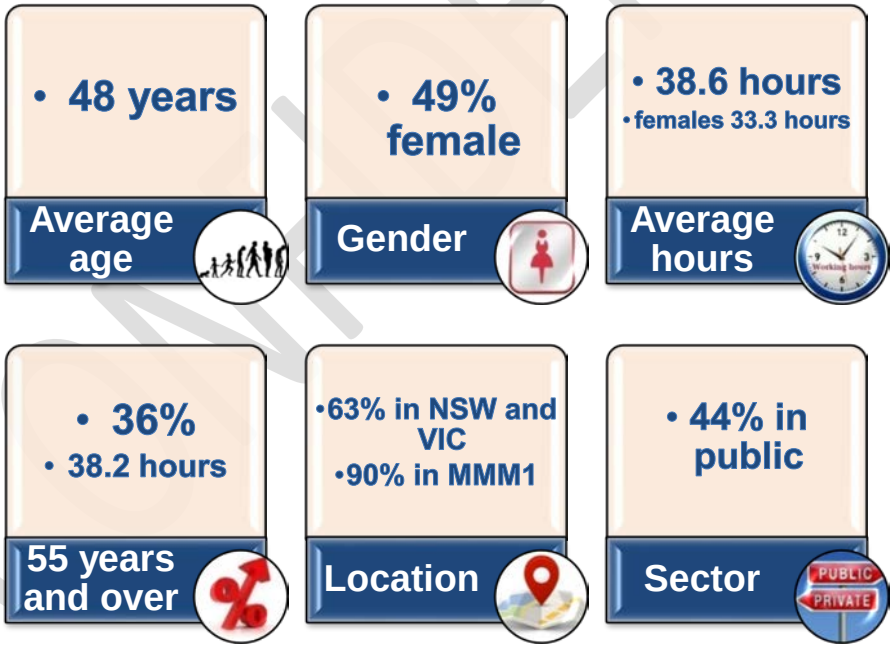


Sources: NHWDS: medical practitioners 2013 to 2016

Current specialist clinicians

According to the 2016 NHWDS, there were 622 specialist endocrinologists who indicated they were employed and working as clinicians (endocrinology workforce) with the following characteristics:

Figure 5: Demographics of the Endocrinology workforce



Source: NHWDS, Medical Practitioner 2016

Distribution

The previous classification system was based on the Australian Standard Geographical Classification – Remoteness Area (ASGC-RA) system. The Australian Bureau of Statistics (ABS) has now replaced to ASGC with the Australian Statistical Geography Standard (ASGS). The ASGS uses the latest residential population data to determine the five base categories. The MMM will overlay the ASGS for the purposes of administering some health workforce programs. Table 1 below defines each of these MMM categories.

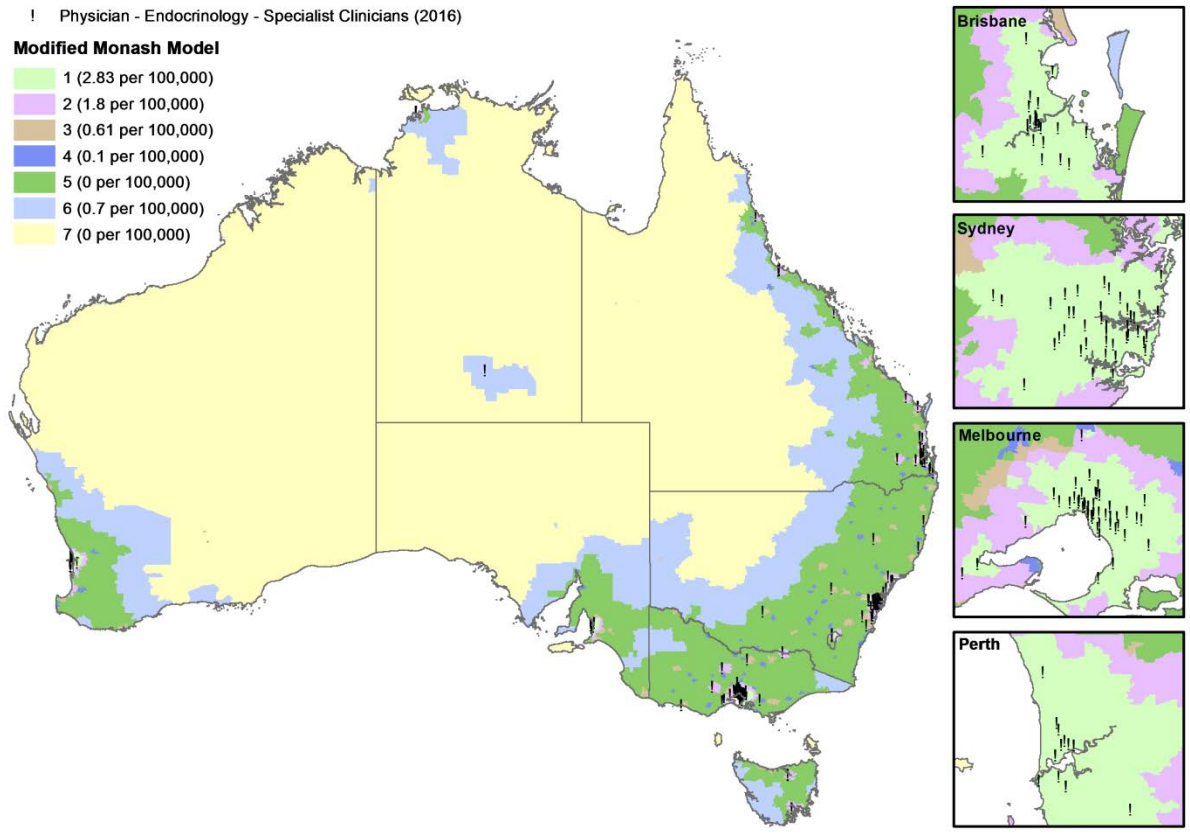
Table 1: Definitions of the Modified Monash Model Categories

MMM Category	Definition
MMM1	All areas categorised ASGS-RA1.
MMM2	Areas categorised ASGS-RA 2 and ASGS-RA 3 that are in, or within 20km road distance, of a town with population >50,000.
MMM3	Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 and are in, or within 15km road distance, of a town with population between 15,000 and 50,000.
MMM4	Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 or MM 3, and are in, or within 10km road distance, of a town with population between 5,000 and 15,000.
MMM5	All other areas in ASGS-RA 2 and 3.
MMM6	All areas categorised ASGS-RA 4 that are not on a populated island that is separated from the mainland in the ABS geography and is more than 5km offshore.
MMM7	All other areas – that being ASGS-RA 5 and areas on a populated island that is separated from the mainland in the ABS geography and is more than 5km offshore.

Source: www.doctorconnect.gov.au

Figure 6 illustrates the Modified Monash Model (MMM) and density of the endocrinology workforce within these areas. As can be seen in the map, the endocrinology workforce is located throughout Australia, but almost exclusively concentrated in Metropolitan areas (90 per cent in MMM1).

Figure 6: Endocrinology workforce (clinicians) by MMM



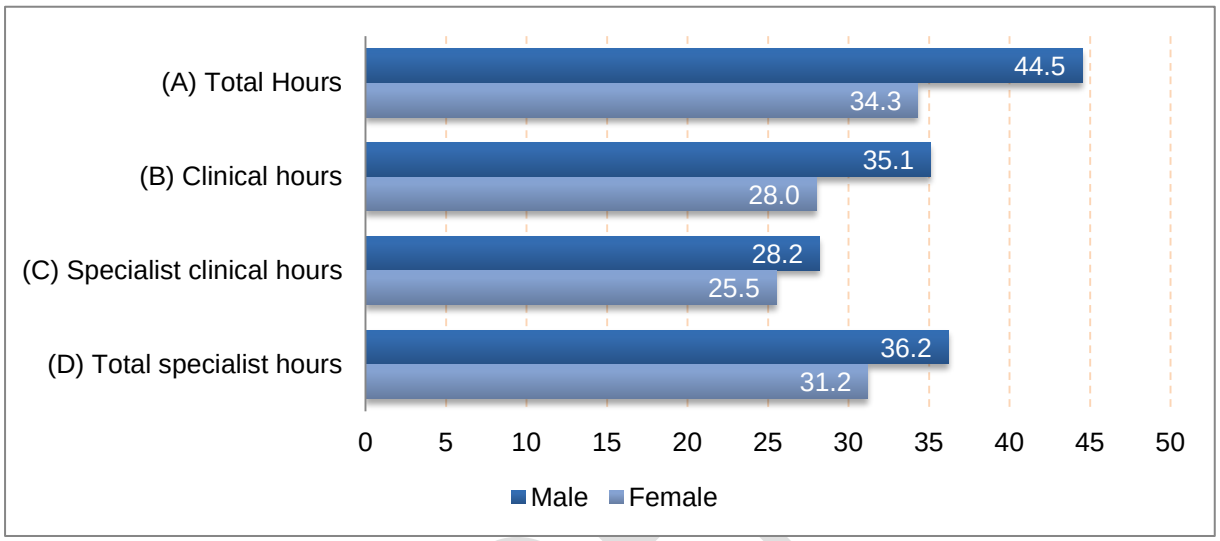
Source: NHWDS, Medical Practitioner 2016

Hours worked

There are a number of ways that the hours of a medical practitioner can be analysed. Appendix 3 outlines the methodology for determining the most appropriate measure of hours for specialists; resulting in considering the clinical and non-clinical hours of the speciality summing to total specialist hours.

Figure 7 below shows the difference between the hours worked by the endocrinology workforce by gender. Females tend to work on average 6 hours less than males. As expected, for both males and females, the total hours (A) are greater than the clinical hours (B) and these are again greater than the specialist clinical hours (C). The difference between the total specialist (D) and specialist clinical (C) hours indicates the clinical support (non-clinical hours) of the endocrinology workforce. On average almost eight hours per week for males and six for females (roughly 22 and 18 per cent respectively of total specialist hours), is spent performing non-clinical work in endocrinology.

Figure 7: Average hours by total, clinical, specialist clinical and specialist total hours worked

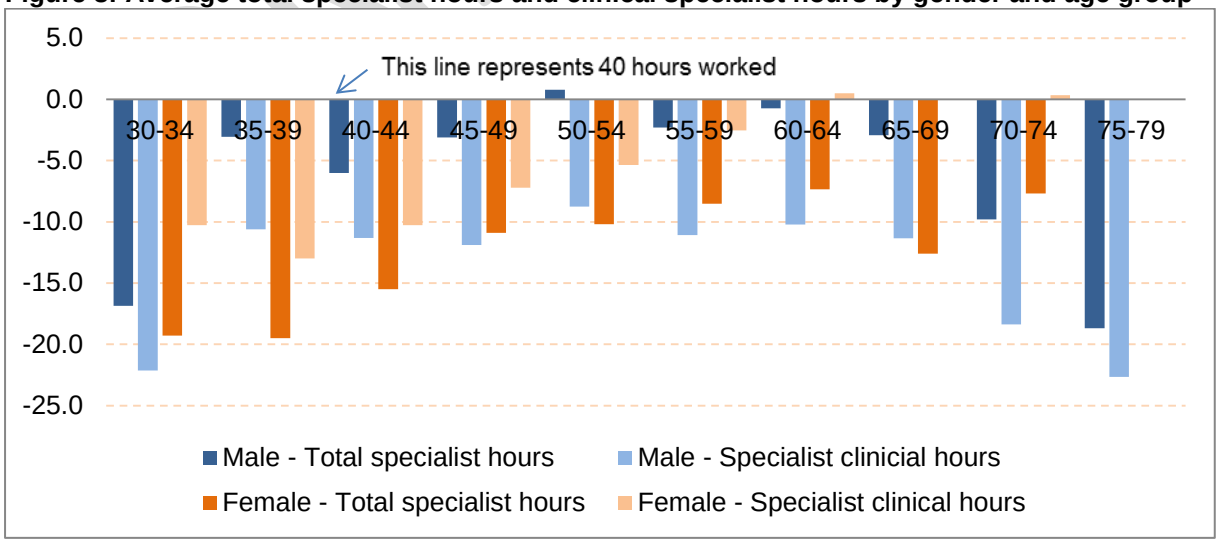


Source: NHWDS, Medical Practitioner 2016

The difference between the total specialist hours (D) and clinical specialist hours (C) by gender and age group are shown in Figure 8. The x-axis is assumed to be average hours worked (40 hours) and the bars in positive or negative position show the hours worked greater or less than 40 hours by age and gender respectively.

