

Department of Health

# Australia's Future Health Workforce – Dermatology

May 2017

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## Executive Summary

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 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.

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

- employment patterns and intentions of prevocational doctors and development of fact sheets on supply and demand in each of the medical specialties; and
- the capacity for and distribution of medical training, including the geographic distribution of medical training and community needs.

The dermatology report is part of the first segment of analysis under the capacity and distribution work. This report involves updating the supply and demand projections previously completed by the former Health Workforce Australia (HWA) and published in Health Workforce 2025 - Medical Specialists Volume 3 (HW 2025 Vol 3).

## Key considerations

It is important to note the following regarding demand and supply modelling for all specialties:

- Supply only includes the hours worked by specialist clinicians in the specific speciality being modelled.
  - o For dermatology this means only the hours worked by dermatology specialists in dermatology contribute toward the supply Full Time Equivalent (FTE). In particular there are 40 dermatology specialists who work in dermatology AND another speciality: 81 percent of their FTE was spent working in dermatology while 19 percent of their FTE was spent working in their other specialty. Only the hours worked in dermatology contribute toward the supply FTE for dermatology.
- The projections depend on a number of key assumptions which underpin each scenario.

## Key findings

### Supply and demand projections

The results of the projections reveal a substantial undersupply of dermatology specialists throughout the entire projection period. Assuming a static intake, the projected workforce deficit accumulates to 90 FTE dermatologists by 2030 and is 60 FTE by 2025. The deficit is more extensive than the results of the comparison scenario in HW 2025 which projected the workforce would be in undersupply of 31 dermatology specialists by 2025.

The predicted undersupply could be addressed by facilitating specialist dermatologists to manage complex, rare or severe skin conditions, and support specialist nurses and general practitioners to manage patients with common or more straightforward conditions.

### **Training program**

The training program intake would need to increase by 5.2 FTE annually from 2018 to 2025 in order to balance the deficit that has been accumulated over the 15 year projection period (2016-2030) pro-rated to the nine years (2022-2030) in which change is achievable.

To accommodate this increased intake, an evaluation of the current training program will be required and novel models for funding and delivery of training may need to be explored for feasibility and sustainability.

Reassessment of approaches to IMG comparability and post-training candidate outcomes may positively impact availability of training posts and transition rates throughout the program.

### **Capacity and distribution for vocational training**

Key considerations for program expansion include:

#### **Funding**

Securing long-term Federal or jurisdictional funding for new posts is fundamental to program expansion.

#### **Distribution**

Currently, the majority of training occurs in public hospitals. In this setting, the presence of many patients with ongoing chronic disease of considerable complexity create opportunities for learning that are less available in the private sector, where activity is rewarded. As a result, sizable hospitals remain central to dermatology training. However new training models whereby an increased proportion of training can occur within the larger private practices and in regional/rural areas have the potential to open up new posts. Maintaining a high quality and clinically diverse program with exposure to general dermatology and its sub-specialties is essential. This could be achieved by greater use of telehealth and store/forward tele-dermatology services during training.

#### **Supervisory capacity**

The current supervisory capacity is a potential limitation on the rapid expansion of the training program, due to the number of consultants required to ensure delivery of the full training curriculum, the impact of retirement rates and the limited capacity in regional areas.

There is potential to expand training capacity into several larger metropolitan hospitals or smaller regional hospitals where there are currently no dermatology departments. This will require jurisdictional support for Registrar funding and in the appointment of fractional consultants and ongoing liaison with local health services. Establishing dermatology departments which work in an integrated manner with other medical sub specialties (oncology, rheumatology, immunology, infectious diseases, gynaecology, paediatric) in a multidisciplinary setting will encourage consultants to undertake managerial or supervisory roles within the public system. Supervisory capacity could be increased by urban specialists using ICT to support and oversee senior registrars in rural or regional areas, thus injecting academic expertise into areas of need.

## Current MBS services

Given that two in three Australians will develop skin cancer, GPs have to play an important role in the first line of care for skin cancer surveillance and management<sup>1</sup>. Analysis of 2015 Medicare Benefits Schedule (MBS) data shows that a subset of General Practitioners (GPs), particularly in QLD and NSW, are providing a high level of skin cancer services. Billing of dermatology MBS items by this subset of GPs exceeds that of the entire dermatology workforce.

These results suggest the emergence of a sub-specialisation in general practice. Skin cancer surveillance is an expected skill for both GP professional colleges. Increasing numbers of GPs undertake further training in skin cancer but there is no agreed standard or training that is accredited by the Australian Medical Council (AMC).

There is some evidence that there are cost inefficiencies from over-servicing. The Department, NMTAN, ACRRM, RACGP and ACD develop a joint strategy to address to ensure optimal use of in MBS skin cancer items utilisation by skin cancer GPs.

Ongoing analysis of patient outcomes and health system cost implications is required to inform further action.

## Recommendations

- The supply and demand projection be closely monitored by NMTAN and the Australian Government Department of Health (the Department), with updates every two years.
- The ACD put forward the following recommendations for consideration by the NMTAN and the Department.

### NMTAN:

- **to facilitate dialogue between ACD and jurisdictional health departments; notably WA, Qld and NSW.** The College seeks funding for new training positions in regional hubs identified as appropriate training locations, offering supervisory capacity potentially supplemented with remote supervision. Jurisdictional support is urgently required to expand public hospital services, incorporating both qualified dermatologists and trainees, into new teaching hospital units in outer metropolitan and regional/rural areas where there are associated medical school clinical teaching units. In addition, expansion of prevocational generalist training opportunities for junior medical officers with an interest in undertaking dermatology specialist training is recommended, to ensure growth in generalist skills.

### The Department, NMTAN and ACD:

- **to develop a joint strategy to address inefficiencies in MBS skin cancer item utilisation by skin cancer GPs.** Improving diagnostic and treatment capabilities will help to reduce system wastage. The College is best placed to set the clinical and ethical standards in GP training and upskilling in skin cancer management and is prepared to take on this role with Department, NMTAN, ACRRM, RACGP to explore implementation strategies with relevant stakeholders and facilitated by NMTAN, including offering certification as the national education provider and offering continuing professional development potentially managed via a joint council with relevant medical colleges.

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<sup>1</sup> House of Representatives Standing Committee on Health. Skin Cancer in Australia: Our National Cancer. Canberra 2015.



## 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 (the Department).

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 subcommittees that explore different aspects of medical training to inform future workforce planning: In addition to the policy-focussed subcommittees, a 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 dermatology 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 (HW 2025 Vol 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 dermatology 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 and policy recommendations for dermatology.

### **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 percent 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 dermatologist is a qualified medical specialist who has obtained postgraduate qualifications specialising in the diagnosis, treatment and prevention of skin diseases and cancers. Dermatologists look after patients of all ages, from babies and children to adolescents and adults. Australian dermatologists spend a lot of time treating diseases caused by sun exposure including sunspots and skin cancers, and need advanced skills in melanoma diagnosis and treatment. Dermatologist also diagnose, treat and manage other skin conditions including acne, psoriasis, atopic eczema, skin infections as well as conditions affecting hair, nails and the mucosa surfaces.

Dermatologists use a wide variety of treatments (such as creams, liquid nitrogen, oral medication and ultraviolet therapy) and specific treatment for skin cancers. Dermatologists also deliver cosmetic services (e.g. laser therapy, muscle relaxants, fillers).

## Results from the HW 2025 Vol 3

Dermatology 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. The dermatology chapter indicated that the workforce was perceived to have some difficulty in filling positions, either through maldistribution or insufficient workforce. The comparison scenario projected the workforce would be in undersupply by 31 specialist dermatologists by 2025. The scenario results generated minimal net change in the workforce over the projection. While the replacement rate was rated at the lowest level, consultation highlighted limitations on future training capacity which may potentially affect this assessment.

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

- 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.

The ACD had provided a range of considerations that may impact supply or demand:

- 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 that training capacity has increased as a result of the Commonwealth funded specialist training program, which now accounts for 20 percent of training places.
- While there is geographic maldistribution of the dermatology workforce, a number of mechanisms exist to improve this, including:
  - o college selection processes, with rural origin registrars;
  - o regional training; and
  - o service delivery models, such as the Rural Health Outreach Fund, telehealth and store/forward tele-dermatology such as TeleDerm

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

## Current workforce status

### Registration, accreditation and specialty fields

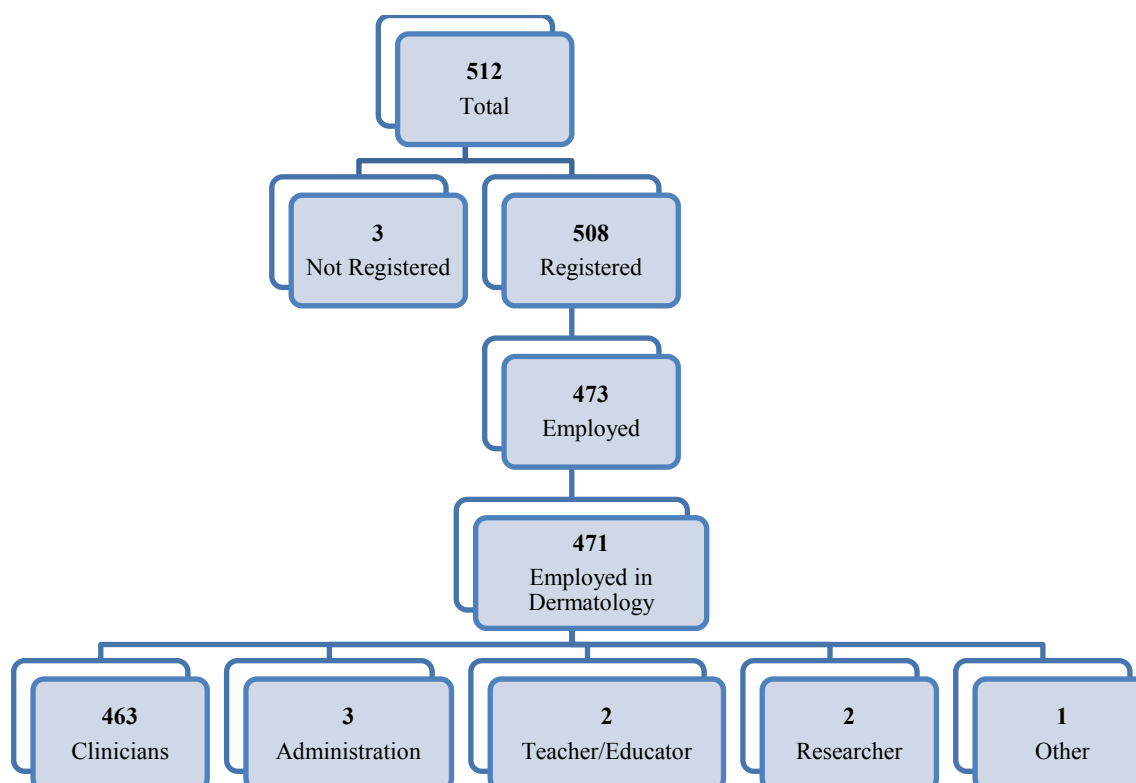
The Medical Board publishes quarterly statistics on Medical Practitioner Registrant Data<sup>2</sup>. In the September 2015 edition there were 513 registrants with a specialty of dermatology. According to the National Health Workforce Data Set (NHWDS), in 2015 there were 508 accredited dermatology specialists with current medical registration in Australia; 5 fewer 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 were three dermatology specialists who did not renew their medical registration in 2015; resulting in a difference of one between the NHWDS and the Medical Board statistics.

As can be seen in Figure 1, of the 508 accredited dermatology specialists with current medical registration, 473 (93 percent) were employed in the medical workforce. While the majority (471) worked in dermatology, two did not work in dermatology. Those who did work in dermatology were mostly clinicians (98 percent) with the remainder working as administrators, teachers/educators and researchers.

Nine percent (40) of dermatology specialist clinicians also worked in a specialty other than dermatology. The most common second specialties were: physician (17), general practice (10) and anatomical pathology (5).

**Figure 1: Dermatology workforce by job role, 2015**



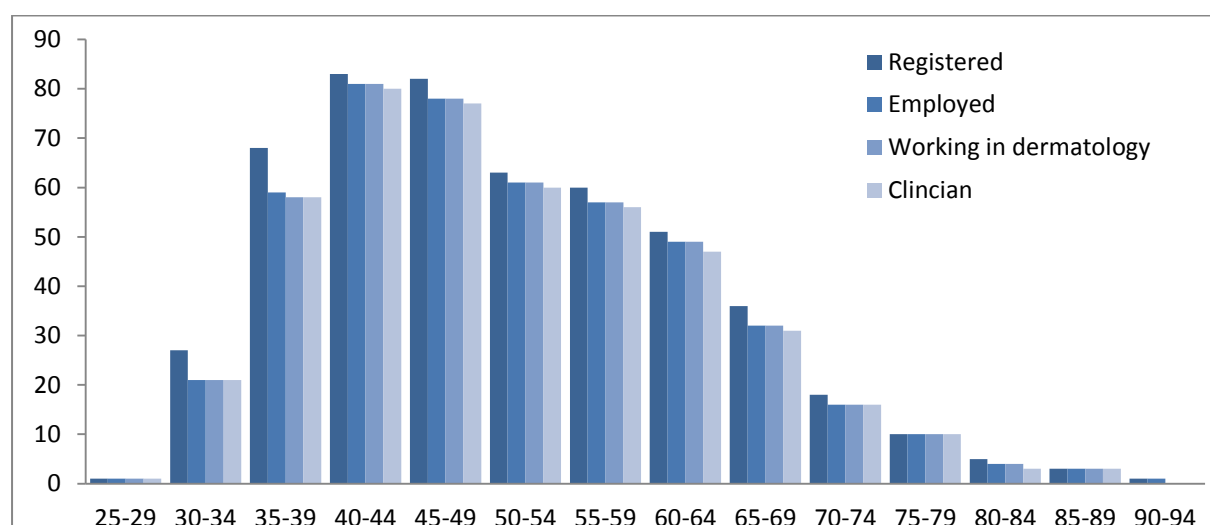
Source: NHWDS, Medical Practitioner 2015

<sup>2</sup> <http://www.medicalboard.gov.au/News/Statistics.aspx>

## Aged and Gender

The age distribution of specialist dermatologists in Australia (Figure 2) show the majority are in the 35-64 year age groups for registered, employed, clinicians and those working in dermatology. There are fewer dermatologists between 25-34 years, as at this age most have yet to complete training (see Table 3: 75 percent of trainees are aged 25-34 years). The proportion of the registered, employed, clinicians and those working in dermatology were similar within each of these age groups. The largest age group for specialist dermatologists is 40-49 years with the numbers in the workforce reducing significantly beyond 64 years of age. Due to the nature of the specialty, some dermatologists choose to practice well beyond retirement age with focus on general dermatology or lower risk cases, thus making a continued contribution to the specialist workforce.

