

Chapter 4

Diagnostic imaging workforce

4.1 Regardless of the modality, a highly trained workforce is essential to obtaining high quality diagnostic images.¹ The Department of Health, Western Australia told the committee that having the right workforce improves the quality of diagnostic images and increases diagnostic accuracy:

I think it is important that we focus on not just having machines around the country and reducing the travel time but also on having the right workforce. The breadth of the workforce spans the radiologists, radiographers, sonographers, nuclear med physicians and technicians, physicists, nursing staff and, these days, also potentially IT support. If you have the right workforce, the quality of the images improve, your useful lifespan is potentially increased and the diagnostic accuracy is also increased.²

4.2 This chapter will outline that there is a shortage of diagnostic imaging specialists and technicians—sonographers, radiographers and radiologists—to meet Australia's current and future need, but some steps have been taken to manage this shortage.

Sonographers

4.3 Sonographers are specialists in conducting and interpreting diagnostic ultrasounds.³ The Australian Sonographers Association (ASA) informed the committee that, like other forms of diagnostic imaging, diagnostic ultrasound is 'highly operator dependent' so there is a need for highly trained sonographers across the country.⁴

4.4 The call for additional sonographers was reiterated by the WA Country Health Service which explained that a lack of sonographers was delaying access to services for patients in rural areas:

...some facilities may only have sonography once a week, and that's because we can only get a sonographer once a week.⁵

1 Dr Richard Zwar, Director of Radiology, Peter MacCallum Cancer Centre, *Committee Hansard*, 9 November 2017, p. 16; Australian Medical Association (AMA), *Submission 7*, pp. 2–3; Medical Oncology Group of Australia, *Submission 28*, p. 1.

2 Dr Audrey Koay, Executive Director, Patient Safety and Clinical Quality, Department of Health, Western Australia, *Committee Hansard*, 9 November 2017, p. 29.

3 Australian Sonographers Association (ASA), *Submission 40*, p. 3.

4 ASA, *Submission 40*, p. 3.

5 Mrs Marie Baxter, Executive Director of Nursing and Midwifery, WA Country Health Service, *Committee Hansard*, 9 November 2017, p. 33.

Training and clinical placement

4.5 The Australasian Society for Ultrasound in Medicine (ASUM) highlighted that there is currently a recognised shortage of trained sonographers and there has been for at least 10 years.⁶

4.6 Training to become a sonographer involves both a course of study and clinical practice, but there are not enough clinical training places for the number of available graduates.⁷ The ASA told the committee that clinical practice is a vital part of a sonographer's training, but these places are becoming increasingly scarce:

There are a number of academic courses available to student sonographers, including two and three-year postgraduate diplomas and a four-year comprehensive course. However, the bulk of the student training needs to be conducted in a clinical setting, and the places available for this training are rapidly diminishing.⁸

4.7 Both the ASA and ASUM explained that independent practices are reluctant to incur the significant financial burden required to facilitate clinical training for sonographers and that the number of training places is diminishing as a result.⁹ Both organisations noted that training a sonographer requires an independent practice to pay both a senior staff member and the trainee for up to two years to allow the trainee to undertake at least 2000 hours of clinical practice.¹⁰

4.8 ASUM explained to the committee that the shortage of training places was leading students seeking clinical places to work for free:

Many sonographer trainees are offering to work for free to gain a clinical placement and open up an opportunity for employment if they are able to prove their value. Even these students struggle to be trained due to the cost of insurance for the practices and the issues around employment and work health and safety.¹¹

4.9 To encourage independent practices to facilitate the clinical training of sonographers, both ASUM and the ASA requested that a subsidy be provided to independent radiology practices.¹²

Accreditation

4.10 In the absence of a sufficient supply of trained sonographers, ASUM told the committee that in some cases practitioners in other fields, who may not be trained to do so, are providing point of care ultrasound.¹³