Across all the ages groups (30-89 years) a large number of endocrinologists are working less than 40 hours.

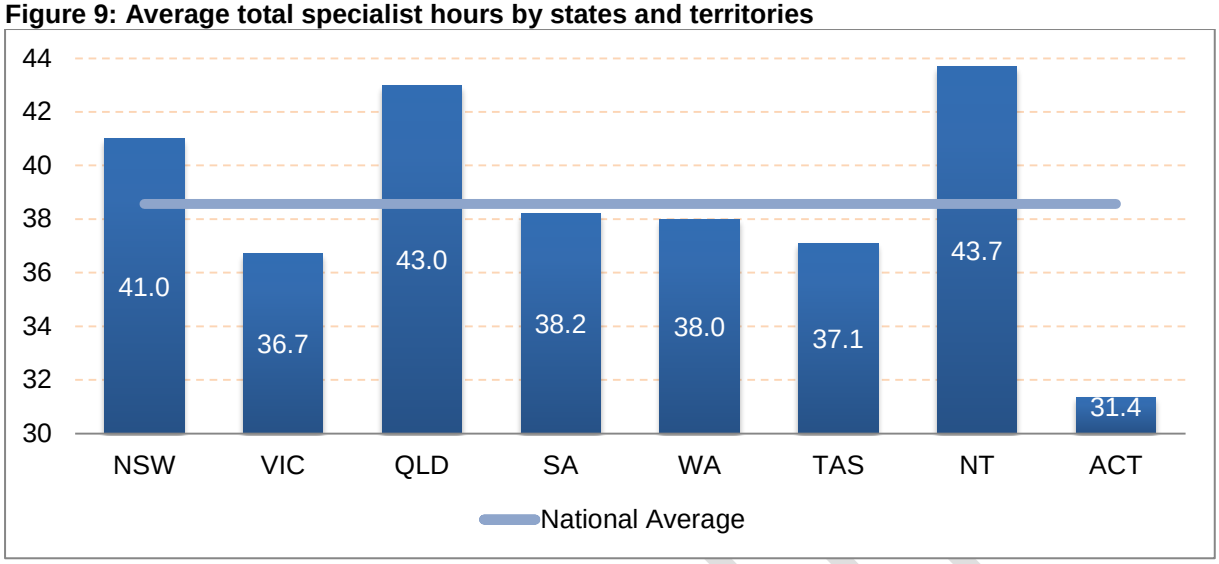
Figure 8: Average total specialist hours and clinical specialist hours by gender and age group



Source: NHWDS, Medical Practitioner 2016

The average total specialist hours worked by states and territories is shown below the national average (Figure 9) indicates that specialist endocrinologist in most states and territories worked below the national average, with the exception of NSW, QLD and NT.

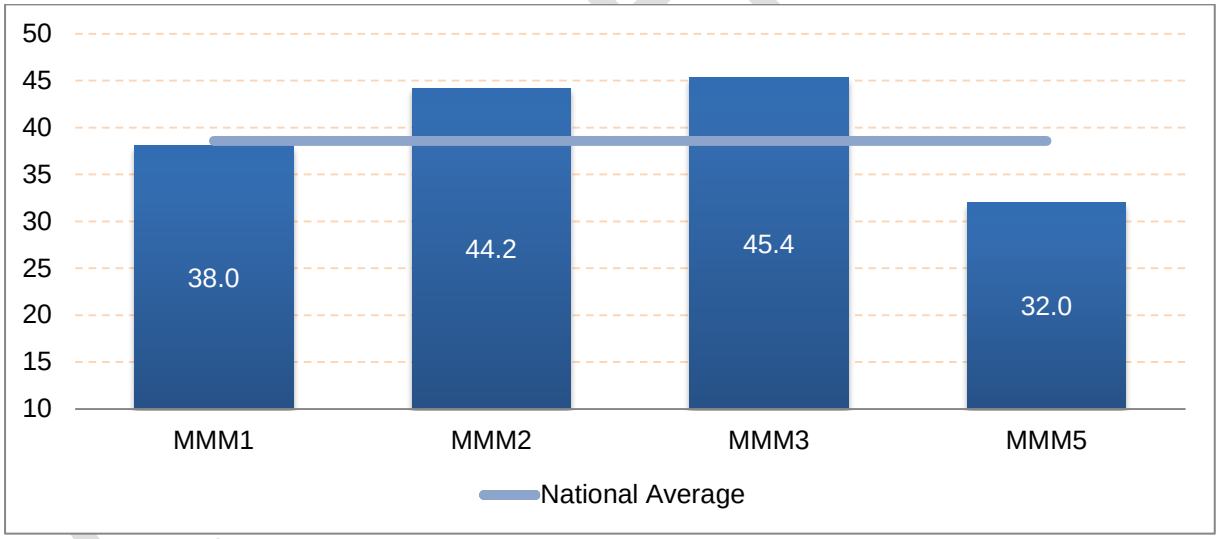
Figure 9: Average total specialist hours by states and territories



Source: NHWDS, Medical Practitioner 2016

Figure 10 shows the variation in total specialist hours worked by specialist endocrinologist from MMM1 to MMM5 ranges from 32.0 hours per week to 45.4 hours per week.

Figure 10: Average specialist clinical hours worked by MMM



Source: NHWDS, Medical Practitioner 2016

Table 2 indicates specialist endocrinologist clinical workload between sectors and jurisdictions. The data shows nationwide that specialist endocrinologist FTE is spending 56.7 per cent in the private sector with 44 per cent in the public sector.

Victoria had the highest proportion of clinical FTE in the private sector (61.9 per cent) while NT and ACT had the lowest (27.3 and 27.8 per cent respectively). The majority of specialist endocrinologists are located in the highly populated states of NSW, VIC and QLD and proportionally less in lower populous states and territories such as NT, ACT and TAS.

Table 2: Endocrinology specialist clinicians (headcount and sector: proportion of specialist clinical FTE in public and private) by state and territory

State And Territories	Headcount	Specialist clinical FTE	
		% Public	% Private
NSW	146	40.8	59.2
VIC	135	38.9	61.9
QLD	80	44.6	55.4
SA	22	50.0	50.0
WA	30	53.4	46.6
TAS	8	63.6	36.4
NT	6	72.7	27.3
ACT	10	72.2	27.8
Total	**437**	**43.6**	**56.7**

Source: NHWDS, Medical Practitioner 2016

Current trainees

Fellowship program

Endocrinology is the study of the physiology and pathophysiology of hormones and hormone producing tissues.

Endocrinology - advanced training program

- Requires 36 months (three years) of full time equivalent training under the supervision of a practising Endocrinologist, of which 24 months of core training must be undertaken at an accredited training site
- Includes work-based learning and assessment requirements
- Successful trainees attain the qualification of Fellow of the Royal Australasian College of Physicians (FRACP) with accreditation to practise as Endocrinologists in Australia or New Zealand

Endocrinology – Advanced Training Curriculum

The purpose of Advanced Training is for trainees to build on the cognitive and practical skills acquired during Basic Training. At the completion of the Endocrinology Advanced Training Program, trainees should be competent to provide at consultant level, unsupervised comprehensive medical care in endocrinology.

<u>By the end of Advanced Training (2017-18):</u>

36 months of certified training time consisting of:
- 24 months of core training
    - o 12 months required clinical training
    - o 12 months core training
- 12 months of non-core training
- Meeting attendance as required
- 1 Trainee interview
- 1 Research Project (for trainees commencing training in 2017 onwards)
- 2 Abstracts (for trainees commencing training in 2017 onwards)
- 3 Abstracts (for trainees who commenced training before 2017)

<u>By the end of Advanced Training (2016):</u>

36 months of certified training time consisting of:

- 24 months of core training:

  - 12 months required clinical training
  - 12 months core training
- 12 months of non-core training
- 1 Trainee interview
- 3 Abstracts (Australia only)
- Attendance at required training courses

Trainee data

The NHWDS data is used herein to describe trainees (those that have identified as specialist-in-training (SIT) (Appendix 3)). For the purposes of modelling, the Department has used a combination of data from the RACP and the NHWDS: Medical Practitioner 2016 survey, noting that there are variances between these data sources. This is largely due to the self-reported nature of the medical workforce survey data.

In comparison to the RACP data, the 2016 medical workforce survey data reported 1 less Endocrinology trainees. There are a number of reasons for this, including that not every practitioner fills out the survey, they are not indicating that they are undertaking Endocrinology training, and each data set has a different collection time point/ cut-off, which will affect the number of trainees counted in a given year.

The number of trainees by training level is also collected through the Medical Training Review Panel (MTRP) data collection each year from medical colleges and reported on in the MTRP Report. There are differences in the numbers in this report and the MTRP as the latter captures the number of trainees as at 30 June each year.

Trainee demographics

The following tables make comparisons with the data supplied from RACP and that from the NHWDS. Data supplied by RACP provides the total number of trainees by training level by state and territory for 2016. Table 3 includes all domestic trainees; in 2016 there were a total of 166 trainees.

Table 3: Trainees (Headcount) by training level, age group, 2016

Age	First year advanced	Advanced training	Total
25-29	18	6	**24**
30-34	29	64	**93**
35-39	3	35	**38**
40-44	0	10	**10**
45-49	0	1	**1**
50+	0	0	**0**
Total	**50**	**116**	**166**

Source: RACP 2016

In comparison, Table 4 details the trainees by age group, gender and self-reported training year according to the NHWDS. The main trend that can be seen is that trainees are predominantly in the 30-34 age groups (54 per cent of total), and that the majority of trainees are female (78 per cent of total).