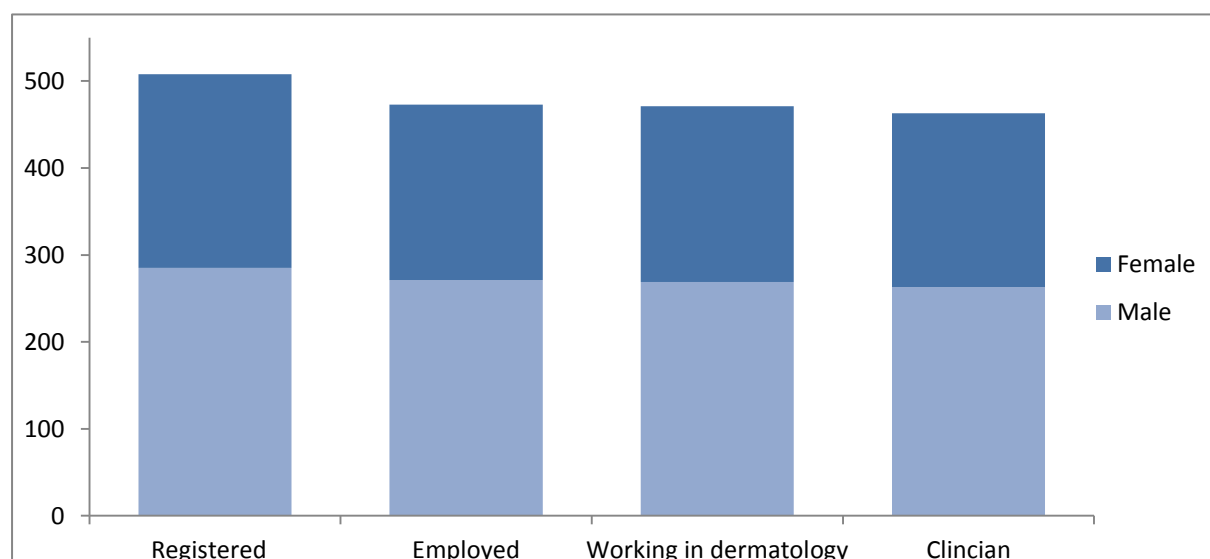
**Figure 2: Comparison of specialist dermatologists that are registered, employed, working in dermatology, clinicians (headcount) by age group**



Source: NHWDS, Medical Practitioner 2015

The gender distribution of the dermatology workforce (Figure 3) shows that approximately 57 percent are male across all groups: registered, employed, clinicians and those working in the field.

**Figure 3: Gender distribution of dermatology workforce, 2015**

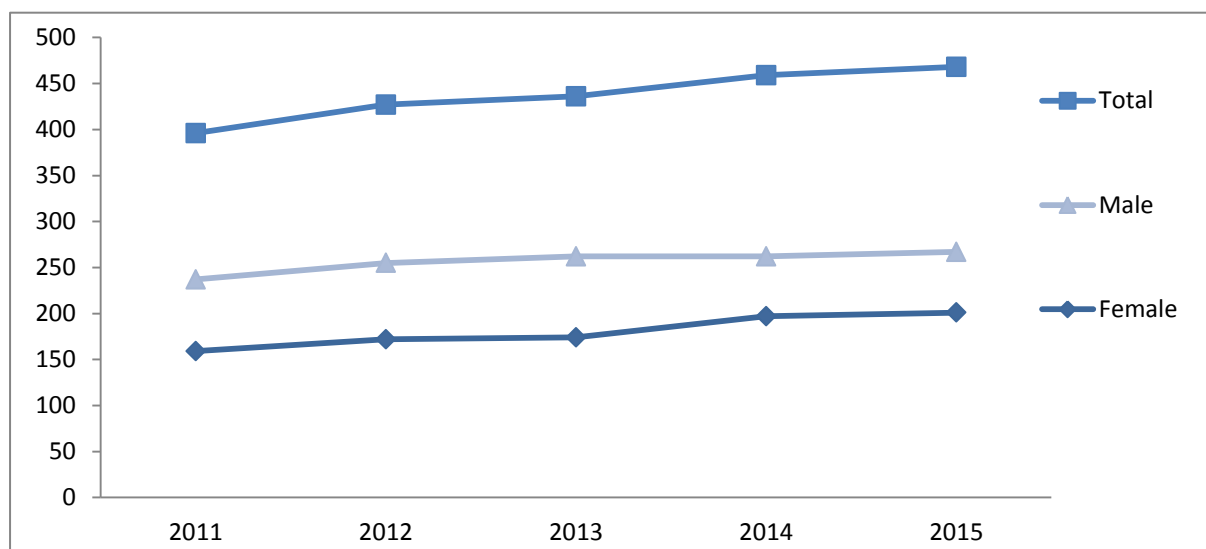


Source: NHWDS, Medical Practitioner 2015

## Growth

Figure 4 shows that the number of employed specialist dermatologists has grown over the four year period from 2011 to 2015 (average annual growth of 4.3 percent), with female specialist dermatologists experiencing the largest growth during this period at an average annual rate of 6 percent, while males have only increased by 3 percent (average annual growth). The proportion of females has increased from 40 percent in 2011 to 43 percent in 2015.

**Figure 4: Employed specialist dermatologists by gender, 2011 to 2015**

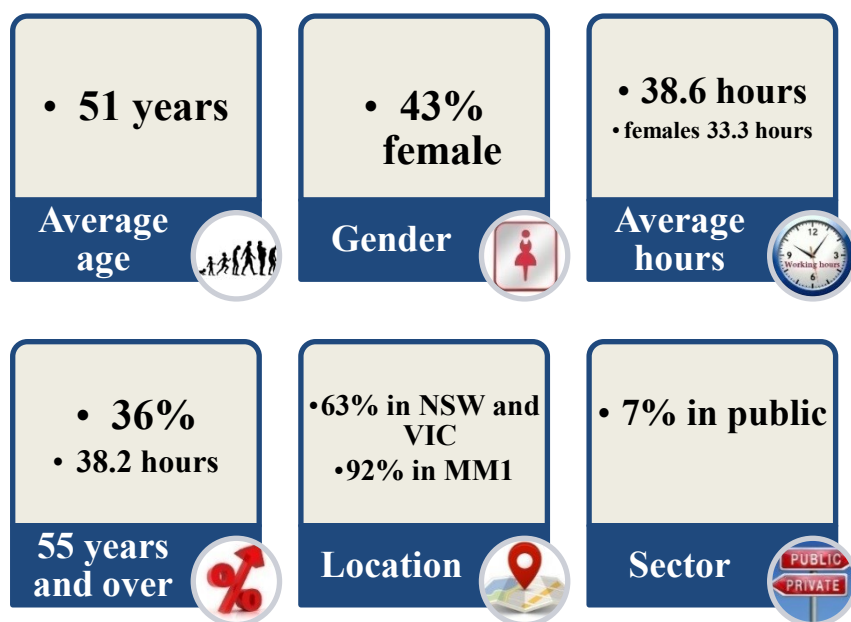


Sources: NHWDS: medical practitioners 2011 to 2015

## Current specialist clinicians

According to the 2015 NHWDS, there were 463 specialist dermatologists who indicated they were employed and working as clinicians (dermatology workforce) with the following characteristics:

**Figure 5: Demographics of the dermatology workforce, 2015**



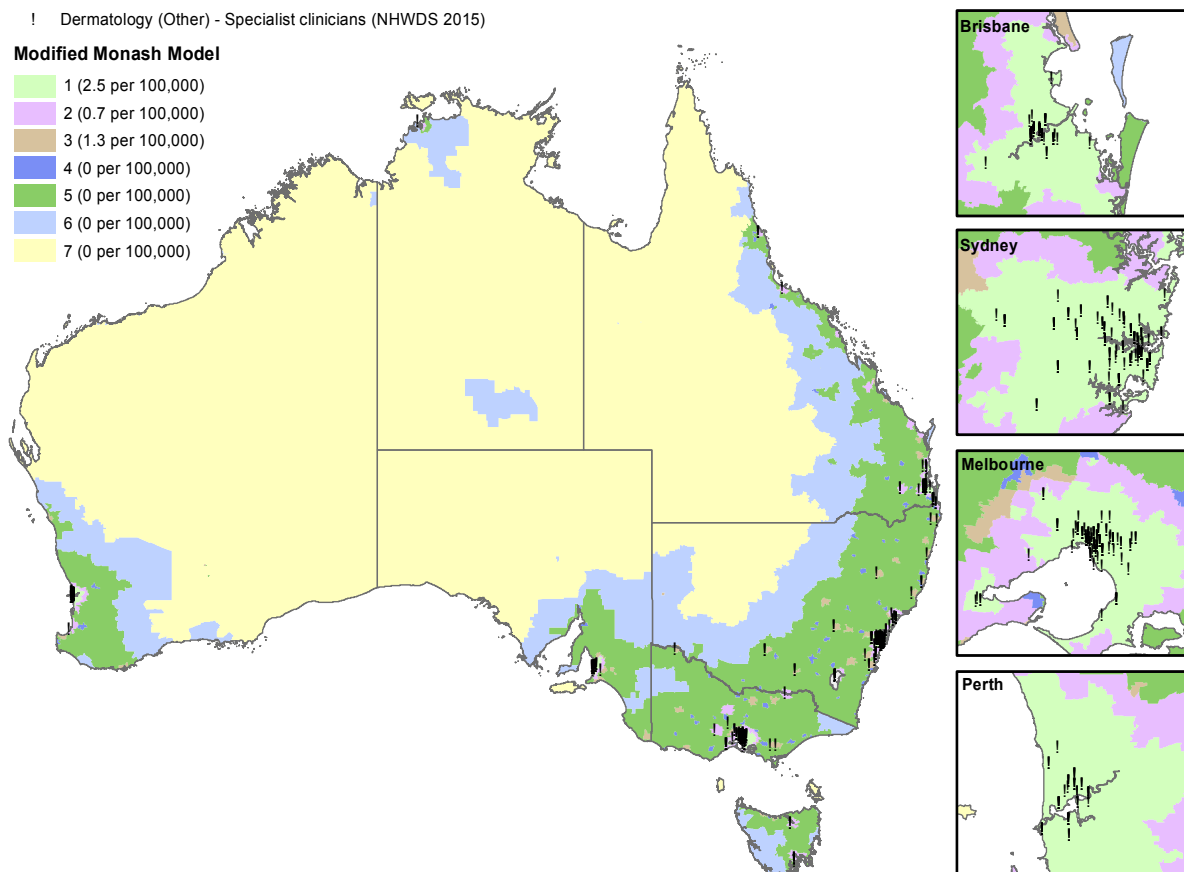
Source: NHWDS, Medical Practitioner 2015

## Distribution

Figure 6 illustrates the Modified Monash (MM) Model and density of the dermatology workforce within these areas. The MM is a new classification system that better categorises metropolitan, regional, rural and remote areas according to both geographical remoteness and town size.

The system was developed to recognise the challenges in attracting health professionals to more remote and smaller communities. MM1 indicates major cities and progresses to MM7, which indicates very remote Australia;

**Figure 6: Dermatology workforce (clinicians) by MM, 2015**



Source: NHWDS, Medical Practitioner 2015

The old 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 MM will overlay the ASGS for the purposes of administering some health workforce programs.



Table 1 defines each of these MM categories. As can be seen in the map, the dermatology workforce is located throughout Australia, but almost exclusively concentrated in Metropolitan areas (92 percent in MM1).

**Table 1: Definitions of the Modified Monash Categories**

MM Category	Definition
1	All areas categorised ASGS-RA1.
2	Areas categorised ASGS-RA 2 and ASGS-RA 3 that are in, or within 20km road distance, of a town with population >50,000.
3	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.
4	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.
5	All other areas in ASGS-RA 2 and 3.
6	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.
7	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.