6 Australasian Society for Ultrasound in Medicine (ASUM), *Submission 11*, p. 2.

7 ASA, *Submission 40*, p. 3.

8 ASA, *Submission 40*, p. 3.

9 ASUM, *Submission 11*, p. 2; ASA, *Submission 40*, p. 3.

10 ASA, *Submission 40*, p. 3.

11 ASUM, *Submission 11*, p. 3.

12 ASUM, *Submission 11*, p. 3; ASA, *Submission 40*, p. 3.

4.11 ASUM explained that, under current accreditation rules, any specialist can perform and claim an ultrasound under the Medicare Benefits Schedule (MBS).¹⁴

4.12 ASUM argued that allowing an unqualified practitioner to perform an ultrasound could be detrimental to both the patients and the public health system because it often led to scans having to be redone at additional expense:

...patients would therefore assume, if they get an ultrasound... that person would indeed be qualified. This is an expectation the patients should be able to have, but unfortunately it is not always the case. This will potentially lead to many examinations, requiring an ultrasound study to be repeated and again putting the patient at risk of potential missed diagnosis or misdiagnosis, as well as adding a further burden on the Commonwealth purse.¹⁵

4.13 The Australian College of Rural and Remote Medicine (ACRRM) notes in its submission that a lack of specialist staff requires rural practitioners to 'take on roles ordinarily the preserve of specialists in the cities'.¹⁶ This may include taking on the role of sonographer.

4.14 To ensure that its members can continue to provide high quality care, the ACRRM offers six training courses per year in the provision of high quality diagnostic ultrasound.¹⁷

4.15 The ACRRM noted that the Commonwealth Government Department of Health (Department), in response to a large increase in the number of ultrasounds being conducted in Australia, is considering revising accreditation standards to require practitioners to undertake formal training and assessment before being allowed to claim Medicare benefits for conducting diagnostic ultrasounds.¹⁸

4.16 ACRRM advised the committee that the Department is considering requiring practitioners to complete the Diploma of Diagnostic Ultrasound from ASUM.¹⁹

4.17 However, the ACRRM suggested that the 'access for candidates, content requirements/relevance and time necessary for completion' meant that the Diploma of Diagnostic Imaging from ASUM was not appropriate for rural doctors.²⁰

4.18 The ACRRM warned that if the wrong accreditation standard was selected, it could end up having 'a very deleterious effect on the timely access to services to rural and remote communities'.²¹

13 ASUM, *Submission 11*, p. 2.

14 Professor George Condous, President, ASUM, *Committee Hansard*, 13 December 2017, p. 36.

15 Prof Condous, *Committee Hansard*, 13 December 2017, p. 36.

16 Australian College of Rural and Remote Medicine (ACRRM), *Submission 4*, pp. 2–3.

17 ACRRM, *Submission 4.1*, p. 4.

18 ACRRM, *Submission 4.1*, p. 5.

19 ACRRM, *Submission 4.1*, p. 5.

20 ACRRM, *Submission 4.1*, p. 5.

4.19 The ACCRM advised the committee that it would continue to work with the Department to identify suitable training for rural practitioners.²²

Nurses and nurse practitioners

4.20 One option to address the sonographer shortage is to invest additional resources to upskill nurses and nurse practitioners to perform some diagnostic ultrasounds.

4.21 The Queensland Nurses and Midwives' Union (QNMU) told the committee that nurses were already well-placed to provide access to x-ray and diagnostic ultrasound services, and in many cases already do so.²³

4.22 Since 2011, to address a shortage of specialist sonographers, nurse practitioners have been trained to provide pelvic ultrasound in cases of suspected miscarriage.²⁴ The QNMU advised the committee that this expanded scope of practice was first introduced in a metropolitan hospital, but could be extended to rural areas.²⁵

4.23 The ACCRM endorsed the nurse practitioner model and agreed that nurse practitioners could take on a larger role in some circumstances.²⁶

4.24 ACCRM also suggested that some sonography could be done with remote supervision, provided the trainee had access to the internet:

...there's no reason why the person at the point of care can't be moving the scan head around, with somebody remotely saying, 'Just turn it a little bit this way or that way or shift it over here.' I've been at a medical education conference in Sydney where we were watching medical students in Armidale undergoing ultrasound training by a professor of ultrasonography, live from Los Angeles, who was doing exactly the same thing. There's this weird territoriality around radiology that doesn't have much to do with the quality of care and access to care for rural and remote communities. You can make this happen. It's just a matter of initiating policy that mandates that this can occur.