Table 4: Trainees (headcount) by age group, gender and training year (current year of training program)

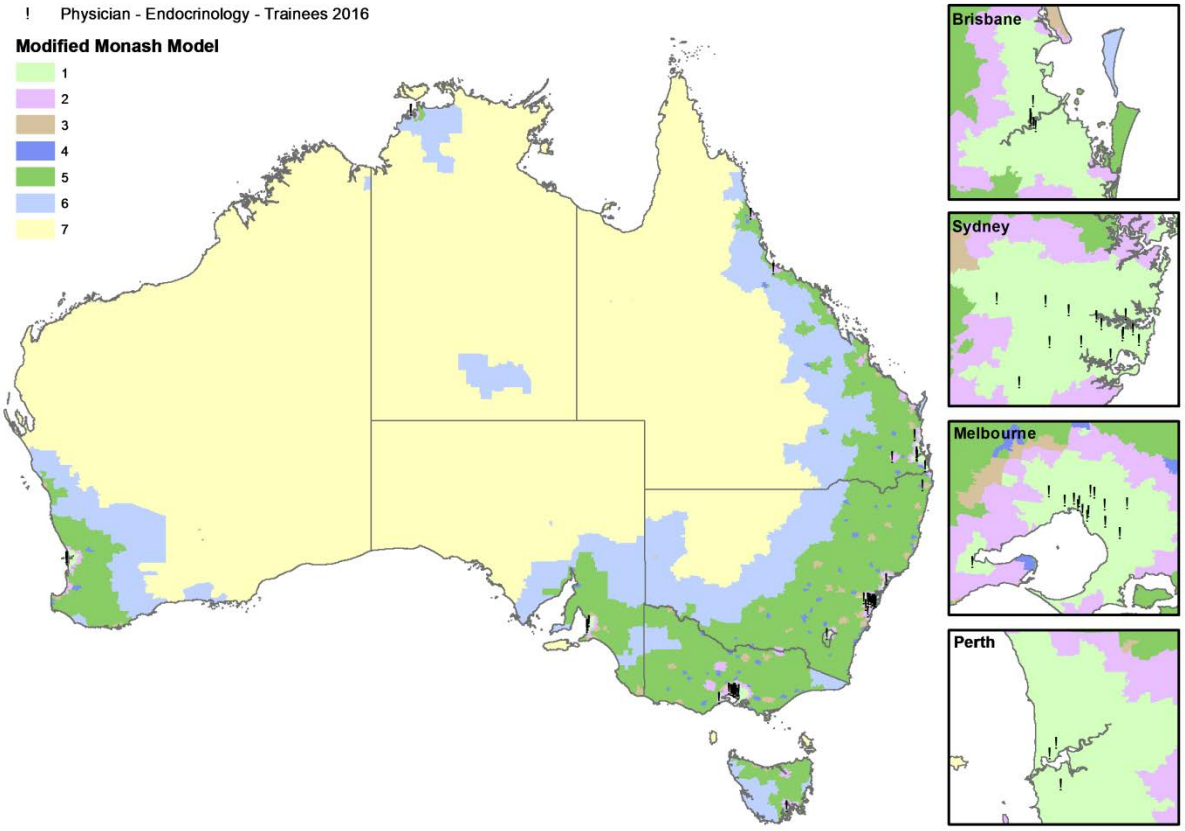
Age	1st	2nd	3rd	4th	5th	6th	7th	8th	Unknown	Total
					Male					
25-29	1	3	1	2	0	0	0	0	1	**8**
30-34	2	4	1	0	4	2	1	0	1	**15**
35-39	0	0	0	3	1	1	0	0	0	**5**
40-44	0	0	0	0	1	0	0	0	0	**1**

Age	1st	2nd	3rd	4th	5th	6th	7th	8th	Unknown	Total
Total	**3**	**7**	**2**	**5**	**6**	**3**	**1**	**1**	**2**	**29**
					Female					
20-25	1	0	0	0	0	0	0	0	0	**1**
25-29	5	2	3	5	5	0	0	0	0	**20**
30-34	10	5	5	8	14	9	2	2	0	**55**
35-39	3	2	6	1	2	3	1	0	1	**19**
40-44	0	0	1	1	0	1	1	1	0	**5**
Total	**19**	**9**	**15**	**15**	**21**	**13**	**4**	**3**	**1**	**100**
Grand Total	**22**	**16**	**17**	**20**	**26**	**16**	**5**	**4**	**3**	**129**

Unknown/not stated are included in these totals. *Source: NHWDS, Medical Practitioner 2016*

The following map (Figure 11) gives a visual overview of the location of Endocrinology trainees at a point in time.

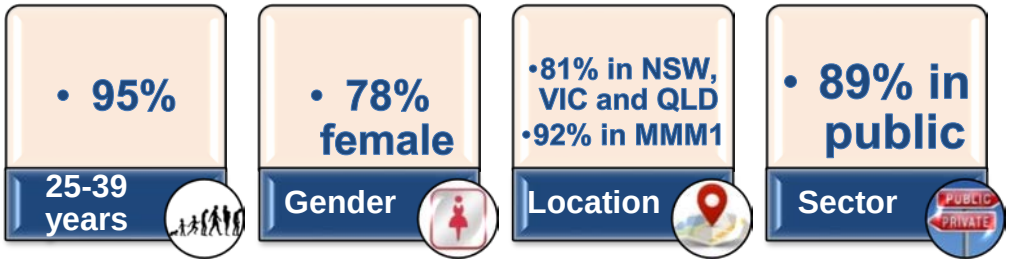
Figure 11: Distribution of Endocrinology trainees



Source: NHWDS, Medical Practitioner 2016

According to the 2016 NHWDS, there were 129 endocrinology trainees in Australia, with the following characteristics:

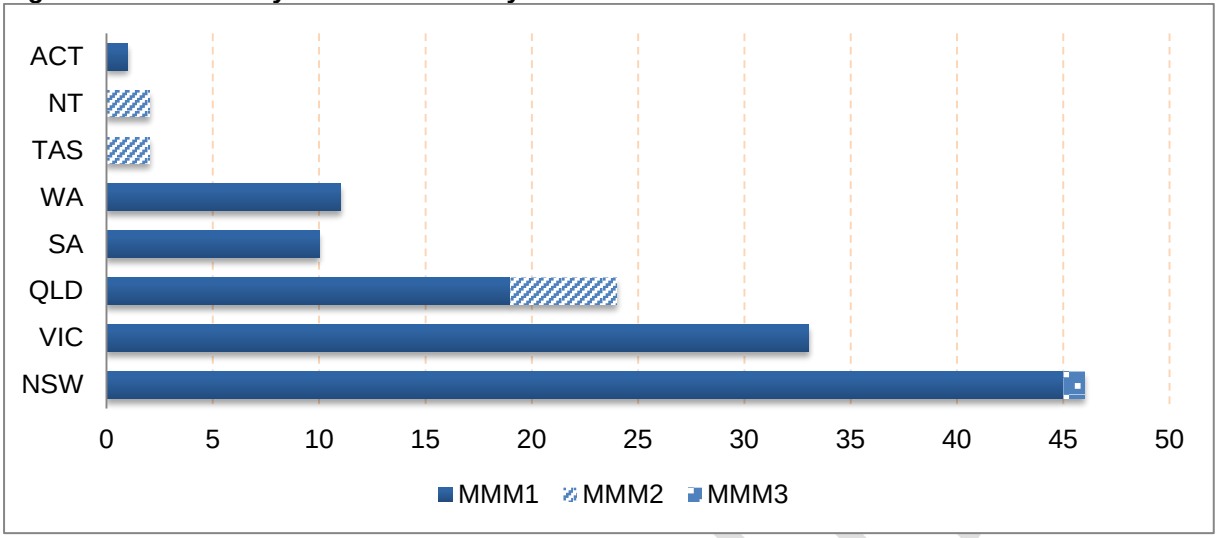
Figure 12: Demographics of endocrinology trainees



Source: NHWDS, Medical Practitioner 2016

Figure 13 outlines the distribution of trainees and shows that almost all trainees (92 per cent) are located in major cities (MMM1). There are 10 trainees were in MMM2, MMM3.

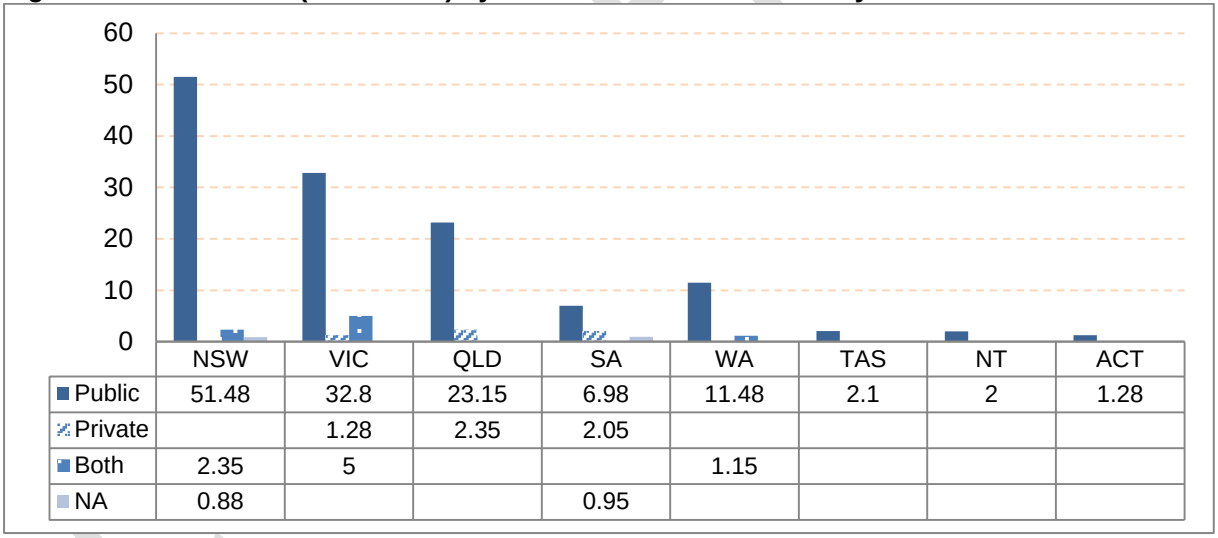
Figure 13: Trainees by state and territory and MMM



Source: NHWDS, Medical Practitioner 2016

Figure 14 details the trainees (FTE) by location and sector. Nationwide public sector is still dominant with over 89 per cent of training there.

Figure 14: Trainee FTE (total hours) by sector and state and territory

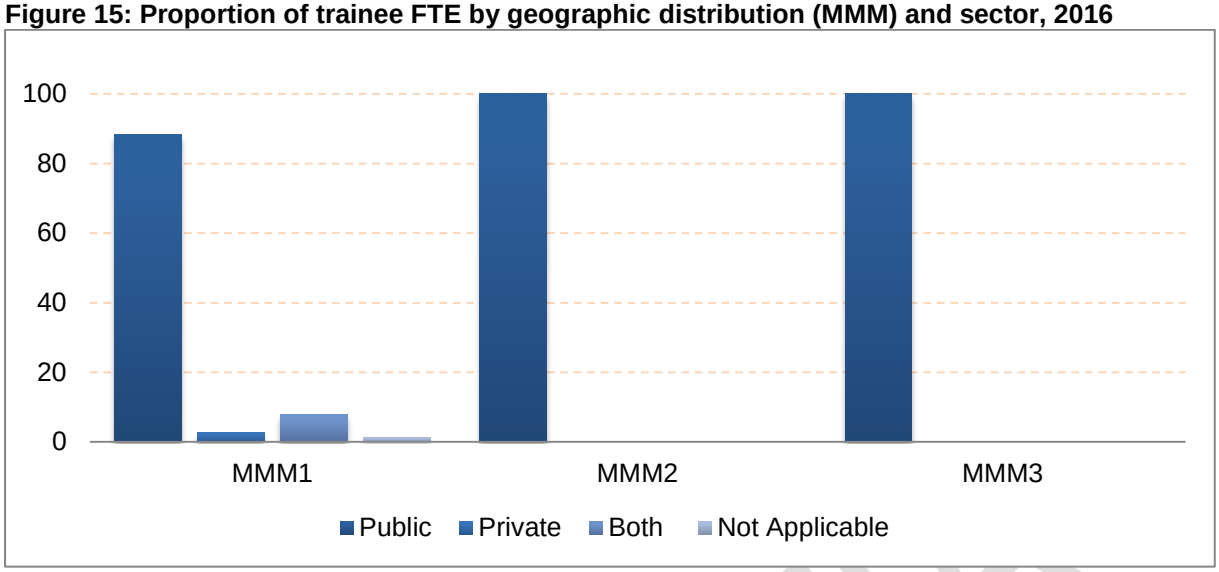


	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
Public	51.48	32.8	23.15	6.98	11.48	2.1	2	1.28
Private		1.28	2.35	2.05				
Both	2.35	5			1.15			
NA	0.88			0.95				

Source: NHWDS, Medical Practitioner 2016

The proportion of trainees by MMM (Figure 14) also shows that private sector traineeships are not available outside of metropolitan areas.