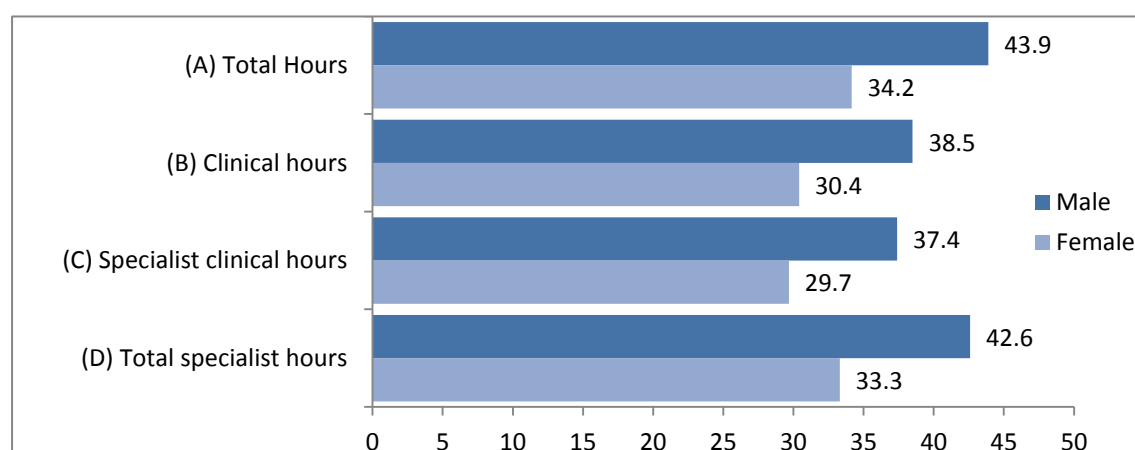
Source: [www.doctorconnect.gov.au](http://www.doctorconnect.gov.au)

## Hours worked

The Medical Practitioner workforce survey (Appendix 6) captures the hours worked at three levels, namely; total hours (A), clinical hours (B) and specialist hours (C and D). The detailed analysis of how the hours worked are determined is outlined in Appendix 3.

Figure 7 below shows the difference between the hours worked by the dermatology workforce, by gender. There is a clear difference between males and females; with females working fewer hours on average. As expected, for both males and females, the total hours are greater than the clinical hours and these are again greater than the specialist clinical hours. The difference between the total specialist (D) and specialist clinical (C) hours indicates the clinical support component (non-clinical hours) for the dermatology workforce (D). On average 5.2 hours for males and 3.6 hours per week for females is spent performing clinical support in dermatology.

**Figure 7: Average hours by total, clinical, specialist clinical and specialist total hours worked, 2015**



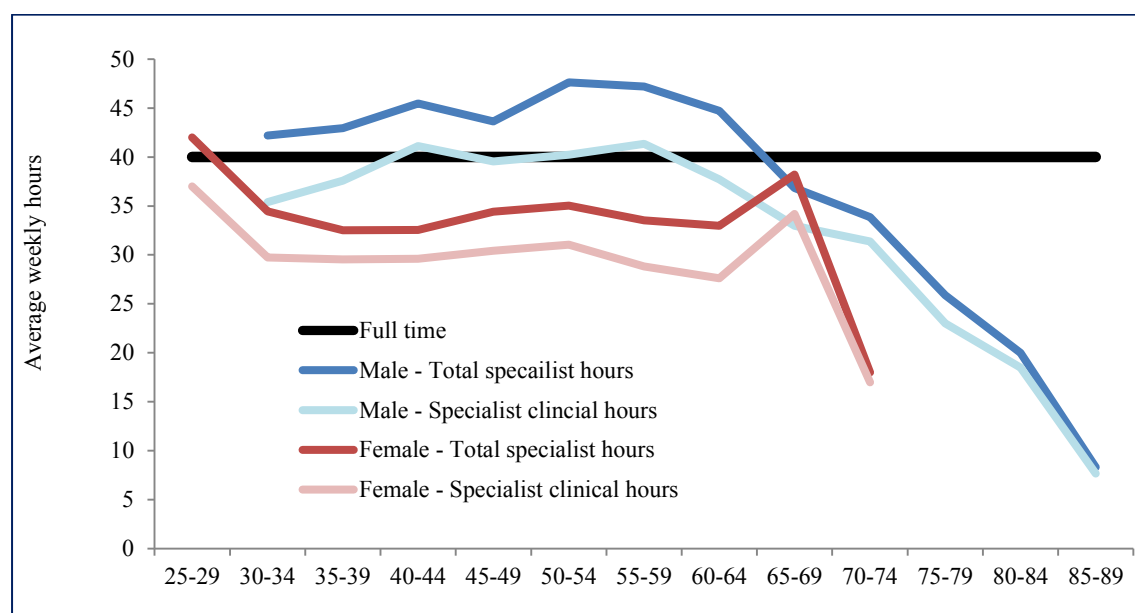
Source: NHWDS, Medical Practitioner 2015

Figure 8 below shows the difference between the total specialist hours (D) and clinical specialist hours (C) by gender and age group. The largest gap can be seen between total



specialist hours and clinical specialist hours in the 50-54 year age group for males and 60-64 year age group for females.

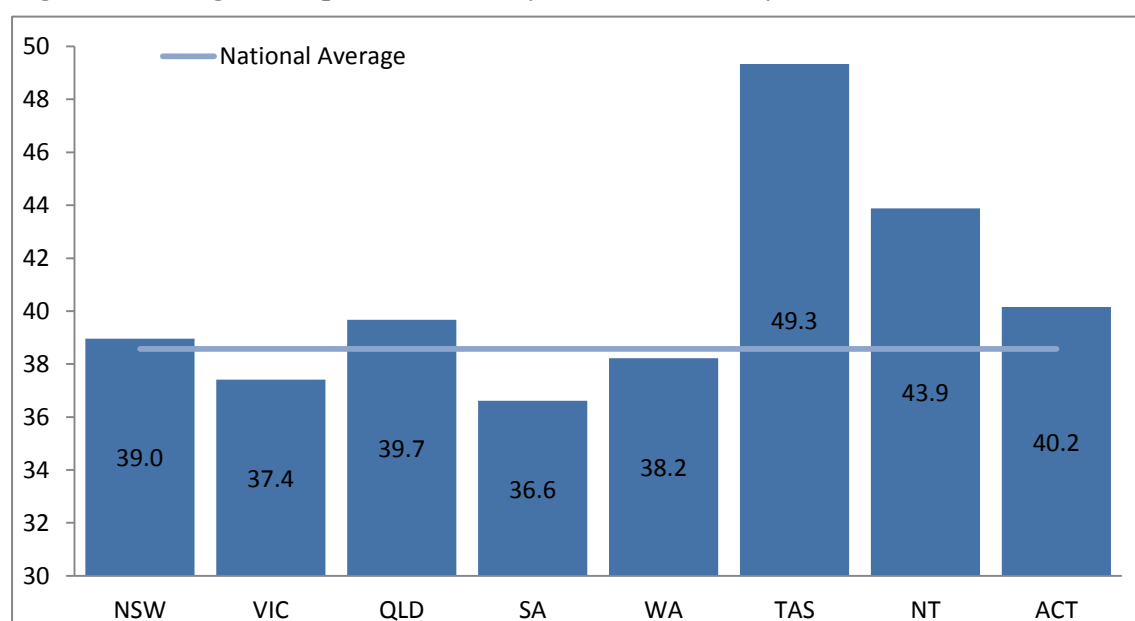
**Figure 8: Average total specialist hours and clinical specialist hours by sex and age group, 2015**



Source: NHWDS, Medical Practitioner 2015

The average total specialist hours worked by states and territories is shown below (Figure 9). Specialist dermatologists in TAS, NT, and ACT tend to work more than the national average (38.6 hours), while those in SA and VIC tend to work less than the national average.

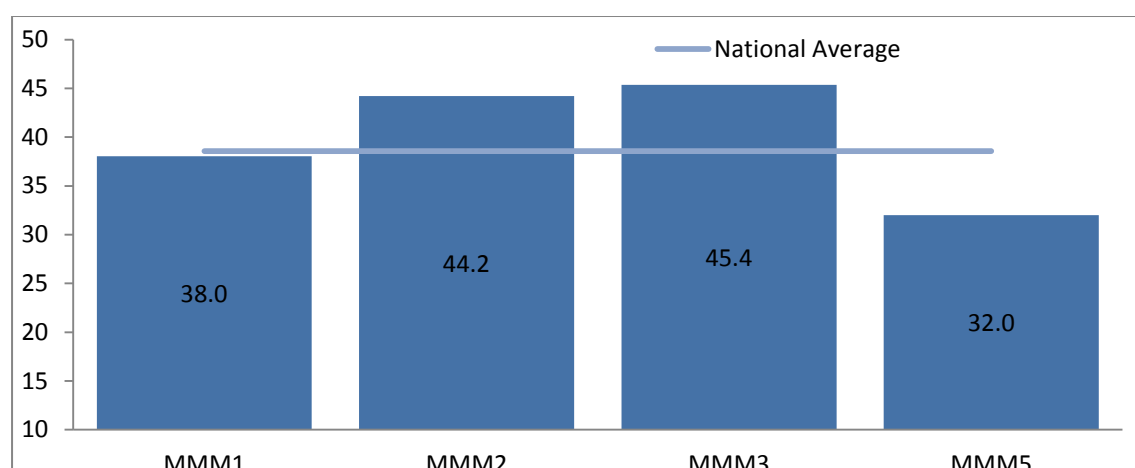
**Figure 9: Average total specialist hours by state and territory**



Source: NHWDS, Medical Practitioner 2015

Figure 10 shows there large variations in the total specialist hours worked by the very few specialist dermatologists outside MM1; ranging from 45.4 hours per week in MM3 to 32 hours per week in MM5.

**Figure 10: Average specialist clinical hours worked by MM**



Source: NHWDS, Medical Practitioner 2015

Table 2 indicates specialist dermatologists' clinical workload between sectors and states and territories. The data shows nationwide the majority of specialist dermatologists FTE occurs in the private sector (93 percent) with seven percent in the public sector.

The ACT had the highest proportion of clinical FTE in the private sector (96 percent) while Vic had the lowest (89 percent). The majority of specialist dermatologists 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: Dermatology specialist clinicians (headcount and sector: proportion of specialist clinical FTE in public and private) by state and territory**

	Headcount	Specialist clinical FTE	
		% Public	% Private
NSW	169	5.2	95.2
VIC	122	11.1	89.3
QLD	79	4.5	95.8
SA	39	9.2	91.1
WA	41	7.3	93.0
TAS	6	6.6	93.4
NT	1	7.0	95.1
ACT	6	4.7	96.1
<b>Total</b>	<b>463</b>	<b>7.1</b>	<b>93.3</b>

Source: NHWDS, Medical Practitioner 2015

## Current trainees

### Fellowship program

Traditionally, dermatology was seen as a branch of general medicine and dermatological training had been undertaken mainly through the Royal Australasian College of Physicians (RACP). The ACD was established in 1966 as the medical college responsible for the training and professional development of medical practitioners in the speciality of dermatology. The ACD is governed by a Board of Directors who are elected, appointed and co-opted by the ACD membership.

To be eligible to enter the ACD Training program registered medical practitioners must have completed 24 months in prevocational training (PGY1 and PGY2 years) and have resident status in Australia. Training Positions are available in NSW, VIC, QLD, SA and WA. There are a limited number of training positions each year and selection is competitive.

ACD training comprises 4 years (46 weeks per annum excluding leave provisions):

- Year 1: Complete the 1st year workshop, Clinical Sciences Online Competency Modules Attain a pass in the Pharmacology Examination, Summative-In-Training-Assessments (SITAs) and clinical training in an accredited training position
- Year 2: Summative-In-Training-Assessments (SITAs); and clinical training in an accredited training position.
- Year 3: Complete the 3rd year workshop, Summative-In-Training-Assessments (SITAs), clinical training in an accredited training position and research requirements.
- Year 4: Summative-In-Training-Assessments (SITAs); clinical training in an accredited training position, five prescribed modules TAE40110 Certificate IV Training & Assessment, Written Fellowship Examinations, Histopathology/Dermoscopy Fellowship Viva, and Clinical fellowship Examination
- Year 5 +: Those who do not successfully complete the examinations continue as Post training candidates.

IMGs specifically must complete their required training time as per their assessment of Overseas Trained Specialist Report in an accredited training position, with the following training/upskilling requirements to be fulfilled:

- 24 months requires completion of 104 weeks of training (including leave provision)
- 12 months requires completion of 52 weeks of training (including leave provision)
- 6 months requires 26 weeks continuous training time (including leave provision) and completion of all contractual obligations with their employer. They may be required to complete additional mentoring time as decided by the IMG Assessment Committee.

### **Trainee data**

The NHWDS data is used herein to describe trainees (those that have identified as specialist-in-training (SIT) (Appendix 4)). For the purposes of modelling, the Department has used a combination of data from the ACD and the NHWDS: Medical Practitioner 2015 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 ACD data, the 2015 medical workforce survey data reported 14 fewer (14 percent) dermatology 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 dermatology 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 ACD and that from the NHWDS. Data supplied by ACD provides the total number of trainees by training level by state and territory for 2015. Table 3 includes all domestic trainees; in 2015 there were a total of 101 trainees.

**Table 3: Trainees (headcount) by training level, age group, 2015**

Age	YR1-YR2	YR3-YR4/PTC	Total
25-29	18	4	22
30-34	24	30	54
35-39	7	9	16
40-44	0	2	2
45-49	0	5	5
50+	0	2	2
<b>Total</b>	<b>49</b>	<b>52</b>	<b>101</b>

Source: ACD, 2015

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 25-39 age groups (92 percent of total), and that there are more female trainees (66 percent of total).