Committee view

4.25 The committee recognises that there has been a substantial shortage of specialist sonographers in Australia for more than a decade. The committee considers that diagnostic ultrasound is an important and useful diagnostic modality that requires specialist training.

21 Associate Professor Thomas Doolan, Chairman, Education and Training Committee, ACCRM, *Committee Hansard*, 13 December 2017, p. 52.

22 ACCRM, *Submission 4.1*, p. 5.

23 Mr Jamie Shepherd, Professional Officer, Queensland Nurses and Midwives' Union (QNMU), *Committee Hansard*, 13 December 2017, p. 51.

24 QNMU, *Submission 13*, p. 4.

25 QNMU, *Submission 13*, p.

26 A/Prof Doolan, *Committee Hansard*, 13 December 2017, p. 54.

4.26 The committee understands that training a sonographer is expensive and that private radiology practices are reluctant to employ trainees. The committee also accepts that only a limited number of sonographers can be placed in public hospitals.

4.27 In the short term, the committee supports the upskilling of nurses and nurse practitioners to perform some sonography in both metropolitan and rural areas.

4.28 The committee accepts that rural and regional practice includes particular constraints that need to be accommodated when considering an appropriate accreditation standard. The committee welcomes the collaborative nature of the talks between the ACRRM and the Department and expects that an accreditation standard can be found that is mutually acceptable to both parties.

Radiographers / x-ray operators

4.29 Radiographers are highly skilled technicians who operate the various diagnostic imaging machines. Professor Richard Zwar from the Peter MacCallum Cancer Centre explained to the committee that radiographers specialise in operating particular machines:

They're highly skilled technicians, and they've now become very subspecialist... They are grouped into subgroups, basically, who operate the different modalities... This is because they need to have specific skills. There are hundreds of protocols on each of these instruments that need to be tweaked and nuanced for the individual patient's situation, often in consultation with the radiologist, who has to be on-site.²⁷

4.30 Mr Cook, Director of Medical Imaging with the Darling Downs Hospital and Health Service advised the committee that Queensland has a lack of specialist radiographers and that other staff have had to be trained to perform x-rays in addition to their other duties:

...there are over 130 X-ray-capable public sites in Queensland, and only 48 of those sites have professional and discretely employed radiographers. The remaining sites rely on non-radiographers or X-ray operators to perform the X-ray examinations on top of their substantive roles as doctors, nurses or operational and administrative staff.²⁸

4.31 A number of Queensland Hospital and Health Services advised the committee that where a non-radiographer workforce exists, there is often supervision from radiographers in larger hospitals and the images are reported via teleradiology.²⁹

27 Dr Zwar, *Committee Hansard*, 9 November 2017, p. 16.

28 Mr Aiden Cook, Director of Medical Imaging, Darling Downs Hospital and Health Service, *Committee Hansard*, 13 December 2017, p. 11. See also Mackay Hospital and Health Service, *Submission 43*, [pp. 1–2].

29 Metro North Hospital and Health Service, *Submission 23*, [p. 1]; West Moreton Hospital and Health Service, *Submission 25*, p. 2; Wide Bay Hospital and Health Service, *Submission 30*, [p. 2].