Figure 15: Proportion of trainee FTE by geographic distribution (MMM) and sector, 2016



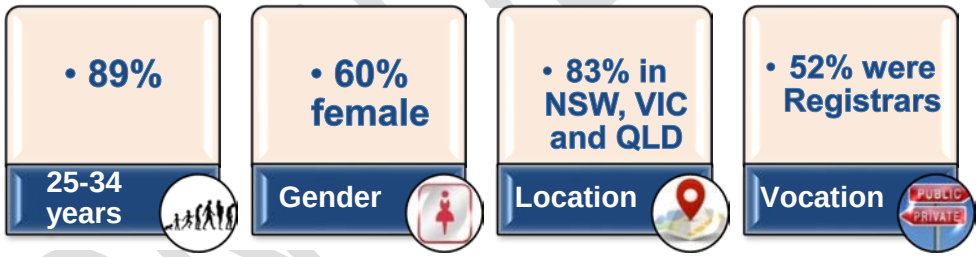
Source: NHWDS, Medical Practitioner 2016

Prevocational intentions

In 2013, new questions were included in the Medical Practitioner workforce survey which identifies those who intend to undertake vocational training. The information collected from these questions form part of the future planning process providing an indication of the future intentions of trainees (Appendix 3).

Figure 15 details the characteristics of the 54 hospital non-specialists (HNS) who indicated their intentions to undertake Endocrinology training:

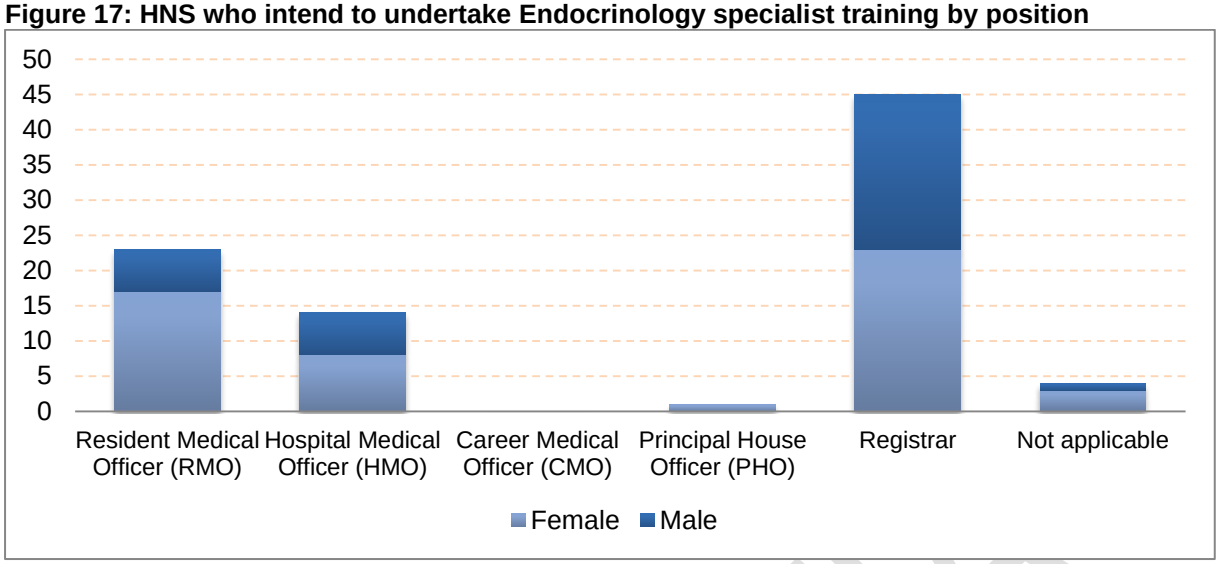
Figure 16: Characteristics of HNS who intend to undertake endocrinology training



Source: NHWDS, Medical Practitioner 2016

The primary group of HNS who intend to undertake Endocrinology training are Registrars, followed by Resident Medical Officers and Hospital Medical Officers (Figure 17).

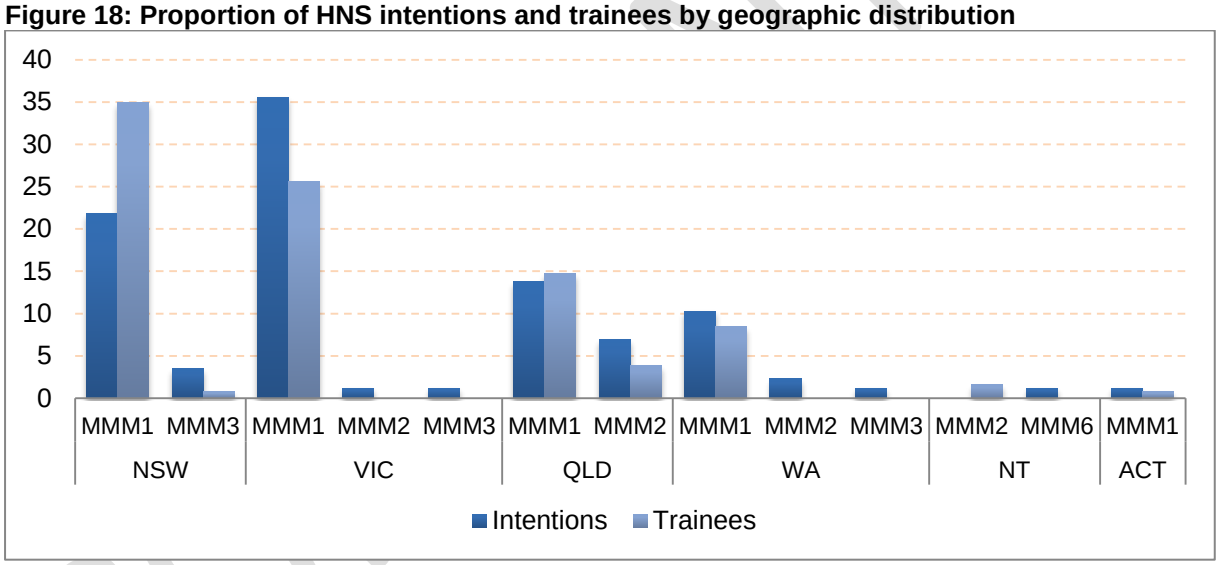
Figure 17: HNS who intend to undertake Endocrinology specialist training by position



Source: NHWDS, Medical Practitioner 2016

Similar to the location of trainees in Figure 11 and Figure 13, HNS's with intentions of training in Endocrinology are mostly located in the same areas as current trainees – primarily major cities in NSW, VIC and QLD (Figure 18).

Figure 18: Proportion of HNS intentions and trainees by geographic distribution



Source: NHWDS, Medical Practitioner 2016

Summary of total workforce by remoteness classification

Table 6 is a broad summary of the population and remoteness characteristics of the Endocrinology workforce. As can be seen the number of specialist Endocrinologist and trainees per 100,000 population is 3.0 in MMM1 areas, 1.9 in MMM2 areas and 0.6 in MMM3 areas. There is only a small number outside of MMM3.

Table 5: Summary of endocrinology workforce (Headcount and FTE) by MMM

Modified Monash Category	2015 population	Specialists and trainees (headcount)	Headcount per 100,000 population	Specialists and trainees (FTE)	FTE per 100,000 population
MMM1	16,885,670	511	3.0	487.9	2.9
MMM2	2,195,310	41	1.9	20.8	0.9
MMM3	1,543,912	10	0.6	24.9	1.6
MMM4	873,037	1	0.1	-	-
MMM5	1,779,535	0	0.0	0.8	0.0
MMM6	312,590	1	0.3	-	-
Grand Total	**23,808,215**	**550**	**2.3**	**534.4**	**2.2**

Note – Trainee FTE is based on clinical hours and specialist FTE is based on total specialist hours.
Source: NHWDS, Medical Practitioner 2016

Workforce projections

Supply

Health professionals who are registered as a specialist endocrinologist through the Australian Health Practitioner Regulation Agency (AHPRA) have been identified using the National Health Workforce Data Set (NHWDS), which includes registrant data and other characteristics obtained through the voluntary medical workforce survey as shown in the demographic data in the sections above.

In this analysis, only those who were registered/accredited, employed clinicians in 2016 are included (i.e. does not include those in the categories of administration, teacher/educator, researcher and 'others'). Health professionals who are hospital non-specialists (HNS) or specialists-in-training (SIT) with intentions of entering endocrinology training, or working towards the specialisation, are excluded at this point of modelling.

Please see Appendix 2 and 4.

Demand

The demand forecasts use a combination of Acute Inpatient and Outpatient, Hospital and Medicare Benefits Schedule (MBS) data to measure increases/decreases in demand for endocrinology on a per capita basis. The acute inpatient and outpatient hospital data used to form the basis of the public component and the MBS data the private component. Projected patient utilisation takes into account population growth and ageing, as well as clinical trends, by projecting age and sex for endocrinology MBS services based on patient utilisation rates. The historical data uses the number of services and separations by age of patient captured as a monthly time series and forecasts the resulting estimates multiplied by the estimated residential population[2].

The utilisation rates are examined at the individual age group level and forecast using a series of exponential smoothing models. Forecasts for each individual age group have been generated using the SAS statistical package. Exponential smoothing has been chosen due to its successful use by the Department in forecasting MBS services for financial modelling purposes.

Projection results

At this stage only one scenario has been conducted for endocrinology. Two different methods for intake into the training program were used to pipeline trainees (dynamic intake and static intake). In the first instance it has be assumed that the dynamic intake pipeline is

[2] Forecast services use ABS catalogue 3222 Population Projections Series B.

more in-line with the current state. The pipelining analysis can be found in Table 8 and Table 9.

The initial year for the projections is 2016 where it is assumed that supply and demand is in balance. The demand rate for endocrinology is estimated to grow at 5.0 per cent. The inflow of new fellows uses the results from the trainee pipeline, while the SIMG new fellows are assumed to remain static over the same time period.

Sensitivity

The results presented are sensitive to changing assumptions. In particular towards changes in the exit rate, number of new college fellows and hours worked.

Interpretation of results for workforce position

It is acknowledged that projections and workforce supply and demand modelling are not an exact science and rely on various assumptions holding true, therefore it is recommended that the final workforce position be interpreted with an error margin of ± three per cent. That is, if the workforce is projected to be in under or over – supply to the magnitude of three per cent or less, then the workforce is considered to be in balance.

Scenarios

The following projections are based on total specialist hours which incorporate both clinical and non-clinical (clinical support) hours (D) worked in endocrinology. Modelling has been historically conducted using total clinical hours; however due to feedback from stakeholders and improvements in data quality, totals specialist hours are now used.

Scenario 1: Dynamic intake scenario

This scenario uses the dynamic pipeline and assumes that the through rate of advanced to new fellows is approximately 4.2 per cent each year based on historical trends. The projections indicate that the workforce would most in balance with a small excess during the projection period. By 2030, the endocrinology workforce is projected to be in a marginal excess of 5.5 per cent of the total workforce.

Table 6: Dynamic intake scenario

	2016	2018	2020	2025	2030
Supply (Headcount)	534	590	654	811	991
Supply (FTE)	446	492	542	677	834
New fellows	37	47	47	53	63
Overseas trained new fellows	6	6	6	6	6
Exits (% of supply)	3.76%	3.47%	3.54%	3.09%	3.03%
Demand (Headcount)	534	586	649	825	1,045
Demand (FTE)	446	488	538	688	880
Excess/Shortfall	-	5	3	-14	-54
Excess/Shortfall (FTE)	-	4	4	-12	-46

Legend:

No perceived shortage	In balance (± 3 per cent)	Only a slight perceived shortage	Percieved shortage

Training Analysis Pipeline (TAP)

The purpose of the training analysis pipeline is to project future vocational training numbers entering the training program as a basis for forecasting the number of domestic and SIMG new fellows as inflows into the workforce.