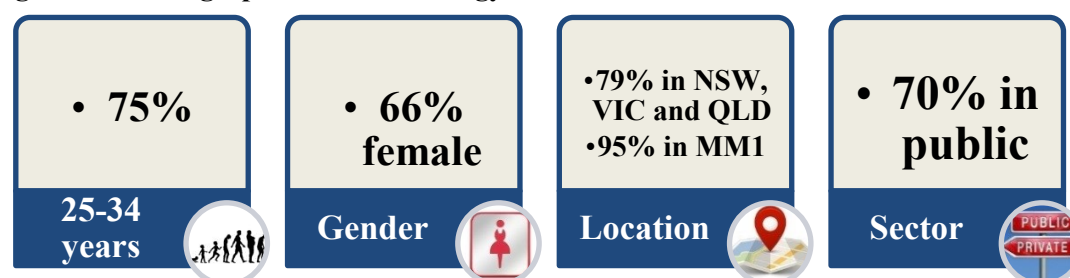
**Table 4: Trainees (headcount) by age group, gender and training year (current year of training program)**

Age	1st	2nd	3rd	4th	5th	6th	7th	8th	Unknown	Total
<b>Male</b>										
25-29	2	3	0	1	0	0	0	0	0	6
30-34	1	1	3	7	0	0	0	0	0	12
35-39	2	1	1	3	1	0	0	0	0	8
40-44	0	0	1	0	0	0	0	0	0	1
45-49	0	0	0	0	0	1	0	1	0	2
50+	0	0	0	0	1	0	0	0	0	1
<b>Total</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>30</b>
<b>Female</b>										
25-29	6	5	3	2	0	0	0	0	0	16
30-34	7	6	7	8	0	0	0	0	1	29
35-39	1	3	1	1	0	1	0	0	0	7
40-44	1	0	1	0	0	0	0	0	0	2
45-49	0	0	0	0	0	0	0	1	0	1
50+	1	0	0	1	0	0	0	0	0	2
<b>Total</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>57</b>
<b>Grand Total</b>	<b>21</b>	<b>19</b>	<b>17</b>	<b>23</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>87</b>

Unknown/not stated are included in these totals.

Source: NHWDS, Medical Practitioner 2015

According to the 2015 NHWDS for medical practitioners, there were 87 dermatology trainees in Australia, with the following characteristics:

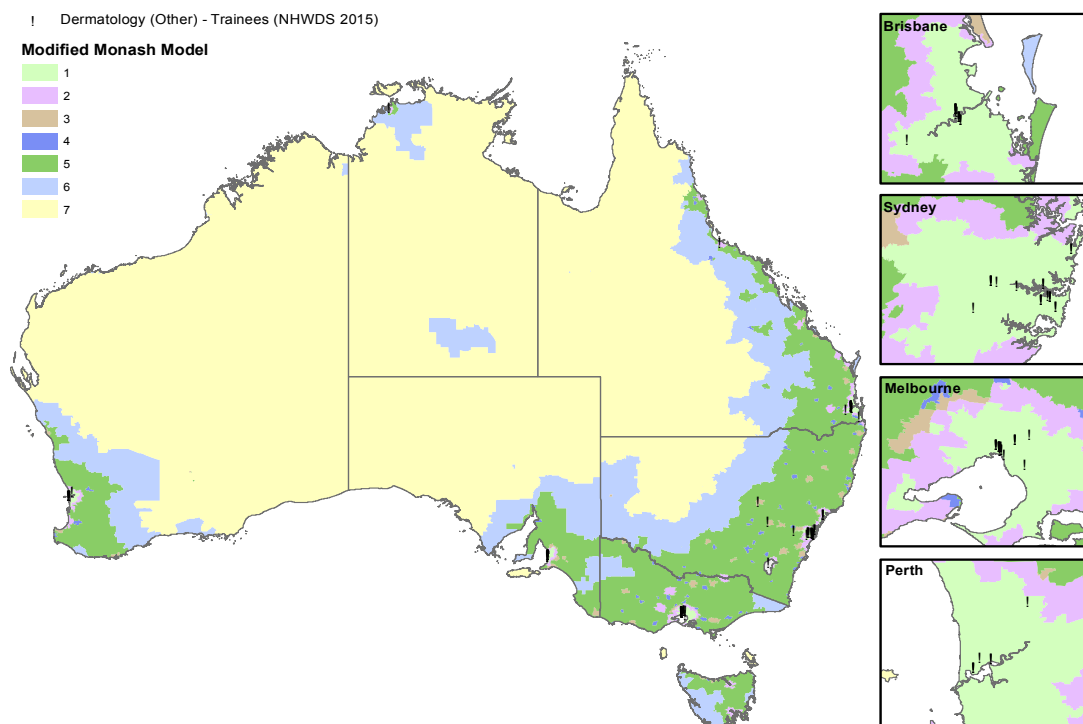
**Figure 11: Demographics of dermatology trainees in 2015**

NHWDS, Medical Practitioner 2015

Source:

The following map (**Figure 12**) gives a visual representation of the geographical location of dermatology trainees at a particular point in time during 2015.

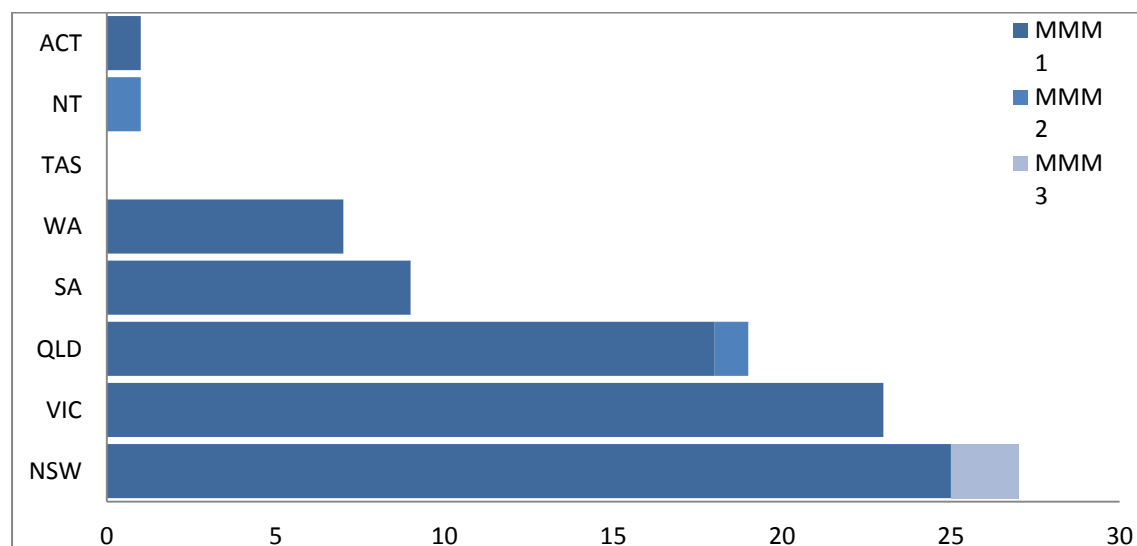
**Figure 12: Distribution of dermatology trainees**



Source: NHWDS, Medical Practitioners 2015

Figure 13 outlines the distribution of trainees and shows that almost all trainees (95 percent) are located in major cities (MM1). Only two trainees were in MM2 and MM3.

**Figure 13: Trainees by state and territory and MM, 2015**



Source: NHWDS, Medical Practitioner 2015

Table 5 details the trainees (FTE) by location, current year of training and sector. Nationwide the public sector is still dominant with 70 percent of training occurring there.

**Table 5: Trainee FTE (total hours) by training year and sector, 2015**

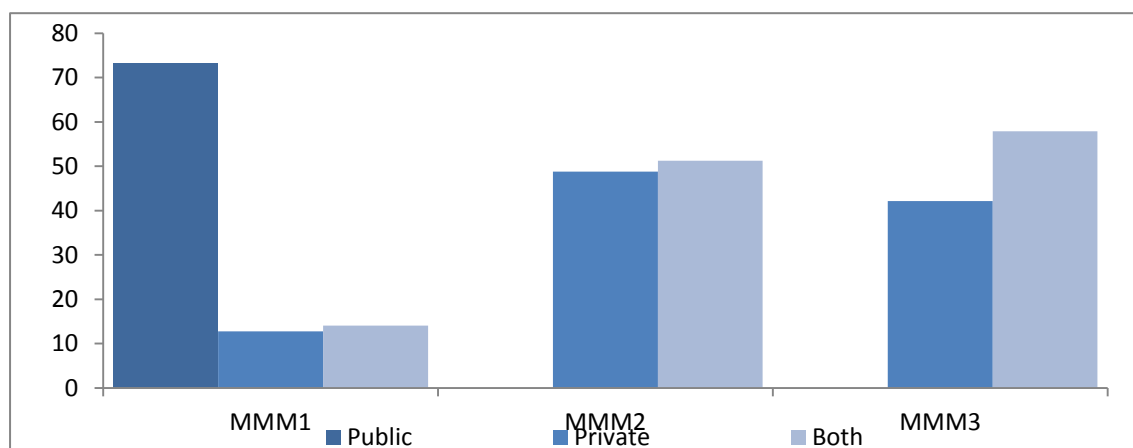
State	Sector	1st	2nd	3rd	4th	5th	6th	7th	8th	*	Total
NSW	Public	4.4	3.1	3.5	4.4	0.0	0.0	0.0	0.0	1.1	16.5
	Private	1.0	0.0	0.0	0.0	1.1	2.4	0.0	1.0	0.0	5.5
	Both	4.5	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2
VIC	Public	1.0	5.8	9.9	5.6	0.0	0.0	0.0	0.0	0.0	22.2
	Private	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1.4
	Both	2.4	1.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	4.6
QLD	Public	1.0	1.1	5.1	4.8	0.0	0.0	0.0	0.0	0.0	12.1
	Private	3.9	1.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	5.3
	Both	0.0	1.1	0.0	0.0	1.1	0.0	0.0	0.8	0.0	2.9
SA	Public	0.0	3.6	0.0	7.5	0.0	0.0	0.0	0.0	0.0	11.1
WA	Public	3.5	0.0	1.1	2.9	0.0	0.0	0.0	0.0	0.0	7.5
	Private	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
NT	Private	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
ACT	Both	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Australia	% Public	10.0	13.8	19.7	25.3	0.0	0.0	0.0	0.0	1.1	69.9
	% Private	6.9	1.0	1.4	0.4	1.1	2.4	0.0	1.0	0.0	14.2
	% Both	7.0	6.6	0.5	0.0	1.1	0.0	0.0	0.8	0.0	15.9

Source: NHWDS, Medical Practitioner 2014

\*unknown year of training

The proportion of trainees by MM (

**Figure 14)** also shows that private sector training positions are mostly available outside of metropolitan areas.

**Figure 14: Proportion of trainee FTE by geographic distribution (MM) and sector, 2015**

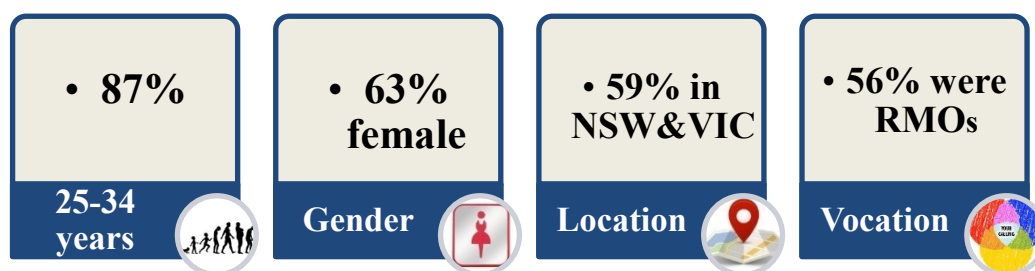
Source: NHWDS, Medical Practitioner 2015

### 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 4).

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

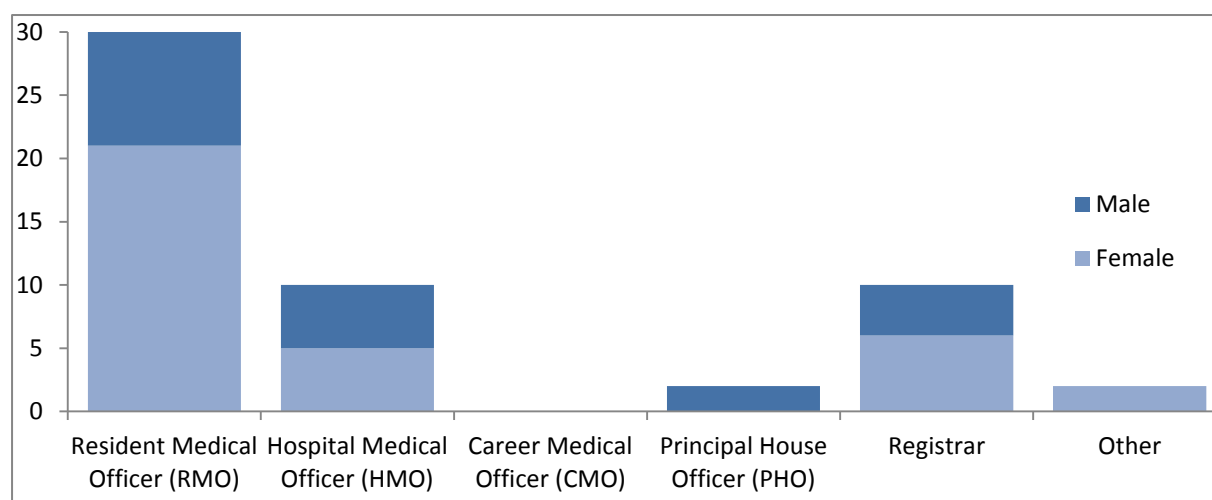
**Figure 15: Characteristics of HNS who intend to undertake dermatology training**



Source: NHWDS, Medical Practitioner 2015

The primary group of HNS who intend to undertake dermatology training are Resident Medical Officers, followed by Registrars and Hospital Medical Officers (Figure 16).

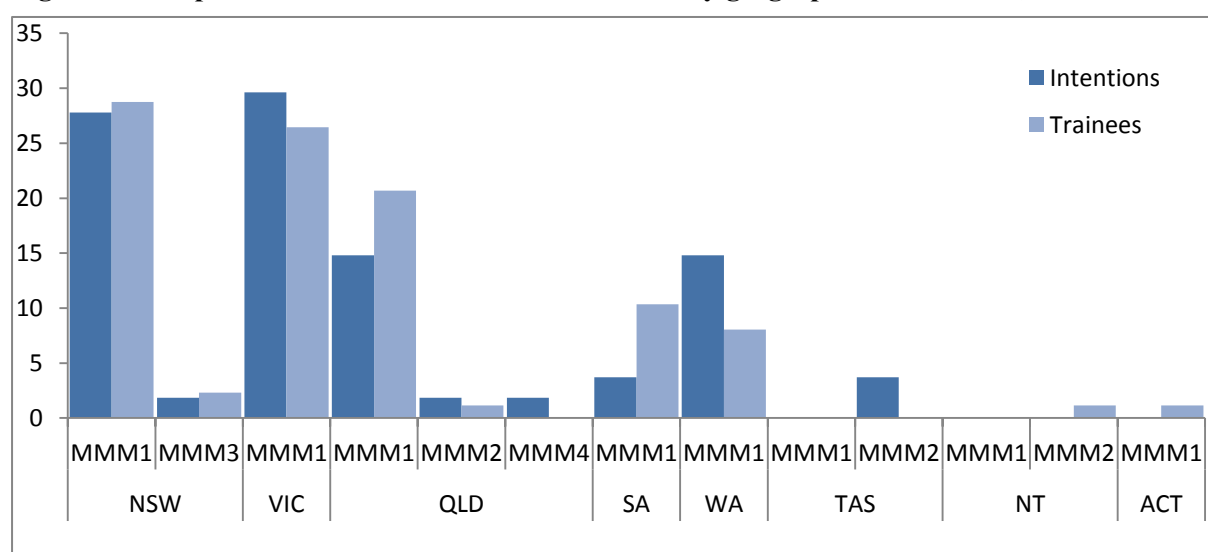
**Figure 16: HNS who intend to undertake dermatology specialist training by position, 2015**



Source: NHWDS, Medical Practitioner 2015

Similar to the location of trainees in **Figure 12** and Figure 13, HNS with intentions of training in dermatology are mostly located in the same areas as current trainees – primarily major cities in NSW, VIC and QLD (Figure 17).

**Figure 17: Proportion of HNS intentions and trainees by geographic distribution, 2015**



Source: NHWDS, Medical Practitioner 2015

## Summary of total workforce by remoteness classification

Table 6 is a broad summary of the population and remoteness characteristics of the dermatology workforce. As can be seen the number of specialist dermatologists and trainees per 100,000 population. There were 3.0 per 100,000 in MM1 areas, 0.9 per 100,000 in MM2 areas and 1.4 per 100,000 in MM3 areas. There is only 1 specialist dermatologist outside of MM3.

**Table 6: Summary of dermatology workforce (Headcount and FTE) by MM**

Modified Monash Category	2015 population	Specialists and trainees (headcount)	Headcount per 100,000 population	Specialists and trainees (FTE)	FTE per 100,000 population
1	16,885,670	508	3.0	487.9	2.9
2	2,195,310	19	0.9	20.8	0.9
3	1,543,912	22	1.4	24.9	1.6
4	873,037	0	0.0	0.0	0.0
5	1,779,535	1	0.1	0.8	0.0
6	312,590	0	0.0	0.0	0.0
7	218,161	0	0.0	0.0	0.0
<b>Grand Total</b>	<b>23,808,215</b>	<b>550</b>	<b>2.3</b>	<b>534.4</b>	<b>2.2</b>

Note – Trainee FTE is based on clinical hours and specialist FTE is based on total specialist hours.

Source: NHWDS, Medical Practitioner 2015

## General Practitioners providing skin cancer services

### Background

Patients can and are encouraged to have skin checks from their GP. A GP can also refer patients to a dermatologist for diagnosis and ongoing management or indeed for a skin check. GPs may be able to treat some skin cancers, or may refer to a dermatologist for a second opinion or treatment.

Patients can also attend a skin cancer clinic for a skin check. These are walk-in, no referral-needed GP-run clinics marketing themselves as holding a special interest in skin cancer. Note the potentially misleading use of language pitting ‘special interest’ in contrast with ‘specialist’. Most doctors who work in skin cancer clinics are GPs, not dermatologists or other specialists. Not all these GPs are vocationally registered specialist GPs with Fellowship of either the Australian College of Rural and Remote Medicine (ACRRM) or the Royal Australian College of General Practitioners (RACGP). Although some may have undergone extra training, GPs are not required to have special qualifications to work in a skin cancer clinic<sup>3</sup>. Research has shown that GPs working in general practice and those working in skin cancer clinics diagnose skin cancer with similar accuracy<sup>2</sup>. Dermatologists have been shown to have greater skin cancer diagnostic accuracy than referring GPs.<sup>3</sup>

Unfortunately many members of the general public are unable to differentiate between a medical specialist and a GP with a “special interest” based on the information they are presented with. In many cases, consumers believe they are attending a medical specialist/dermatologist when in fact attending a skin cancer clinic and receiving care from GP without specialist qualifications.

<sup>2</sup> <http://www.cancercouncil.com.au/wp-content/uploads/2013/04/Getting-your-skin-checked.pdf>

<sup>3</sup> Tran, H et al. Assessing diagnostic skill in dermatology: A comparison between general practitioners and dermatologists. Australasian Journal of Dermatology (2005) 46, 230–234.



Skin cancer diagnosis and treatment is a core competency for ACRRM and RACGP Fellows. There are a variety of training and upskilling options including certificates, short courses and workshops offered by national private providers; Australian and international universities, as well as a Certificate of Primary Care Dermatology through the RACGP (in partnership with the ACD) for GPs who wish to extend their skills. The Skin Cancer College Australasia (SCCA) also offers GP training, including awarding of ‘SCCA-accredited doctor’ status and a ‘Fellowship’ of the College; this and other educational offerings by this provider are not delivered by dermatologists or other specialists. These courses may also be taken by non-vocationally registered doctors who wish to work in primary care skin cancer clinics. None of these skin cancer courses or qualifications are accredited by the Australian Medical Council.

This raises concerns about institutions setting their own teaching standards in the absence of formal certification and the impact on patient safety and outcomes, as well as misleading the general public. As GPs represent the first line of patient care, ACD encourages GPs to undertake upskilling and continuing medical education in skin cancer surveillance and management.

### Current MBS services

The Medicare Benefits Schedule (MBS) data is able to provide a partial picture of the GP skin cancer workforce. This only includes GPs who have a Medicare provider number and bill Medicare for the skin cancer services. This does not include services provided in a public hospital. A GP may have more than one provider number.

The definition of a GP providing skin cancer services is based on analysis conducted by the department (using SAS enterprise guide) and advice from departmental medical advisers, whereby the results of the modelling indicates that each GP who’s total billings for skin cancer services exceed 30% of their overall services is in a skin cancer clinic for the purpose of this report.

Using 2015 Medicare data this resulted in a total of 379 GPs classified as performing a high level of skin cancer services, averaging 2,107 services per year. These are assumed to be effectively working in skin cancer clinics for the purpose of this report. A further 1,140 were performing a moderate level of services at an average 589 per year. Table 7 shows a classification of GPs based on the number of skin cancer services provided in 2015. The group which provides a high level of services are classified as skin cancer clinic GPs for the purpose of this report. This group represents approximately 1 percent of the GP workforce, yet performs 29 percent of all GP skin cancer services at a rate 44 times higher than the remainder of the GP workforce.

**Table 7: Summary of Medicare skin cancer services by service group, 2015**

Service Group (1 - low service, 3 - high service)	Number of provider numbers*	Services provided	Average yearly Skin Cancer services per practitioner
Low level of skin cancer services	38,230	1,190,366	31
Moderate level of skin cancer services	1,140	674,460	589
High level of skin cancer services	379	798,643	2,107

\*refers to provider numbers identified as a GP through Medicare Derived Medical Specialty

Table 8 shows that each year skin cancer clinic GPs are conducting services approximately 1.5 times that of MBS services by specialist dermatologists.

**Table 8: MBS items billed in 2014 & 2015 by skin cancer clinic GPs**

Year	Services		Patient Load***	
	Specialist Dermatologist*	Skin Cancer GP**	Specialist Dermatologist*	Skin Cancer GP**
2014	519,811	782,156	267,228	295,243
2015	531,428	798,643	271,522	297,713

\*refers to all "skin cancer" items billed by specialist dermatologists, \*\*refers to skin cancer services billed by GPs classified as skin cancer clinic GPs, \*\*\*patient load is based on unique patients in Medicare

Table 9 gives the breakdown of the 379 skin cancer GPs identified in 2015 by state. QLD and NSW have the highest concentration of skin cancer GPs and the highest number of services per GP.

**Table 9: Headcount GP Skin cancer by state and number of services provided, 2015**

State	Headcount	Services
Australian Capital , Northern Territory & Tasmania*	10	6,927
New South Wales	149	320,193
Queensland	144	332,563
South Australia	9	18,080
Victoria	29	49,858
Western Australia	38	68,947
<b>Total</b>	<b>379</b>	<b>798,643</b>

\*combined due to low service count Table 10 shows the top ten items claimed by skin cancer clinic GPs of the 680,759 services provided. Item 30071 for diagnostic biopsy covered 29 percent of all services, with item number 30192 sitting around 23 percent of services.

**Table 10: Top 10 MBS items claimed by skin cancer GPs, 2015**

MBS items (top ten items)	Services
30071 - Diagnostic Biopsy Of Skin Or Mucous Membrane,	234,674
30192 - Premalignant Skin Lesions	191,621
30195 - Benign Neoplasm Of Skin	99,672
31280 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	41,521
31205 - Tumour	32,567
31265 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	27,408
31285 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	24,056
30202 - Malignant Neoplasm Of Skin Or Mucous Membrane	19,919
31270 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	16,711
31255 - Basal Cell Carcinoma Or Squamous Cell Carcinoma (Including Keratocanthoma)	15,709
<b>Total</b>	<b>703,858</b>

In comparison Table 11 shows the top ten procedural skin MBS items claimed by dermatologists. Item 30071 for diagnostic biopsy covered 49 percent of all services, with item number 30192 sitting around 28 percent of services.

**Table 11: Top 10 Procedural skin MBS items claimed by Dermatologists, 2015**

MBS items (top ten items)	Services
30071 - Diagnostic Biopsy Of Skin Or Mucous Membrane,	220,094
30192 - Premalignant Skin Lesions	128,407
31280 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	23,169
30202 - Malignant Neoplasm Of Skin Or Mucous Membrane	19,990
31205 - Tumour	19,519
30195 - Benign Neoplasm Of Skin	17,802
31265 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	13,246
31285 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	13,246
31270 - Basal Cell Carcinoma Or Squamous Cell Carcinoma	9,752
31255 - Basal Cell Carcinoma Or Squamous Cell Carcinoma (Including Keratocanthoma)	7,976
<b>Total</b>	<b>453,231</b>

## **Workforce projections**

### **Supply**

Health professionals who are registered as a dermatology specialist 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 2015 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 dermatology training, or working towards the specialisation, are excluded at this point of modelling.

### **Demand**

The demand forecasts use a combination of Acute Inpatient Hospital (AIH) and Medicare Benefits Schedule (MBS) data to measure increases/decreases in demand for dermatology on a per capita basis. The acute inpatient 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 dermatology 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.

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**

Four different projection scenarios were conducted for dermatology. Three of the scenarios utilise total specialist hours. A clinical hour scenario is also presented for comparison purposes. Please refer to the discussion in the 'Hours worked' section (page 43) regarding the issues associated with using total clinical hours for modelling individual specialties.

The three different specialist hours scenarios are based on the same training pipeline, but applying different methods to balance the workforce. The pipelining analysis for this can be found in Table 16.

The initial year for the projections is 2016, and it is assumed that supply and demand is in balance in this year. The demand rate for dermatology is estimated to grow at 4.5 percent. The inflow of new fellows uses the results from the trainee pipeline, while the IMG 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 and changes to the number of new college fellows.

### **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  $\pm 3$  percent. That is, if the

workforce is projected to be in under or oversupply to the magnitude of 3 percent 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 the dermatology specialty. 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: Static FTE intake

The projections in Table 12 indicate that the workforce would be in undersupply during the projection period. By 2030, the deficit accumulates to approximately 14 percent of the required number of dermatologists.