Table 7 shows the predicted movement of trainees from entering the college training program right through to becoming a new fellow (Domestic or SIMG). The methodology focuses on moving through the training levels (which accounts for part-time and interrupted trainees) rather than on transitioning on a yearly basis. It is based on historical movements that have been calculated using the RACP data. In the future, when data over more time

points have been collected from the RACP, more accurate transition rates can be calculated. The transition rates in Table 7 are data driven and calculated from the changes between three time points (2014 – 2016 RACP data) in particular. These rates are then consistently applied to pipeline trainees and SIMG. These results are shown in Table 8 and Table 9.

Table 7: TAP transition calculations

Movements	Per cent	Comments
New intake (dynamic)	50.2%	(of previous years basic trainees)
New intake (static)	91.8%	
Basic to Basic	61.4%	
Basic to Advanced	1.9%	
Advanced to Advanced	70.8%	
Advanced to New Fellow	29.6%	
Retention rate	96.1%	New intake
	99.1%	Basic
	100%	Advanced
Through rate	-	if everyone FT and complete in 72 months
	4.2%	Actual (incorporates PT, waiting for rotation etc.)
OTS	6	Static
Partially comparable	0	
Substantially comparable	6	
OTS new fellow	6	

Table 8 below shows the TAP method for the dynamic new intake each year. This TAP shows an increase of the new intake each year of 1.9 per cent based on the average annual increase in basic to advanced trainees observed over the previous years. This results in a total of 856 new fellows over 2016 – 2030.

Table 8: Dynamic intake scenario TAP, 2010 – 2030

	Training pipeline																				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
ADV (YR4-YR6)	133	127	119	134	161	154	166	160	159	160	162	165	169	174	180	185	192	198	205	212	219
Substantially comparable					8	8	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Partially comparable					1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTS					9	8	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Domestic new fellows	38	30	34	32	9	64	37	49	47	47	47	48	49	50	52	53	55	57	59	61	63
OTS new fellows					7	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Total New Fellows					16	68	42	55	53	53	53	54	54	56	57	59	60	62	64	66	68
MTRP	College data				Calculated							Estimated					Balanced intake/NF				

Table 9 below shows the TAP method for the static new intake each year. This is built on the basis of the new intake of basic trainees remaining at 1,085. This TAP shows an increase of the new intake each year of 1.9 per cent based on the average annual increase in basic to advanced trainees observed over the previous years. This results in a total of 774 new fellows over 2016 – 2030.

Table 9: Static intake scenario TAP, 2010 – 2030

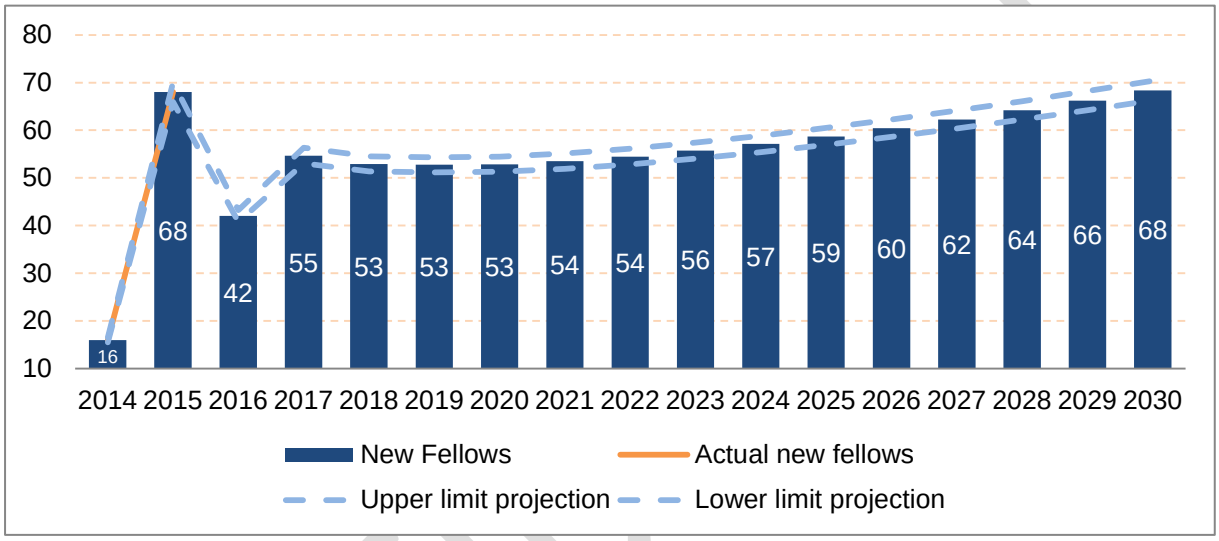
	Training pipeline																				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
ADV (YR4-YR6)	133	127	119	134	161	154	166	160	159	159	158	158	157	157	157	156	156	156	156	156	156
Substantially comparable					8	8	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Partially comparable					1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTS					9	8	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Domestic new fellows	38	30	34	32	9	64	37	49	47	47	47	47	47	47	46	46	46	46	46	46	46
OTS new fellows					7	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Total New Fellows					16	68	42	55	53	53	53	52	52	52	52	52	52	52	52	52	52
MTRP	College data				Calculated							Estimated					Balanced intake/NF				

Results of pipelining

Figure 18 shows the historical number of new Fellows in 2014 and the projected number of new Fellows, based on the above transition rates. A lower and upper limit of ± three per cent has been included to show the range of the future projection of new fellows (domestic and SIMGs).

At the end of 2014 RACP removed structured fellowship rounds which previously were held four times a year with the last round for the entire training year being done in December 2014. Resulting in a number of trainees completing training at the end of the 2014 training year being admitted to fellowship in January rather than December which lowered the 2014 new fellow numbers down and increased the 2015 round up. This will be observed in many of the other subspecialties.

Figure 19: New Fellows pipeline projections



Source: MTRP reports, RACP data and TAP projections

Capacity and Distribution for Training

Vocational medical training is undertaken by most medical practitioners. The process of gaining a vocational training position is competitive, with training provided through the RACP. The vocational medical training pipeline enables the number of training positions required under various scenarios to be modelled. It provides a representation of the medical workforce from the graduate level through to physician - endocrinology specialty Fellowship. The model draws together the known flows and inter-dependencies at each stage of the medical education and training pipeline in a dynamic, system wide projection of each component over the period to 2030.

Graduate numbers are only one component of the medical education pathway, with many medical practitioners choosing to pursue vocational training. The vocational medical training pipeline analysis highlights that, based on the existing demand for specialist services being carried forward (and other factors such as the number of expected graduates and a continued migration flow being held constant), there will be more medical practitioners seeking a vocational training position than places available.

Training capacity also impacts on vocational medical training. It recognises training capacity pressures are increasing as the larger cohorts of medical graduates move from intern to prevocational to vocational training positions. This is reflected in the 37 per cent in vocational training positions with 15,478 in 2011 moving to 21,224 by 2016 with unclear links to future workforce requirements and the continued reliance on IMGs places additional burden on the training capacity of the system.

The Department has continued to support the initiative to expand training capacity through the commitment to continue funding for the Specialist Training Programme (STP), which provides funding for specialist training positions in expanded settings for 900 training rotations a year in 2017.

However, the Department is only a small contributor to the overall number of training places nationally through funding of the STP posts. Responsibility for funding of and organising vocational training lies with many parties: jurisdictions (for post-graduate and specialist training in the public sector) and Colleges (who operate Australia and New Zealand wide). To add to the complexity, medical practitioners will often cross jurisdictional, sectoral, specialty college and international boundaries throughout their training pathway. As a result of the division of responsibilities and the potential myriad of individual medical practitioner's pathways, imbalances in the vocational training pipeline are complex to manage and resolve, and will require partnerships between governments, employers, the College and professional bodies.

Results of consultation

The Department is aware that whilst supply and demand studies are an inexact science, understanding the current situation and future scenarios can be challenging, the Department therefore aims to consult with both the training college and the professional association on the report.

The following section presents the views of the College and the Professional Association. These different views below highlights the need to update the modelling on a regular basis to ensure the latest data and understanding of the workforce reflected in the studies.

Supervisory capacity requirements

The RACP has indicated the following:

- xx

The Australian Diabetes Society and Endocrine Society of Australia (ADS and ESA) has indicated the following:

- xx

Identify non-workforce based requirements and limitations

The RACP has indicated the following:

- xx

The ADS and ESA has indicated the following:

- xx

Mapping of training capacity

The RACP has indicated the following:

- xx

The ADS and ESA has indicated the following:

- xx

Specialist Training Programme

The RACP has indicated the following:

- xx

The ADS and ESA has indicated the following:

- xx

List of Appendices

Appendices

Appendix 1: Summary of modelling inputs

Updating supply and demand

The supply side of the planning equation is determined using the characteristics of the known current workforce and projecting this forward with known and projected trainee inflows and exit trends from the workforce. The demand side uses historical service utilisation patterns and projects these forward based on population growth. It also relies on other factors that have shown to influence the utilisation patterns i.e. funding of specific programs that have either increased or decreased usage of services or seasonal patterns.

Descriptive characteristics of the physician workforce

The demographic characteristics of the current physician workforce are outlined as well describing the trainees and those intending to train. It is an important component in understanding the current supply and what is likely to be required into the future.

Capacity

The rapid growth in domestic medical graduates will continue to place pressure on medical training capacity. A significant amount of work has occurred to expand clinical training capacity across professional entry, pre-vocational and vocational training levels and additional work is underway to explore internships, however more needs to be done. While there have been recent expansions in medical training in alternative settings, medical training has traditionally been highly concentrated in public hospitals and in particular acute wards. It is important as medical training requirements continue to grow that capacity to expand medical training is considered.

Distribution

The growth in domestically trained medical graduates also presents an opportunity to distribute domestically trained doctors more effectively both geographically and into the traditionally less popular specialties. It has been argued that changing the distribution of medical training might contribute to an improvement in the distribution of the medical workforce. There is increasing evidence that students and junior doctors who study and work in rural areas are more likely to work in rural areas post specialisation.

Modelling inputs

The following information details the inputs that will be used in undertaking the modelling for the physician workforce. The physician workforce is defined by those medical practitioners that have an accreditation in physician and have identified a physician subspecialty as one of their main specialties of practice by age, gender and average hours worked, along with the number of new fellows and the number of active trainees by year of training.

The following parameters were specified as inputs for the projection modelling:

Flows in

- Workforce stock
- Domestic new fellows
- International new fellows
- Temporary migration (held at a constant total level)
- Skilled migration (exemptions)

Flows out

- Exits from the workforce include all permanent and temporary flows out of the workforce.