**Table 12: Static FTE intake scenario 1**

Headcount	2016	2018	2020	2025	2030
<b>Supply</b>	<b>480</b>	<b>515</b>	<b>553</b>	<b>636</b>	<b>715</b>
<b>Supply (FTE)</b>	<b>462</b>	<b>492</b>	<b>520</b>	<b>582</b>	<b>652</b>
<i>New fellows</i>	18	19	20	22	22
<i>Overseas trained new fellows</i>	5	5	5	5	5
<i>Exits (% of supply)</i>	1.34%	1.36%	1.76%	1.49%	1.62%
<b>Demand</b>	<b>480</b>	<b>526</b>	<b>577</b>	<b>702</b>	<b>814</b>
<b>Demand (FTE)</b>	<b>462</b>	<b>502</b>	<b>542</b>	<b>643</b>	<b>743</b>
<b>Excess/Shortfall</b>	<b>0</b>	<b>-11</b>	<b>-24</b>	<b>-66</b>	<b>-99</b>
<b>Excess/Shortfall (FTE)</b>	<b>0</b>	<b>-10</b>	<b>-22</b>	<b>-60</b>	<b>-90</b>

In the above table headcount refers to the actual number of dermatology new fellows combined with existing workforce supply projections. The Health Workforce Planning Tool (HWPT) assumes that the hours worked by each age cohort remain unchanged over time. Therefore the Excess/Shortfall in FTE by 2030 is also included. When total specialist hours are considered, the shortfall in 2030 is 90 FTE.

The following two scenarios indicate what may happen the training intake was increased to reduce the deficit and balance the workforce.

### Scenario 2: Balancing the static FTE

In scenario 1 above, the deficit of 99 dermatologists has been accumulated over the 15 year projection period (2016-2030). Changes could only really occur to the training intake from 2018 with the additional new fellows only starting to flow through from 2022. To achieve balance in the workforce over nine years (2022-2030), this would require an increase of 8.7 FTE to the intake annually from 2018 to 2025. Table 13 shows the result of a fully balanced workforce. This change, results in a reduction in the undersupply from 14 percent of the required number to 0.5 percent.

**Table 13: Scenario 2: Balancing the static FTE scenario**

Headcount	2016	2018	2020	2025	2030
<b>Supply</b>	<b>480</b>	<b>515</b>	<b>553</b>	<b>664</b>	<b>813</b>
<b>Supply (FTE)</b>	<b>462</b>	<b>492</b>	<b>520</b>	<b>608</b>	<b>742</b>
<i>New fellows</i>	18	19	20	33	35
<i>Overseas trained new fellows</i>	5	5	5	5	5
<i>Exits (% of supply)</i>	1.34%	1.36%	1.76%	1.42%	1.43%
<b>Demand</b>	<b>480</b>	<b>526</b>	<b>577</b>	<b>703</b>	<b>815</b>
<b>Demand (FTE)</b>	<b>462</b>	<b>502</b>	<b>542</b>	<b>643</b>	<b>743</b>
<b>Excess/Shortfall</b>	<b>0</b>	<b>-11</b>	<b>-24</b>	<b>-38</b>	<b>-1</b>
<b>Excess/Shortfall (FTE)</b>	<b>0</b>	<b>-10</b>	<b>-22</b>	<b>-35</b>	<b>-1</b>

### Scenario 3: Balancing the static FTE (pro rata deficit)

The following scenario pro rates the deficit that has been accumulated over the 15 year projection period (2016-2030) to the nine years (2022-2030) in which change is achievable. This means the workforce would not be balanced by 2030, but balances for a nine year deficit of 59 dermatologists. This would require an increase of 5.2 FTE to the intake annually from 2018 to 2025. Further increases to the training program intake could be made past 2025 which would balance the workforce beyond the projection period. Table 14 shows the result of a pro-rated balancing of the workforce. This change results in a reduction in the undersupply from 14 percent of the required number, to five percent.

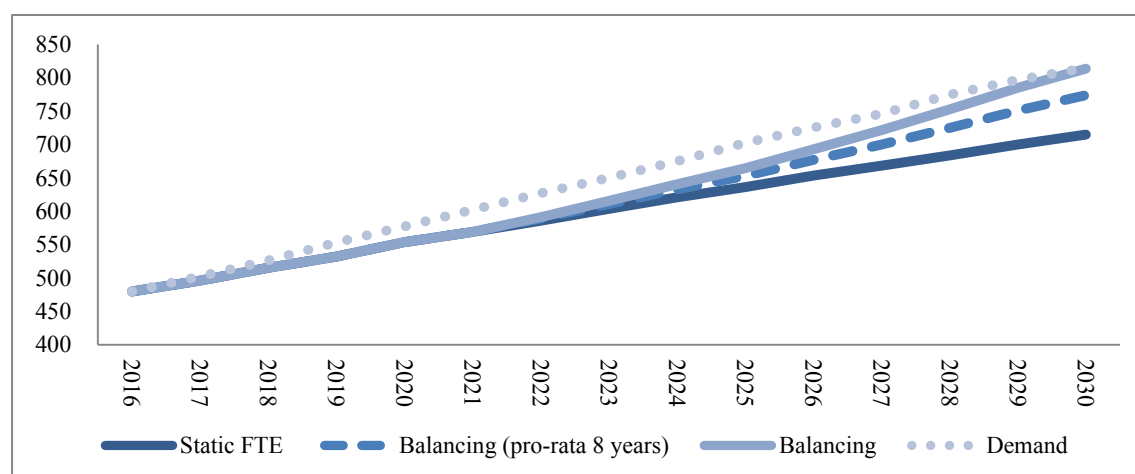
**Table 14: Balancing the static FTE (pro rata deficit eight years) scenario 3**

Headcount	2016	2018	2020	2025	2030
Supply	480	515	553	653	774
Supply (FTE)	462	492	520	598	706
New fellows	18	19	20	28	30
Overseas trained new fellows	5	5	5	5	5
Exits (% of supply)	1.34%	1.36%	1.76%	1.45%	1.50%
Demand	480	526	577	702	815
Demand (FTE)	462	502	542	643	743
Excess/Shortfall	0	-11	-24	-49	-41
Excess/Shortfall (FTE)	0	-10	-22	-45	-37

### Scenario comparison

The following figure shows the differing effects of the scenario modelled over the projection period and how they come into balance by 2030.

**Figure 18: Summary of the projections**



### Ongoing monitoring

These supply and demand projections are only the first step of the process in determining supply and capacity. The next step is determining the training pathway and trajectory. The development of such a training plan begins to understand the issues and recognise the drivers and/or barriers that a long term plan will need to address to maintain adequate supply to meet demand in the future. This will also be closely monitored by continually adjusting the modelling projection to address policy changes and other government initiatives that are likely to impact on the supply and demand for dermatology. However, it does not factor in unmet demand.

## Training Analysis Pipeline (TAP)

The purpose of the Training Analysis Pipeline (TAP) is to project future vocational training numbers entering the training program as a basis for forecasting the number of domestic and IMG new fellows as inflows into the workforce projections.

Table 15 shows the predicted movement of trainees from entering the ACD training program right through to becoming a new fellow (Domestic or IMG) in a pipeline. The methodology focuses on moving through the training years as there are no barriers until fellowship exams. The transitions are based on data requested from the ACD to assist in more accurately determining the movement.

**Table 15: TAP transition calculation**

Movements	Percent	Comments
New intake	102 FTE	Balances total number of trainees to available FTE positions
Year 1 to Year 1	4%	
Year 1 to Year 2	96%	
Year 2 > Year 2	18%	
Year 2 > Year 3	82%	
Year 3 To Year 3	12%	
Year 3 To Year 4	88%	
Year 4 To Post Training Candidate	11%	
Year 4 To New Fellow	89%	
Post Training Candidate to Post Training Candidate	86%	
Post Training Candidate to New Fellow	14%	
Retention rate	98%	Year 1 – Year 4
	93%	Post Training Candidate
Through rate (4 year)	98%	If everyone FT and complete in 60 months
	93%	Approx. actual (incorporates PT, interrupted etc.)
IMGs	9	Per year (based on ACD advice)
<i>Substantially comparable</i>	1	Per year (average 2014-2015)
<i>Partially comparable</i>	40%	Of IMGs (based on ACD advice)
<i>Post training candidate</i>	60%	Of IMGs (based on ACD advice)
IMGs new fellow	38%	Percent of IMGs in previous 2 years

The transition rates in

Table 15 are data driven and calculated from the changes between two time points (2014 and 2015 ACD data). These rates are then consistently applied to pipeline trainees. Other assumptions based on 2014 and 2015 data, include:

- Every year there are 12 percent of trainees who are part time or interrupted; and
- Not all training positions are able to be filled all of the time (five percent of training FTE positions unfilled across the year).

ACD have advised that the total number of training places is limited to 102 FTE from 2017 onwards, therefore the intake each year is dependent upon the number of trainees that return from interrupted training, share training positions and the number of partially comparable IMGs balanced against the number of positions that become available through people completing the program, becoming a post training candidate or withdrawing from the program.

The number of partially comparable IMGs has decreased comparatively to 2014-2015 based on advice from ACD around changes to their comparability assessments. There are also very few substantially comparable IMGs which ACD advised was due to most candidates lack of experience in skin cancer. The ACD could lead provision of such education.

Table 16 below shows the method for the new intake each year which restricts the total number of trainees in training positions to 102 FTE. The total number of trainees in the program increase as the number of post training candidates increases. The number of partially comparable IMGs has decreased comparatively to 2014-2015 which results in more training places being available to domestic trainees. The TAP results in 394 new fellows from 2016 - 2030.

**Table 16: Static FTE intake TAP, 2010 – 2030**

Training program	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
New intake	23	20	26	22	26	19	29	20	24	20	25	22	23	21	24	23	23	22	23	23	23
YR1	42	44	42	46	27	19	30	21	25	21	26	23	24	22	25	24	24	23	24	24	24
YR2					22	30	23	32	26	28	25	29	27	28	26	28	28	28	27	27	28
YR3	45	54	57	61	26	21	27	22	29	24	26	24	27	25	25	24	26	26	25	25	25
YR4					18	23	19	24	20	25	21	23	21	24	22	23	21	23	23	23	22
Post training candidate					6	8	9	9	10	10	11	11	11	11	12	12	12	12	12	12	12
Domestic total	87	98	99	107	99	101	107	108	109	109	109	110	110	110	110	110	111	111	111	111	111
IMG Substantially comparable					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IMG Partially comparable		4	7	1	7	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
IMG PTC					1	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
IMG total		4	7	1	9	11	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Total trainees in training positions					100	100	101	102	101	102	101	102	102	102	101	102	102	102	102	102	102
Total trainees in pipeline		102	106	108	108	112	115	116	117	117	117	118	118	118	118	118	119	119	119	119	119
Domestic new fellows	21	15	17	17	24	17	22	18	22	19	24	20	22	20	22	21	22	21	22	22	22
IMG new fellows	5	6	3	6	5	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Total New Fellows	26	21	20	23	29	23	28	23	27	24	29	25	27	25	27	26	27	26	27	27	27

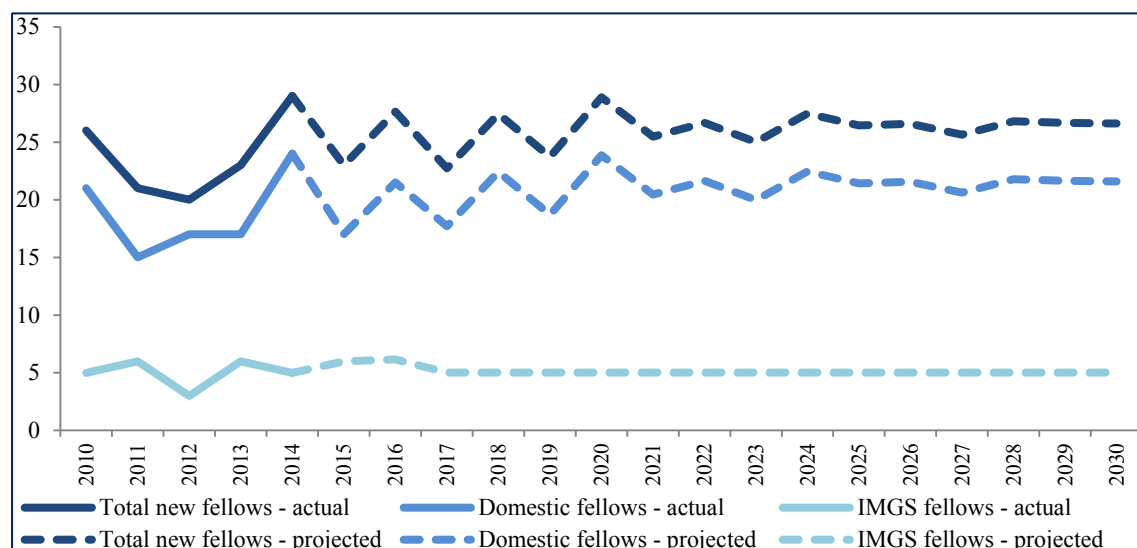
	MTRP
	College data
	Calculated
	Projected



## Results of TAP

Figure 19 shows the historical number of domestic and IMGS new fellows and the forecasted number of domestic and IMGS new fellows, based on the above pipeline and transition rates. The IMGS new fellows have been held constant.

**Figure 19: New Fellows pipeline projections**



Source: MTRP reports and training pipeline projections based on historical trends

## 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 ACD. 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 dermatology 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 medial graduates move from intern to prevocational to vocational training positions. This is reflected in the 30 percent in vocational training positions with 15,478 in 2011 moving to 20,069 by 2015. 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 Program (STP), which provides funding for specialist training positions in expanded settings for 900 training rotations a year in 2014 and to be continued to 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 vocational training lies largely with jurisdictions (for post-graduate and specialist training in the public sector) and responsibility for organising vocational training lies with the ACD (who operate Australia 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 ACD and professional bodies.

## **Results of consultation**

The following section presents the views of the ACD. These different views below highlight the need to update the modelling on a regular basis ensuring the latest data and current trends of the workforce are reflected in the studies.

### **College consultation**

The focus of this paper is assessment of current dermatology services, projected requirements into the future and implications for training to achieve the best outcome for patients and the community. One key feature of the report is the projected number of dermatologists required by 2030. The ACD welcomes the forward thinking nature of the report and supports the process.

### **Supervisory capacity requirements**

The ACD has indicated the following:

- The number of consultants required to supervise and deliver the full dermatology training curriculum is a potential limitation on the expansion of the ACD training program.
  - o At the level of the individual trainee, the training program usually consists of eight rotations (six-monthly rotations across four years). For each rotation, a minimum of three Clinical Supervisors are required, in addition to one hospital Head of Department (HoD) and one Supervisor of Training (SoT) for the institution/training network. Furthermore, College assigns one Director of Training for each State Faculty to co-ordinate all training across all sites.
  - o Assuming each rotation sits within a different hospital/training network, up to 41 consultants could be involved in delivering the full four year training program to one trainee. In actuality, this is considerably reduced due to multiple supervisory positions often being filled by one consultant, fewer consultants in regional/rural areas, and rotations being placed within the same hospital or training network reducing the number of SoTs and HoDs.
- The supervisory capacity of ACD Fellows tends to be stable each year; in 2016, approximately 160 College Fellows – almost a third of all dermatology consultants in Australia – were involved in training of the 99 FTE registrars. This suggests an already high level of engagement amongst dermatologists and considerable personal investment in the education of future specialists.
- The average age of the dermatology workforce is 51 years. The rate of retirement of consultants will impact the supervisory workforce capacity and it is critical to

- impart vital teaching skills to the younger workforce to ensure that the highest quality training is maintained.
- Incremental increases in the number of training positions required to curb dermatology workforce shortages will necessitate a corresponding increase in supervisory capacity – this is essential to guarantee a quality training program and prevent an untenable burden on the existing supervising workforce.
- The setting of training is also a key consideration with respect to supervisory capacity:
  - In order to gain experience across the four curriculum domains (clinical sciences and pharmacology; medical dermatology; procedural dermatology; and professional qualities) registrars should ideally be placed in rotations within both general dermatology and sub-speciality clinics, requiring supervision by consultants with relevant clinical expertise at these sites.
  - Training of dermatologists requires exposure to consultant dermatologists with sub-specialist capabilities. Clinical subspecialties with dermatology include surgical, paediatric, allergy, occupational, cosmetic, dermatopathology, Mohs surgery and radiotherapy. There is therefore a need for some dermatologists to sub-specialise and for patients with complex needs to access sub-specialised services. By necessity most sub-specialised services are found in major centres with the infrastructure and patient base to support them.
  - Apart from clinical sub-specialties within the discipline of dermatology there are non-clinical roles which are filled by consultant dermatologists such as University research, corporate research, education, administration and policy. These roles may not directly service patients in the form of consultation and treatment but they support the health system that does. Ascertaining the requirements for, and providing, clinical and non-clinical sub-specialists dermatologists for our community is also a consideration in workforce planning
  - Sub-specialisations within dermatology may further impact the number of consultants available to deliver a general dermatology training program. The effect of certain sub-specialisations cannot currently be deduced; for example, as cosmetic services are not represented in MBS utilisation data, it is difficult to determine the proportion of time spent performing these procedures, compared with medical and surgical services, across the profession. Ascertaining the skill set distribution will shed light on supervisory capacity in the future.

### **Identify non-workforce based requirements and limitations**

- There is some evidence that there are cost inefficiencies from over-servicing. These resources could be better deployed if more tightly controlled. These issues were explored in depth by the House of Representatives Standing Committee on Health<sup>4</sup>. In recognition of the high rate of skin cancer in Australia, GPs, rural nurses and allied health professionals were recommended to have training in identification of skin cancer.

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<sup>4</sup> House of Representatives Standing Committee on Health. Skin Cancer in Australia: Our National Cancer. Canberra 2015.

- Diagnosis and management of skin cancer was noted as an expected skill for both GP professional colleges. Increasing numbers of GPs choose to undertake further training in skin cancer with courses ranging up to Masters level. However, there is no agreed standard for this training in primary care skin cancer that is accredited by the Australian Medical Council (AMC). The level of training of doctors working in Skin Cancer Clinics is not always clear to the public and Skin Cancer Clinics can employ doctors who have not achieved GP Fellowships. The parliamentary committee recommended that the “Royal Australian College of General Practitioners conduct an assessment of ways to provide firm assurance to the public concerning skin cancer clinics. The assessment should consider potential accreditation options as well as a requirement for such clinics to be staffed by a minimum number of suitably qualified and experienced staff including dermatologists”.

The ACD has indicated the following:

- The College has indicated that it is not supportive of the Recommendation put forward by the House of Representatives Standing Committee on Health that dermatologists be required staff members of skin cancer clinics. Skin cancer GPs have narrowed their scope of practice and dermatologists do not wish to likewise narrow their scope to support this emerging workforce.
- There are several infrastructure limitations which impact the provision of training in regional/rural areas, namely the considerable out-of-pocket costs and inadequate availability of transportation for consultants and trainees. While in the past state funding may have covered these expenses, currently the servicing of regional and rural communities and the provision of training has been increasingly challenging. There is the need for continuing support for trainees to accompany consultants on their outreach services, to gain essential clinical experience and to encourage them to provide such services in future.
- Trainees are increasingly benefiting from advances in technology. Developments in telehealth and e-learning, such as web-based seminars, forums and online modules, are allowing for distance education, enhanced communication with peers and cross-disciplinary interaction. This may be of particular benefit to trainees outside major centres. If training in rural settings is to increase, access to this communication infrastructure is vital. Ensuring ongoing and expanded experience of trainees with technology based services such as telehealth allows the renewing dermatology workforce the tools to augment the services to rural and remote areas.
- There are certain boundary issues with respect to scope of practice, such as the provision of skin cancer and other dermatological services by GPs in both metropolitan and regional areas.
- This may lead to reduced referral rates to dermatological services and have implications on the quality of care, due to the lack of training in surveillance, surgical skills and patient management. Analysis of skin cancer MBS items suggests that the subset of skin cancer GPs may also be contributing to inefficiencies in the health system.
- The geography and demography in Australia is broad and diverse, as are the dermatology requirements of different communities across the country. Applying tailored service provision models according to the needs of particular areas will

- improve patient outcomes. Outlining the different requirements for dermatology services and service models in metropolitan, outer metropolitan, provincial, rural, remote, culturally/language diverse, poor socio-economic, armed services, mining and indigenous communities will better allow workforce planning to prospectively meet these needs.

### **Mapping of training capacity**

The ACD has indicated the following:

- Currently, dermatology registrar training is delivered in over 60 sites across Australia, of which approximately 30 percent are private hospitals or practices. There are currently three main private sites which offer multiple training positions.
- Optimally, a considerable portion of training rotations should be rostered within a public hospital setting in order to gain clinical exposure to diverse and complex cases within a multidisciplinary model of care. However, there are challenges in establishing new training positions within public hospitals often due to financial and logistical constraints at the state and local health service level. Furthermore, some public hospitals in both metropolitan and regional areas do not have dermatology departments and in certain cases dermatology is not always appreciated as essential in the acute setting, with existing dermatology services introduced late in the patient care journey. In this regard, dermatology departments may struggle to show evidence of efficiency and effectiveness in key performance indicators relative to other departments. For example they may be called for a ward consult, yet the case will almost never be under the management of a dermatologist. Inpatient data records may at best record a dermatologic condition as comorbidity.
- The public hospitals charter is to provide health care to the community. Part of this care is to provide training of specialists who then proceed to provide that care. Cost-based decision making by public hospitals in all states places constraints on both consultant dermatologists and trainee positions. A cultural change is needed across the public health sector to prevent marginalisation of dermatology services, especially in the face of increasing numbers of infectious disease, cutaneous oncology, rheumatology, gynaecology, immunology or paediatric services that require the ongoing interaction with dermatology to maintain patient outcomes.
- Increasing training in the private practice setting might represent a possible solution to expand capacity of the program. Already there are several College-accredited training positions in private practices. There are a growing number of large private facilities with multiple general and sub-specialty clinics which might have capacity to take on a training role. But even in the largest practices, some cases will be referred to hospital clinics as their complexities are unable to be managed in the private setting. Private practice training should not be considered as directly substitutable for public hospital training but suitable as an adjunct.
- There are limited dermatology trainee positions in regional and rural areas as there are fewer dermatologists in these locations. Introduction of the Integrated Rural Training Pipeline (IRTP) may help to strengthen training outside of metropolitan centres. However ensuring longevity and sustainability of training in regional settings may require additional resource allocation, not only to ensure that the quality of training matches that of major centres and that trainees are exposed to a

- diversity of clinical cases, but also to improve consultant retention. The case mix, workload, responsibility, on call, continuing medical education and unpaid work related time in some provincial consultant positions can provide challenges to recruitment and retention. Due to the lack of administrative and clinical support in regional centres, there may be considerable differences in the consultant job description which can negatively impact retention in the long term.
- College's rural challenges are to work with the aging rural workforce to ward against collapse and loss. The system is extremely fragile. Even larger regional centres outside of metropolitan areas face possible future workforce depletion unless they too can be eligible for new streams of funding and support. As these regional centres have substantive rural catchments they are the frontline in rural service provision for a speciality profession with a small workforce like dermatology. Maintaining the strength and sustainability in these larger regional centres is critical and needs to occur in parallel with service and training delivered to more rural towns.

### **Specialist Training Program**

The ACD has indicated the following:

- The STP has worked well to open up new training posts hitherto unfunded and this has greatly benefited the training program. ACD supports the maintenance and expansion of this program.

## **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 dermatology workforce**

The demographic characteristics of the current dermatology 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, intern 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 alternate 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. Based on evidence collected by Australian Rural Clinical Schools, it is proposed that if in the course of their training doctors could spend more time in rural locations or in primary care settings, they may be more likely to stay and practice in those settings.

## **Modelling inputs**

The following information details the inputs that will be used in undertaking the modelling for the dermatology workforce. The dermatology workforce is defined by those medical practitioners that have an accreditation in dermatology and have identified dermatology 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 dermatology specialists 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 dermatology workforce is defined as those that:
  - o Are employed (excluding those on leave for more than three months)
  - o Have clinician status
  - o Have specialist accreditation in dermatology
  - o Work the most or second most hours in the specialty field of dermatology.
- Inputs to the dermatology workforce are based on 2014 data and additional data from the ACD 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 dermatology as their first field of training (excluding the second specialty field)
  - Include those who have transitioned from trainee to holding a specialist accreditation in dermatology 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:
    - They don't have specialist accreditation, or
    - If they do have specialist accreditation, but the principal area of their main job in medicine was not specialist
- Hours worked are calculated and applied separately for each age/gender cohort for dermatology specialists. The data from which hours worked is calculated is taken from the hours reported by dermatology specialists on the relevant workforce survey items for 2014.
- Exit rates are calculated on a unique basis for dermatology 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 dermatology 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 population growth and ageing, as well as clinical trends, by projecting age by sex 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<sup>5</sup>.
- 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

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<sup>5</sup> Forecast services use ABS catalogue 3222 Population Projections Series B.



group have been generated using the SAS statistical package. Exponential smoothing has been chosen due to its successful use in the Department of Health at forecasting MBS services for financial modelling purposes.

- Demand and supply start from an 'in balance' position.
- The demand growth rate for dermatology is currently in the range of 4.5 per annum.

## Appendix 2: Definition of a Specialist (example using anaesthesia)

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 used 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.

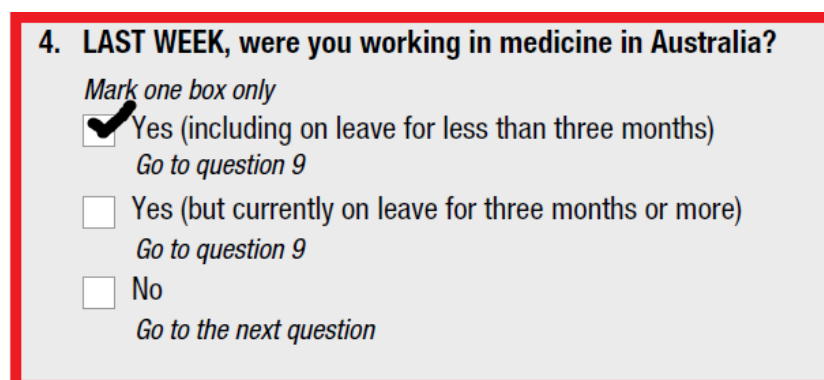
In order to be classified as a specialist a record must pass four initial conditions.