Supply assumptions

- Medical practitioners who are registered physician specialists or subspecialist through Australian Health Practitioner Regulation Agency (AHPRA) have been identified through the use of the National Health Workforce Data Set (NHWDS), which includes registrants and the workforce survey.
- The Physician workforce is defined as those that:
    - Are employed (excluding those on leave for more than three months)
    - Have clinician status
    - Have specialist accreditation in physician
    - Work the most or second most hours in the specialty field of physician.
- Inputs to the physician workforce are based on 2016 data and additional data from the RACP as required.
- The trainees that have been identified through the workforce survey have been defined through the following methodology, that assumes that they:
    - Are employed (excluding those on leave for more than three months)
    - Currently undertaking specialist training in a physician subspecialty as their first field of training (excluding the second specialty field)
    - Include those who have transitioned from trainee to holding a specialist accreditation in a physician subspecialty due to timing issues of registration and workforce survey.
    - Includes those who were originally classified as intentions and trainees (due to AIHW imputation), these have been classified to be trainees only
    - Includes those who were originally classified as trainee and specialist clinicians, if:
        - o They don't have specialist accreditation, or
        - o If they do have specialist accreditation, but the principal area of their main job in medicine was not specialist
- Specialist International Medical Graduates (SIMG) enter into the model through either the temporary or permanent migration streams. The inflow of physician specialists via migration is obtained from Health of Immigration and Border Protection (DIBP) and reconciled with the RACP data.
- Hours worked are calculated and applied separately for each age/gender cohort for physician specialists. The data from which hours worked is calculated is taken from the hours reported by physician specialists on the relevant workforce survey items for 2016.
- Exit rates are calculated on a unique basis for physician specialists for each five year age/gender cohort.
- Exit rates are calculated by carrying forward the current distribution of ages of the workforce and assuming the same distribution in the future. The rates are based on observed retirements over recent years, not on retirement intentions.
- Exit rates are a composite measure including all forms of removal from the workforce, permanent or temporary.

- All physician specialists are assumed to remain in the workforce, even in situations of oversupply. That is, exit rates are not adjusted to take account of possible movements away from a profession in an oversupply situation.

Demand assumptions

- The demand forecasts consider both public and privately delivered services.
- Projections of acute inpatient utilisation take into account female population growth and ageing, as well as clinical trends, by projecting age by females for same day or overnight stays, specialty-specific trends in admission rates and length of stay.
- Similarly the historical MBS data uses the number of services received by age of patient captured as a quarterly time series and forecasts the resulting estimates multiplied by the estimated residential population[1].
- The utilisation rates are examined at the individual age group level and forecast using a series of Exponential Smoothing models. Forecasts for each individual age group have been generated using the SAS statistical package. Exponential smoothing has been chosen due to its successful use in Health at forecasting MBS services for financial modelling purposes.
- Demand and supply start from an 'in balance' position.

[1] Forecast services use ABS catalogue 3222 Population Projections Series B.

Appendix 2: Definition of a Specialist (example for anaesthetist)

There are two sources of information used to determine the current supply of specialists; the medical workforce survey data and the AHPRA registration data. These two sources of information are combined by the AIHW into the *National Health Workforce Dataset: Medical Practitioners* (NHWDS). The NHWDS is used to determine whether a medical practitioner should be classified as a specialist (in up to two specialities). These classifications are sued to determine supply for the purposes of modelling the medical workforce.

The Medical Workforce survey provides a rich source of information regarding the current activities of medical practitioners. The answers to this survey are critical to ensure that that data remains an accurate snapshot of medical workforce trends.

The following example details the method for using the NHWDS data and associated survey questions to classify a medical practitioner as a specialist and therefore 'supply' in the specialty demand and supply modelling. This method applies to all specialities, but anaesthesia is used in this example.

In order to be classified as a specialist a record must pass three initial conditions.

- Be currently registered as Medical practitioner
- Be accredited as an Anaesthetist
- Be currently employed in the Medical profession
- Be currently working as a Clinician

Current registration as a medical practitioner and specialist accreditation in anaesthesia are data items maintained by AHPRA.

The following survey questions relate to whether the medical practitioner is employed and working as a clinician. To be classified as a specialist they must have answered that they are currently employed and working as a clinician.

Figure 1: Survey questions relating to Employment Status

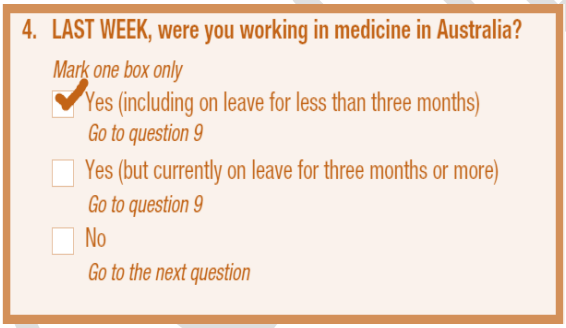
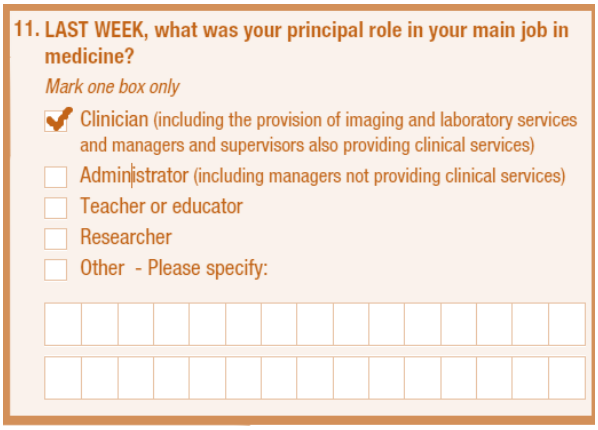
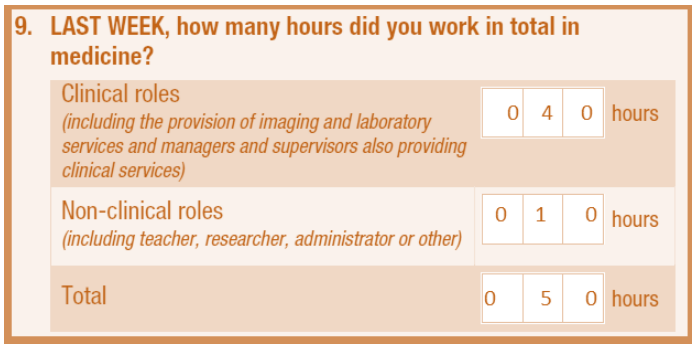


Figure 2: Survey questions relating to Clinician Status



In addition medical practitioners are required to specify that they are working clinical hours. If the practitioner specifies that they are working only non-clinical hours, then they will not be counted.

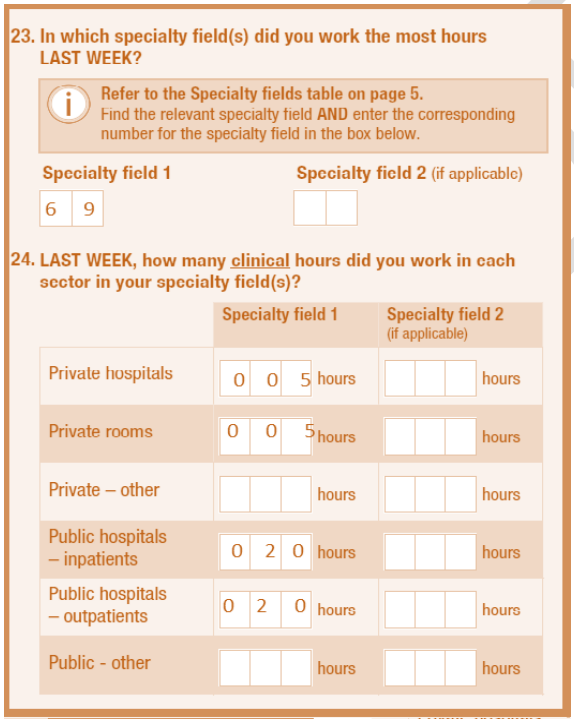
Figure 3: Survey questions relating to clinical and non-clinical hours



These conditions are applied initial to ensure a rigorous estimate of the current workforce based on the employment and accreditation status of medical practitioners. For example, to avoid counting medical practitioners who are in retirement the process checks to ensure that medical practitioners are currently employed and working as clinician. This also avoids counting medical practitioners who are currently working as administrators and teachers.

The next step looks at the main area in which the medical practitioner is employed. This is the step where medical practitioners have the opportunity to specify on the survey, in which area of medicine they're currently employed. There is space to fill out *two* professions.

Figure 4: Survey questions relating to principal field of main specialties



The above survey question is crucial to the inclusion of a medical practitioner as an anaesthetist. This question indicates that the medical practitioner will be classified as a specialist in the recorded specialty provided that all previous criteria have been met.

If the medical practitioner is currently registered and is;

- employed,
- working as a clinician
- and has accreditation with AHPRA in Anaesthesia

At this point they will be counted as an Anaesthetist provided they have indicated so in question 23.

With the exception of 3 cases, that is the end of the classification process.

Case 1: Specialist and trainee

If the medical practitioner has also indicated that they are a current anaesthesia trainee and their year of completion is the year of the survey then they will be classified as a trainee and not a specialist. This can occur due to timing issues; the medical practitioner is in a training program on the date they complete the survey, however on the date of data extraction (which can be up to 2 months later) the medical practitioner has obtained fellowship and AHPRA has recorded them as an accredited specialist. The decision was made to classify the medical practitioner according to the date of completion of the survey. In this instance the medical practitioner will be classified as an anaesthetist in the following year.

Figure 5: Survey questions relating to training

Case 2 – fails to answer question 23

If the medical practitioner fails to answer question 23 but currently is registered medical practitioner and is;

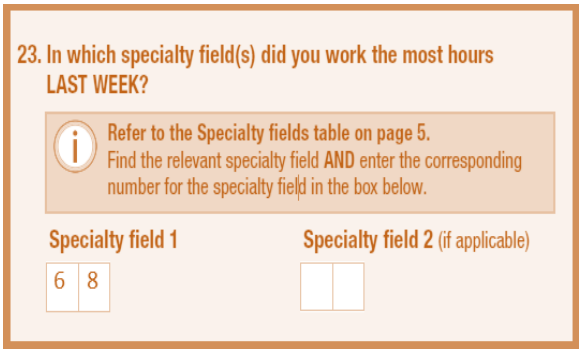
- employed,
- working as a clinician
- has accreditation with AHPRA in Anaesthesia
- and has two or fewer specialities accredited with AHPRA

then their survey response to question 23 is imputed as anaesthesia (69) and they are counted as a Specialist.

Case 3 - Erroneous answer recorded in question 23

The medical practitioner responds to the survey indicating that they are currently working as a vocationally registered GP. They do not currently have accreditation with APHRA as a GP but they do have current accreditation as an anaesthetist and are; currently registered as a medical practitioner, employed, and working as a clinician. The response to question 23 is imputed as Anaesthesia (69) and they are classified as an anaesthetist.

Figure 6: Erroneous answer recorded in question 23



Appendix 3: Hours worked

The Medical Practitioner workforce survey (Appendix 5) captures the hours worked at three levels as shown in Figure 24 below. The first row (A) is where a practitioner identifies the total hours they worked in the previous week. They are asked to split their total hours into (B) time spent in clinical roles and non-clinical roles. Non-clinical is defined as "including teacher, researcher, administrator and other". They are then asked to split their clinical hours into (C) time spent in up to two specialities (clinical hours in specialty 1 and clinical hours in specialty 2).

For example, two per cent (28) of physician specialists worked hours in another specialty in addition to a physician subspecialty (most commonly general practice, physician, sexual health medicine and pain medicine). For this group of dual specialists, 57 per cent of their FTE was spent in a physician subspecialty, while 43 per cent was spent in their other specialty.

They grey 'unknown' area in row (C) can occur when the hours reported in specialty 1 and specialty 2 do not add up to the clinical hours (B). The unknown clinical hours may be due to an error when completing the survey form (the medical practitioner miscalculates their hours) or it may represent time worked as a non-vocationally registered General Practitioners P (Non-VRGP) or in a third specialty. The unknown hours were not used in the modelling inputs. Furthermore, as can been seen in the grey 'not asked in survey' area in row (C), the non-clinical hours worked in each specialty are not captured in the survey.