- Be currently registered as Medical practitioner
- Be accredited as an Anaesthetist
- Be currently employed in the Medical profession; and
- 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 20: Survey questions relating to Employment Status**



**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*



**Figure 21: Survey questions relating to Clinician Status**

**11. 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:


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 22: Survey questions relating to clinical and non-clinical hours**

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


<b>Clinical roles</b> <i>(including the provision of imaging and laboratory services and managers and supervisors also providing clinical services)</i>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">4</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div>hours</div> </div>
<b>Non-clinical roles</b> <i>(including teacher, researcher, administrator or other)</i>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">1</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div>hours</div> </div>
<b>Total</b>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">5</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div>hours</div> </div>

These conditions are initially applied 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 23: Survey questions relating to principal field of main specialties**

**23. 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)**

**24. 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	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="5"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Private rooms	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="5"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Private – other	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public hospitals – inpatients	<input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="0"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public hospitals – outpatients	<input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="0"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public - other	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours

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
- and has accreditation with AHPRA in Anaesthesia

They will then 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, 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 two 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 24: Survey questions relating to training**

**SECTION D: Specialist training**

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

No ☐ *Go to question 29*

Yes ☒ *Go to the next question*

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

**i** 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)
6   9	

### **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 specialties 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 (Specialty field code 68). They do not currently have accreditation with AHPRA 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 25: Erroneous answer recorded in question 23**

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

**i** 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)
6   8	

### Appendix 3: Hours worked

The Medical Practitioner workforce survey (Appendix 6) captures the hours worked at three levels as shown in

Figure 26 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, 9 percent (40) of specialist dermatologists worked hours in another specialty in addition to dermatology (most commonly physician and general practice). For this group of dual specialists, 81 percent of their FTE was spent in dermatology, while 19 percent 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 in a third specialty or as a non-vocationally registered GP (Non-VRGP). The unknown hours were not used in the modelling inputs. Furthermore, as can be 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.

Figure 26 shows how the use of clinical hours (highlighted in row B) is flawed for the purposes of modelling individual medical specialties. The clinical hours (highlighted in row B) can be much higher than the individual specialist clinical hours (C) as clinical hours comprises unknown clinical hours and/or hours worked in another specialty (other than the one being modelled). When clinical hours are used for modelling, the FTE is overestimated by including hours worked in a specialty other than the one being modelled as well as unknown/unattributed clinical hours. It also underestimates supply by excluding the time spent in clinical support (non-clinical hours) for a specialty.

**Figure 26: Hours worked as captured in the workforce survey.**

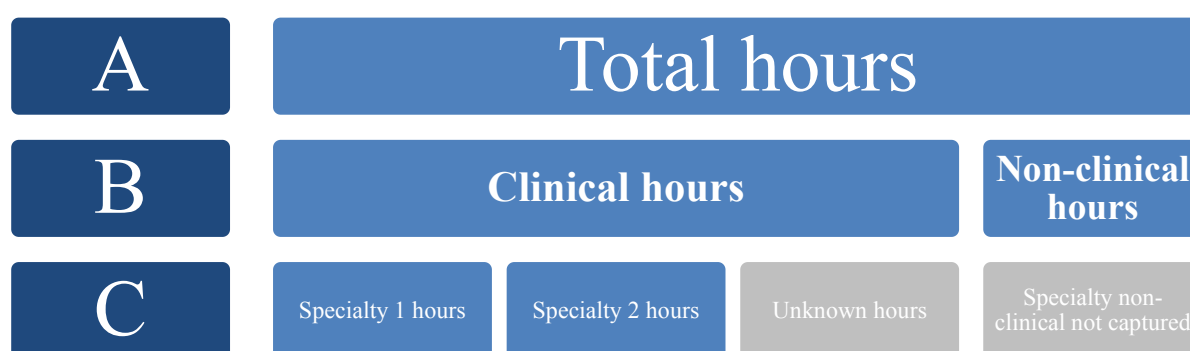


Figure 27 below shows how the hours for individual specialties have been estimated for modelling purposes in this report. In order to calculate (D), the total hours worked in dermatology (clinical and non-clinical hours), the proportion of the clinical hours for each of the specialties were used to attribute 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 27: Estimating total specialty hours**

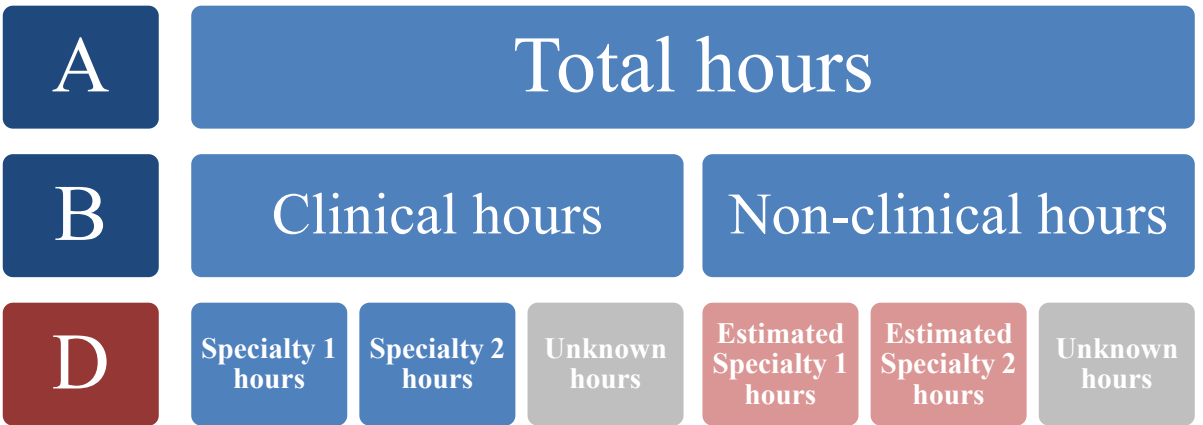
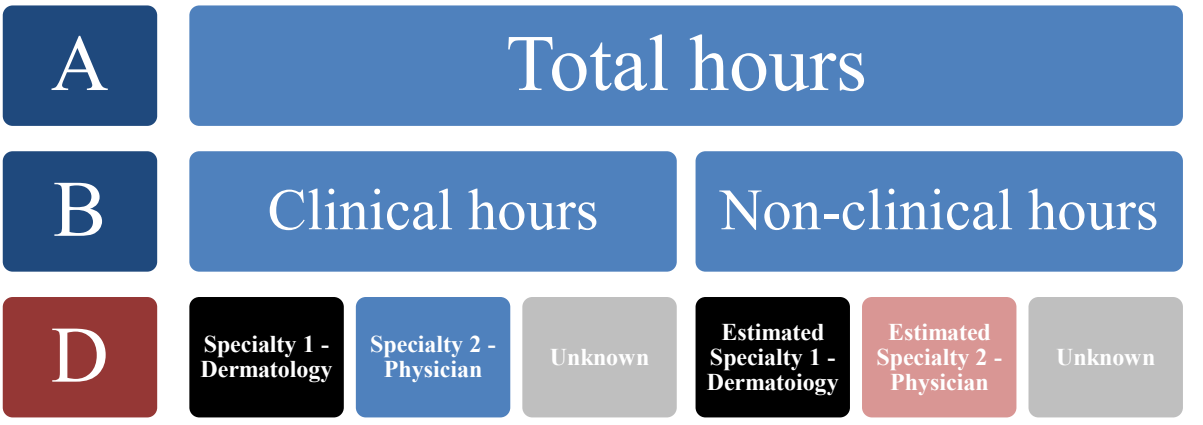


Figure 28 below shows which hours contribute to supply in the projections utilising total specialist hours (“Total specialist hour’s scenario”). In this example, if a practitioner indicated in specialty field 1 they worked in dermatology and in specialty field 2 they worked as a physician, then the clinical specialty 1 hours plus the non-clinical estimated specialty 1 hour (highlighted in black) are used in the modelling for dermatology.

**Figure 28: 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 are a current anaesthesia trainee and must also be;

- registered as a medical practitioner and
- employed as a medical practitioner (see Figure 20)

The only exception is if they indicate on the survey that they are also intending to train. If they have a current training year, then they will be classified as a trainee (see Figure 24).

Figure 29: Survey question related to current specialist training


**SECTION D: Specialist training**

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

No ☐ *Go to question 29*

Yes ☒ *Go to the next question*


**26. 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)
<input type="text" value="6"/> <input type="text" value="9"/>	<input type="text"/> <input type="text"/>

Figure 30: Survey question relating to current year of training program

**28. 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)
<input type="checkbox"/> 1st year	<input type="checkbox"/> 1st year
<input type="checkbox"/> 2nd year	<input type="checkbox"/> 2nd year
<input type="checkbox"/> 3rd year	<input type="checkbox"/> 3rd year
<input type="checkbox"/> 4th year	<input type="checkbox"/> 4th year
<input type="checkbox"/> 5th year	<input type="checkbox"/> 5th year
<input type="checkbox"/> 6th year	<input type="checkbox"/> 6th year
<input type="checkbox"/> 7th year	<input type="checkbox"/> 7th year
<input type="checkbox"/> 8th year	<input type="checkbox"/> 8th year

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


Figure 31: Survey questions relating to intending to train

**16. Do you intend to undertake specialty training?**

No ☐ *Go to question 18*

Yes ☒ *Go to the next question*

**17. 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.

## Appendix 5: Data variables and sources

Data variables	Data sources
<b>Geography</b>	<ul style="list-style-type: none"> <li>- 1270.0.55.003 - Australian Statistical Geography Standard (ASGS): Volume 3 - Non ABS Structures, July 2011(State Suburbs ASGS Non ABS Structures Ed 2011 Digital Boundaries in ESRI Shapefile Format).</li> <li>- Geometric values – XY coordinates of the centroid using ABS digital boundaries.</li> </ul>
<b>Population</b>	<ul style="list-style-type: none"> <li>- Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011, ABS 2033.0.55.001 (datacube - SSC indexes).</li> </ul>
<b>Socio-Economic Indexes for Areas</b>	<ul style="list-style-type: none"> <li>- Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011, ABS 2033.0.55.001 (datacube - SSC indexes).</li> </ul>
<b>MBS services</b>	<ul style="list-style-type: none"> <li>- Australia Government Department of Health, Medical Benefits Division</li> </ul>
<b>Hospital Separations</b>	<ul style="list-style-type: none"> <li>- Australia Government Department of Health, Acute Care Division</li> </ul>
<b>Hospital Facilities</b>	<ul style="list-style-type: none"> <li>- Australia Government Department of Health, GIS server and included the category of facility by XY location.</li> </ul>
<b>Specialist Training Program (STP) posts</b>	<ul style="list-style-type: none"> <li>- Australia Government Department of Health, Health Training Branch</li> </ul>
<b>Trainees</b>	<ul style="list-style-type: none"> <li>- ACD 2014 - 2015 and NHWDS medical practitioner 2014</li> </ul>
<b>Supervisors</b>	<ul style="list-style-type: none"> <li>- ACD 2014 - 2015 and NHWDS medical practitioner 2014</li> </ul>
<b>Specialist clinicians</b>	<ul style="list-style-type: none"> <li>- NHWDS medical practitioner 2014</li> </ul>
<b>International medical graduate specialists</b>	<ul style="list-style-type: none"> <li>- ACD 2014 and 2015 and NHWDS medical practitioner 2014</li> </ul>



## Appendix 6: Medical Practitioners survey 2015



### Workforce Survey Form Profession: Medical



#### 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 31

##### 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 31

Yes ☐ Go to question 31



For questions 9-19, 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. LAST WEEK, of the clinical hours worked, 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.

11. 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:


12. 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 18
- ☐ Specialist-in-training (including AGPT program trainees)  
Go to question 18
- ☐ Hospital non-specialist (including pre-vocational doctors)  
Go to question 15
- ☐ Other clinician  
Go to question 18
- ☐ Non-clinician  
Go to question 18

13. LAST WEEK, were you working in General Practice

Mark one box only

- ☐ with specialist registration in general practice  
Go to question 18
- ☐ without specialist registration in general practice  
Go to the next question

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

No ☐ Go to question 18

Yes ☐ Go to question 18

15. 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:


16. Do you intend to undertake specialty training?

No ☐ Go to question 18

Yes ☐ Go to the next question

17. 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.

--	--

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**18. 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

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

For state and territory mark one box only

- |                              |                              |  |
|------------------------------|------------------------------|--|
| <input type="checkbox"/> NSW | <input type="checkbox"/> SA  | <input type="checkbox"/> NT                |
| <input type="checkbox"/> VIC | <input type="checkbox"/> WA  | <input type="checkbox"/> ACT               |
| <input type="checkbox"/> QLD | <input type="checkbox"/> TAS | <input type="checkbox"/> Other territories |

Postcode

Suburb

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

No ☐ Go to question 22

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

- |                              |                              |  |
|------------------------------|------------------------------|--|
| <input type="checkbox"/> NSW | <input type="checkbox"/> SA  | <input type="checkbox"/> NT                |
| <input type="checkbox"/> VIC | <input type="checkbox"/> WA  | <input type="checkbox"/> ACT               |
| <input type="checkbox"/> QLD | <input type="checkbox"/> TAS | <input type="checkbox"/> Other territories |

Postcode

Suburb

**21. 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**

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

No ☐ Go to question 25

Yes ☐ Go to the next question

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For questions 23-24:

**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.

23. 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)

24. 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	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Private rooms	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Private – other	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public hospitals – inpatients	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public hospitals – outpatients	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours
Public - other	<input type="text"/> <input type="text"/> <input type="text"/> hours	<input type="text"/> <input type="text"/> <input type="text"/> hours

#### SECTION D: Specialist training

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

No ☐ Go to question 29

Yes ☐ Go to the next question

26. 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)

27. (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)

28. 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

- ☐ 1st year  
☐ 2nd year  
☐ 3rd year  
☐ 4th year  
☐ 5th year  
☐ 6th year  
☐ 7th year  
☐ 8th year

Specialty field 2 (if applicable)

- ☐ 1st year  
☐ 2nd year  
☐ 3rd year  
☐ 4th year  
☐ 5th year  
☐ 6th year  
☐ 7th year  
☐ 8th year

#### SECTION E: Workforce intentions

29. 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

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

whole years

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## SECTION F: Your details

### 31. 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

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

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