Previously, specialty modelling was conducted using clinical hours. Figure 24 shows how the use of clinical hours (highlighted in row B) is flawed for the purposes of modelling individual medical specialties. As can be seen, the clinical hours can be much higher than the individual specialist clinical hours (C) as total clinical hours comprises hours worked in another speciality (other than the one being modelled) as well as unknown clinical hours. This results in the FTE being overestimated. Furthermore, using clinical hours only excludes an essential component of the workforce – the time spent undertaking clinical support (non-clinical hours).

Figure 7: Hours worked as captured in the workforce survey.

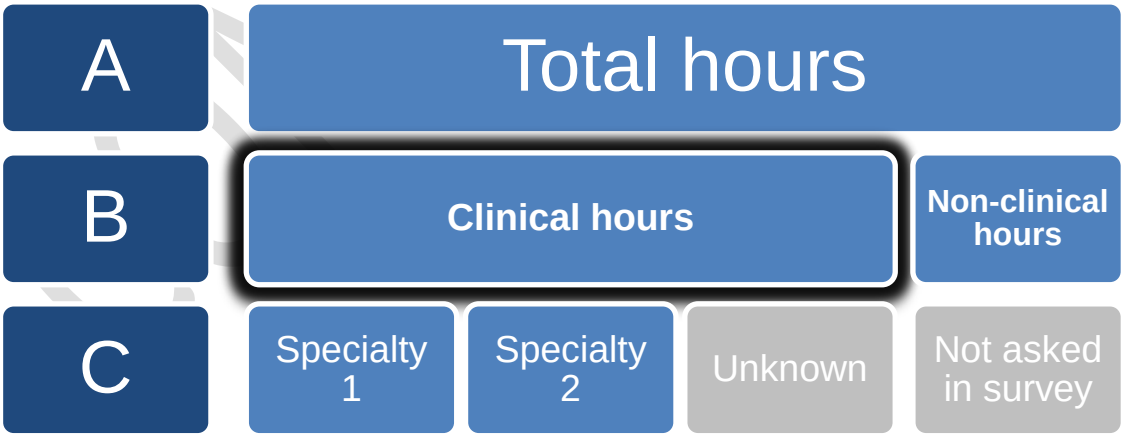


Figure 25 below shows how the hours for individual specialties have been estimated for modelling purposes in this report. In order to calculate (D), the total hours worked in a physician subspecialty (clinical and non-clinical), the non-clinical hours spent in the speciality needed to be estimated (red boxes in row D). The proportion of the clinical hours for each of the specialities were used to attribute non-clinical hours to the specialties to give an indication of the total specialist hours (clinical and non-clinical) a practitioner is working in a given speciality.

Figure 8: Estimating total specialty hours

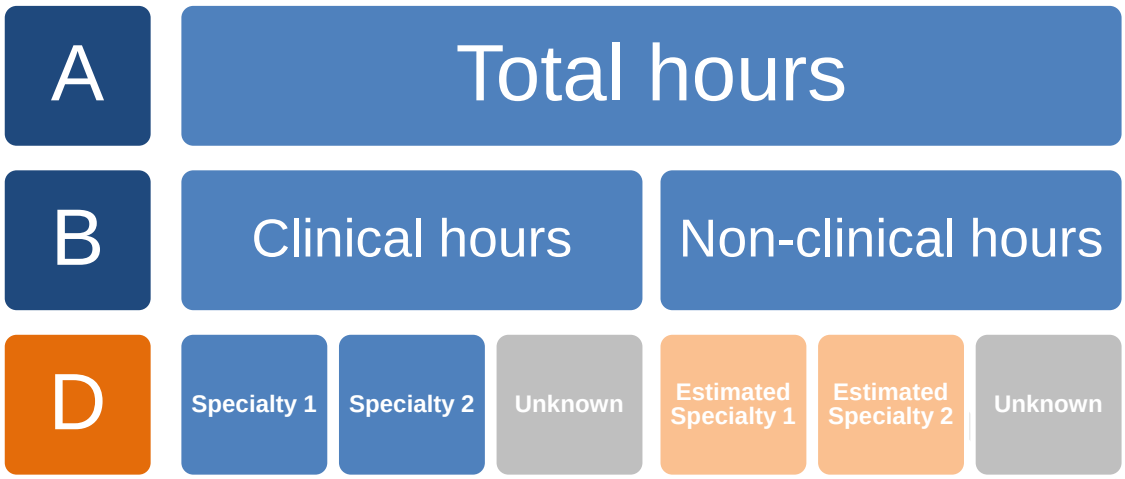
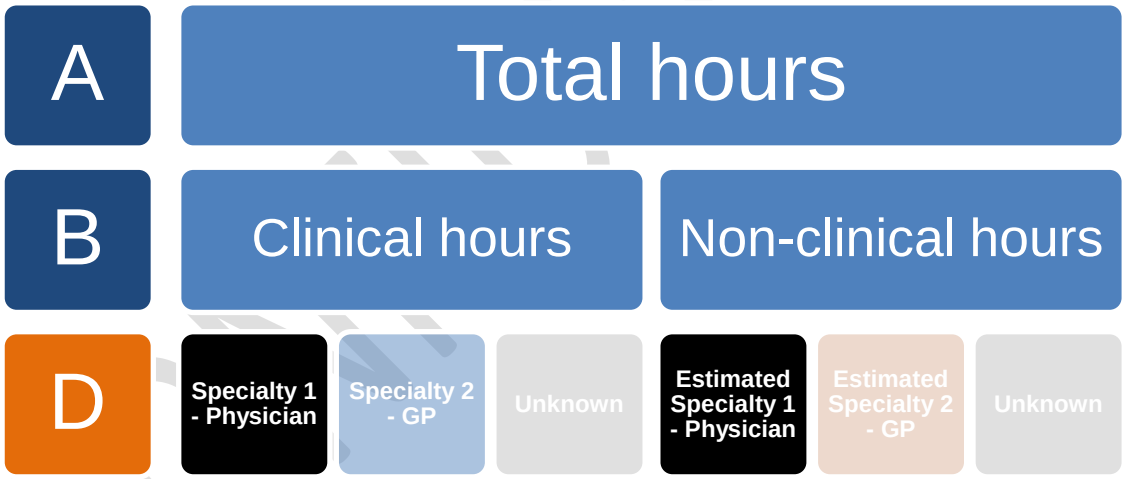


Figure 26 below shows which hours contribute to supply in the projections utilising total specialist hours ('Total specialist hours scenario **Error! Reference source not found.**). In this example, if a practitioner indicated in specialty field 1 they worked in a physician subspecialty and in specialty field 2 they worked as a physician, then the clinical specialty 1 hours plus the estimated non-clinical specialty 1 hours (only the black boxes) are used in the modelling for a physician subspecialty.

Figure 9: Total specialty hours used in modelling – example



Appendix 4: Trainees and Intentions

The classification of trainees and those intending to train is based on the medical workforce survey. To be classified as a trainee the medical practitioner must answer survey question 26 indicating that they're a current anaesthesia trainee they must also be;

- Registered as a medical practitioner and employed as a medical practitioner (see figure 18).

The only exception is if they indicate on the survey that they're also intending to train. If they have a current training year, then they're classified as a trainee (see **Figure 22**).

Figure 10: Survey question related to current specialist training

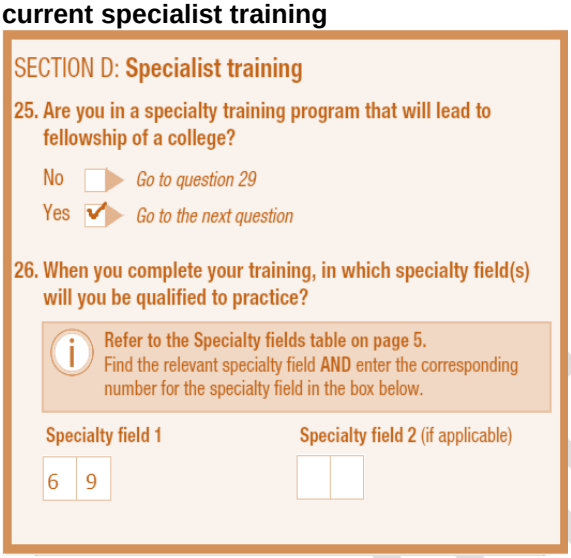
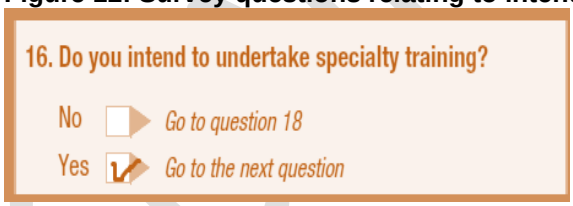
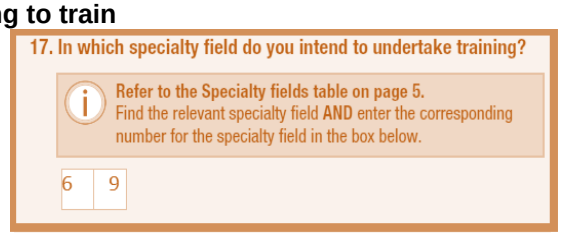


Figure 11: Survey question relating to current year of training program

To be classified as intending to train the medical practitioner needs to answer question 16 indicating that they're intending to undertake training as a specialist and answer question 17 to indicate that they intend to train as an anaesthetists.

Figure 12: Survey questions relating to intending to train





Appendix 5: Medical Practitioners survey 2016

Medical Board of Australia

Workforce Survey Form

Profession: Medical

WKSY-30

COMPLETING THIS SURVEY

Information supplied on this form may be provided to other persons and agencies for workforce planning. The Medical Board of Australia and the Australian Health Practitioner Regulation Agency (AHPRA) are committed to ensuring the privacy and confidentiality of personal information held and will adhere to the National Privacy Principles under the Privacy Act 1988 (Cth) when collecting, using, disclosing, securing and providing access to private information.

- Read all instructions
- Print clearly in BLOCK LETTERS using a black or blue pen
- Place X in ALL applicable boxes
- These questions are optional

Today's date: (DD / MM / YYYY) / /

SECTION A: **Your qualifications**

1. Where did you obtain your initial medical degree?

Mark one box only

- ☐ Australia
- ☐ New Zealand
- ☐ Other overseas - Please specify country:

2. What year did you graduate from medical school?

(YYYY)

3. If you have a specialist qualification in medicine, where did you obtain your initial specialist qualification?

Mark one box only

- ☐ Do not have a specialist qualification
- ☐ Australia
- ☐ New Zealand
- ☐ Other overseas - Please specify country:

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SECTION B: **Your employment**

For the following questions, employed includes:
The practice of medicine, or work that is principally concerned with that discipline, e.g. research, administration or teaching of medicine, in which you worked in Australia for a total of one hour or more LAST WEEK in a job or business (including own business) for pay, commission, payment in kind or profit.

4. LAST WEEK, were you working in medicine in Australia?

Mark one box only

- ☐ Yes (including on leave for less than three months)
  Go to question 9
- ☐ Yes (but currently on leave for three months or more)
  Go to question 9
- ☐ No
  Go to the next question

5. LAST WEEK, why were you not working in medicine in Australia?

Mark one box only

- ☐ Working in medicine overseas
  Go to the next question
- ☐ Working in an occupation other than medicine
  Go to question 7
- ☐ Not working in paid employment at all
  Go to question 8
- ☐ Retired from regular work
  Go to question 32

6. LAST WEEK, what field of medicine were you working in?

Go to question 8

7. LAST WEEK, what was your occupation?

8. LAST WEEK, did you take active steps to look for work in medicine in Australia?

Looking for work includes (either part-time or full-time):
- applying for work
- enquiring about a job
- answering an advertisement
- registering with an employment agency
- advertising for work
- contacting people about a job.

No ☐ *Go to question 32*

Yes ☐ *Go to question 32*

For questions 9-20, if you were on leave last week, answer for a typical week. **Exclude** hours on call not worked.

9. LAST WEEK, how many hours did you work in total in medicine?

Clinical roles *(including the provision of imaging and laboratory services and managers and supervisors also providing clinical services)*	☐☐☐ hours
Non-clinical roles *(including teacher, researcher, administrator or other)*	☐☐☐ hours
Total	☐☐☐ hours

10. In the last year, on average how many hours per week did you practice via tele-health in medicine?

Telehealth is the use of telecommunication techniques for the purpose of providing telemedicine, medical education, and health education over a distance.

☐☐☐

11. LAST WEEK, of the hours that you worked in your clinical roles, how many hours did you work in each sector in medicine?

Private hospitals ☐☐☐ hours	Public hospitals – inpatients ☐☐☐ hours
Private rooms ☐☐☐ hours	Public hospitals – outpatients ☐☐☐ hours
Private – other ☐☐☐ hours	Public – other ☐☐☐ hours

For the following questions, answer for the job in which you worked the most hours last week.

12. LAST WEEK, what was your principal role in your main job in medicine?

Mark one box only

- ☐ Clinician (including the provision of imaging and laboratory services and managers and supervisors also providing clinical services)
- ☐ Administrator (including managers not providing clinical services)
- ☐ Teacher or educator
- ☐ Researcher
- ☐ Other - Please specify:

13. LAST WEEK, what was the principal area of your main job in medicine?

Mark one box only

- ☐ General practitioner (GP) (excluding AGPT program trainees) *Go to the next question*
- ☐ Specialist (other than GP) *Go to question 19*
- ☐ Specialist-in-training (including AGPT program trainees) *Go to question 19*
- ☐ Hospital non-specialist (including pre-vocational doctors) *Go to question 16*
- ☐ Other clinician *Go to question 17*
- ☐ Non-clinician *Go to question 17*

14. LAST WEEK, were you working in General Practice with specialist registration in General Practice?

Mark one box only

No ☐ *Go to the next question*

Yes ☐ *Go to question 19*

15. LAST WEEK, were you a RACGP/ ACRRM/ RVTS trainee?

No ☐ *Go to question 19*

Yes ☐ *Go to question 19*

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16. LAST WEEK, what was your position in the hospital?

Mark one box only

- ☐ Intern
- ☐ Resident Medical Officer (RMO)
- ☐ Hospital Medical Officer (HMO)
- ☐ Career Medical Officer (CMO)
- ☐ Principal House Officer (PHO)
- ☐ Registrar
- ☐ Other - Please specify:

17. Do you intend to undertake specialty training?

No ▶ *Go to question 19*

Yes ▶ *Go to the next question*

18. In which specialty field do you intend to undertake training?

Refer to the Specialty fields table on page 5.
Find the relevant specialty field **AND** enter the corresponding number for the specialty field in the box below.

19. LAST WEEK, what was the principal work setting of your main job in medicine?

Mark one box only

- ☐ Solo Private Practice
- ☐ Group Private Practice
- ☐ Locum Private Practice
- ☐ Aboriginal health service
- ☐ Community mental health service
- ☐ Community drug and alcohol service
- ☐ Other community health care service
- ☐ Hospital *(excluding outpatient service)*
- ☐ Outpatient service
- ☐ Residential mental health care service
- ☐ Residential aged care facility
- ☐ Commercial/business service
- ☐ Tertiary educational facility
- ☐ School
- ☐ Other educational facility
- ☐ Correctional service
- ☐ Defence force
- ☐ Other government department or agency
- ☐ Other

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20. LAST WEEK, where was the location of your main job in medicine?

For state and territory mark one box only

☐ NSW	☐ SA	☐ NT
☐ VIC	☐ WA	☐ ACT
☐ QLD	☐ TAS	☐ Other territories

Postcode

Suburb

21. Other than the location reported in question 19, do you also work in a regional, rural or remote location?

No ▶ *Go to question 23*

Yes ▶ *Specify state, postcode and suburb below, then go to the next question*

If you work in more than one additional regional, rural or remote location, provide the one in which you work the most hours.

For state and territory mark one box only

☐ NSW	☐ SA	☐ NT
☐ VIC	☐ WA	☐ ACT
☐ QLD	☐ TAS	☐ Other territories

Postcode

Suburb

22. On average, how often do you work in this location?

Mark one box only, and report the frequency worked at this location

	☐ Weekly	day(s) per week
OR	☐ Fortnightly	days per fortnight
OR	☐ Monthly	days per month
OR	☐ Quarterly	days per quarter
OR	☐ Annually	days per year

SECTION C: **Specialist registration**

23. Do you have a specialist registration in medicine (including specialist registration in general practice)?

No ☐ *Go to question 26*

Yes ☐ *Go to the next question*

For questions 24-25:
Specialty field 1 relates to the specialty in which you worked the most hours LAST WEEK.
Specialty field 2 (if applicable) relates to the specialty in which you worked the second most hours LAST WEEK.

24. In which specialty field(s) did you work the most hours LAST WEEK?

Refer to the Specialty fields table on page 5.
Find the relevant specialty field **AND** enter the corresponding number for the specialty field in the box below.

Specialty field 1 ☐☐ **Specialty field 2** (if applicable) ☐☐

25. LAST WEEK, how many clinical hours did you work in each sector in your specialty field(s)?

	Specialty field 1	Specialty field 2 (if applicable)
Private hospitals	☐☐☐ hours	☐☐☐ hours
Private rooms	☐☐☐ hours	☐☐☐ hours
Private – other	☐☐☐ hours	☐☐☐ hours
Public hospitals – inpatients	☐☐☐ hours	☐☐☐ hours
Public hospitals – outpatients	☐☐☐ hours	☐☐☐ hours
Public - other	☐☐☐ hours	☐☐☐ hours

SECTION D: **Specialist training**

26. Are you in a specialty training program that will lead to fellowship of a college?

No ☐ *Go to question 30*

Yes ☐ *Go to the next question*

27. When you complete your training, in which specialty field(s) will you be qualified to practice?

Refer to the Specialty fields table on page 5.
Find the relevant specialty field **AND** enter the corresponding number for the specialty field in the box below.

Specialty field 1 ☐☐ **Specialty field 2** (if applicable) ☐☐

28. (a) In which year(s) did you commence your specialty training program(s)?

Specialty field 1 ☐☐☐☐ (YYYY) **Specialty field 2** (if applicable) ☐☐☐☐ (YYYY)

(b) In which year(s) do you intend to complete your specialty training program(s)?

Specialty field 1 ☐☐☐☐ (YYYY) **Specialty field 2** (if applicable) ☐☐☐☐ (YYYY)

29. What year of your training program(s) are you in?

For example:
1. If you are 1st year of an advanced training program but have done 3 years of basic training, please respond 4th year.
2. If you have been completing your training part time for 3 years, but you are in the 2nd year of the training program, please respond 2nd year.

Specialty field 1	Specialty field 2 (if applicable)
☐ 1st year	☐ 1st year
☐ 2nd year	☐ 2nd year
☐ 3rd year	☐ 3rd year
☐ 4th year	☐ 4th year
☐ 5th year	☐ 5th year
☐ 6th year	☐ 6th year
☐ 7th year	☐ 7th year
☐ 8th year	☐ 8th year

SECTION E: **Workforce intentions**

30. In total, how many years have you worked in medicine in Australia?

Include years regardless of full-time or part-time status.
Exclude time spent not working and unpaid leave.

☐☐ whole years

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31. How many more years do you intend to remain in the medicine workforce in Australia?

☐☐ whole years

SECTION F: **Your details**

32. Are you of Aboriginal or Torres Strait Islander origin?

Mark one box only

- ☐ No
- ☐ Yes - Aboriginal
- ☐ Yes - Torres Strait Islander
- ☐ Both Aboriginal and Torres Strait Islander

33. Are you a temporary resident?

- ☐ No ▶ *Thank you, no further questions.*
- ☐ Yes ▶ *Specify your visa type below*
  - ☐ 309 - Partner (offshore)
  - ☐ 402 - Training and Research
  - ☐ 417 - Working Holiday
  - ☐ 422 - Medical Practitioner
  - ☐ 444 - Special category
  - ☐ 457 - Temporary Work (Skilled)
  - ☐ 485 - Temporary Graduate
  - ☐ 572 - Vocational Education and Training Sector
  - ☐ 573 - Higher Education Sector
  - ☐ 574 - Postgraduate Research Sector
  - ☐ 820 - Partner (onshore)
  - ☐ Other

Thank you, no further questions.
Please return this workforce survey to AHPRA in the same envelope as your renewal application

	Physician		**Radiology**	57	Paediatric respiratory and sleep medicine
1	Cardiology	29	Diagnostic radiology	58	Paediatric rheumatology
2	Clinical genetics	30	Diagnostic ultrasound	59	Specialist paediatrician
3	Clinical pharmacology	31	Nuclear medicine		**Pathology**
4	Endocrinology		**Obstetrics and gynaecology**	60	General pathology
5	Gastroenterology and hepatology	32	Gynaecological oncology	61	Anatomical pathology (including cytopathology)
6	General medicine	33	Maternal-fetal medicine	62	Chemical pathology
7	Geriatric medicine	34	Obstetrics and gynaecological ultrasound	63	Haematology
8	Haematology	35	Reproductive endocrinology and infertility	64	Immunology
9	Immunology and allergy	36	Urogynaecology	65	Microbiology
10	Infectious diseases	37	Specialist obstetrician and gynaecologist	66	Forensic pathology
11	Medical oncology		**Paediatrics and child health**	67	Specialist pathologist
12	Nephrology	38	Clinical genetics		**Intensive care medicine**
13	Neurology	39	Community and child health	85	Paediatric intensive care medicine
14	Nuclear medicine	40	General paediatrics	86	Specialist intensive care physician
15	Respiratory and sleep medicine	41	Neonatal and perinatal medicine	68	**General practice**
16	Rheumatology	42	Paediatric cardiology	69	**Anaesthesia**
17	Specialist physician	43	Paediatric clinical pharmacology	70	**Psychiatry**
	Surgery	44	Paediatric emergency medicine	71	**Emergency medicine**
18	Cardio-thoracic surgery	45	Paediatric endocrinology	72	**Ophthalmology**
19	General surgery	46	Paediatric gastroenterology and hepatology	73	**Dermatology**
20	Neurosurgery	47	Paediatric haematology	75	**Rehabilitation medicine**
21	Orthopaedic surgery	48	Paediatric immunology and allergy	76	**Radiation oncology**
22	Otolaryngology- head and neck surgery	49	Paediatric infectious diseases	77	**Public health medicine**
23	Oral and maxillofacial surgery	50	Paediatric intensive care medicine	78	**Occupational and environmental medicine**
24	Paediatric surgery	51	Paediatric medical oncology	79	**Medical administration**
25	Plastic surgery	52	Paediatric nephrology	80	**Palliative medicine**
26	Urology	53	Paediatric neurology	81	**Sport and exercise medicine**
27	Vascular surgery	54	Paediatric nuclear medicine	82	**Sexual health medicine**
28	Specialist surgeon	55	Paediatric palliative medicine	83	**Addiction medicine**
		56	Paediatric rehabilitation medicine	84	**Pain medicine**

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Endocrinology

Changes to clinical practice into the future

	Perspective	Strategies to address the situation
New treatments	–	–
Treatments that will be superseded	–	–
Predicted task substitution	–	–

Capacity and distribution for training

	Perspective	Strategies to address the situation
Supervisory capacity requirements	–	–
Non-workforce based requirements and limitations	–	–
Training capacity	–	–
Specialist Training Programme	–	–