4.32 Whilst the Hospital and Health Services noted that having trained radiographers in rural hospitals would be ideal, the services accepted that other staff could be trained to take on these roles safely and efficiently with appropriate supervision.³⁰

4.33 Darling Downs Hospital and Health Service expressed concern that a better coordinated training regimen for non-radiographer staff was required:

X-ray operators are essential for the provision of basic imaging services to a significant rural and remote population and the majority of the geographical area of this country. There is a lack of modern and focused vocational qualification and training at a federal level to provide consistency of training to non-radiographer X-ray operators in low-volume rural and remote sites. This is desperately required to build and maintain an appropriately trained and regulated workforce.³¹

Radiologists

4.34 Radiologists are specialists in interpreting diagnostic images and also perform some interventional image-guided procedures.³²

4.35 As noted in chapter one, the Royal Australian and New Zealand College of Radiologists (RANZCR) and the Australian Diagnostic Imaging Association (ADIA) recommend the implementation of the *Quality Framework for Diagnostic Imaging* (Quality Framework).³³ The Quality Framework requires on-site supervision by a clinical radiologist 'to improve supervision and clinical oversight' of radiology services.³⁴

4.36 ADIA told the committee that implementing the Quality Framework would improve patient care and avoid unnecessary scans because an on-site radiologist would be able to advise practitioners and radiographers about the right test for a particular patient.³⁵

4.37 RANZCR President, Dr Greg Slater, provided the committee with an example from his own practice to demonstrate the benefits of having a radiologist on-site:

I was working recently in a practice in Cairns that my employer owns, and we received a referral for an eight-year-old child for a CT of the head. The

30 West Moreton Hospital and Health Service, *Submission 25*, p. 2; Wide Bay Hospital and Health Service, *Submission 30*, p. 2.

31 Mr Cook, *Committee Hansard*, 13 December 2017, p. 11. See also: Darling Downs Health and Hospital Service, *Submission 21*, p. 2.

32 See for example AMA, *Submission 7*, p. 1; Australian Diagnostic Imaging Association (ADIA), *Submission 17*, p. 5.

33 Dr Greg Slater, President, Royal Australian and New Zealand College of Radiologists (RANZCR), *Committee Hansard*, 13 December 2017, p. 2; RANZCR, *Submission 14*, p. 1.

34 RANZCR, *Submission 14*, p. 3. See also ADIA, *Submission 17*, p. 5; Department of Health (Department), *Submission 18*, pp. 31–32.

35 Dr Sivash Es'haghi, President, ADIA, *Committee Hansard*, 13 December 2017, p. 4.

child had been having strange visual symptoms and headaches and was referred for the CT. The CT radiographer came to me, concerned about this referral, to seek advice. I contacted their referring doctor and suggested that an MRI would be a more appropriate test. The referring doctor was unaware that MRI was available. He thought his only option was to refer for CT. So we performed an MRI and it turned out that the child was perfectly okay. Nevertheless, the investigation needed to be done and it was quite clear that MRI was the appropriate test to be done in that situation.³⁶

4.38 Some other submitters disagreed that on-site radiologists were necessarily required.

4.39 Primary Health Care Limited, a private radiology clinic, argued that a more flexible model—one that permitted radiologists to provide supervision to multiple sites—could be a more efficient way of providing supervision:

For the last, say, 15 years I've been working for Primary [Health Care Limited] and almost sort of pioneered a model where radiologists travel between centres every day to provide supervision, procedures and attendance for things that require attendance. That's been tremendously successful in allowing us to maintain bulk-billing through a huge number of practices for a huge number of people, despite the fact that there have been no rebate rises and despite the fact that everything else has increased in cost. So, it's been incredibly efficient, and we've used teleradiology and other technologies very effectively.³⁷

4.40 Primary Health Care Limited suggested that accepting the Quality Framework could lead to some unintended consequences and negatively affect access to imaging services for some patients.³⁸

4.41 Primary Health Care Limited suggested that some of these unintended consequences could include increased workforce costs, reduced bulk billing, increased out-of-pocket costs and less innovation.³⁹ Primary Health Care Limited also suggested that requiring an on-site radiologist does not recognise that some current practice (in the case of non-contrast CT or cases of low complexity) does not require an on-site radiologist.⁴⁰

4.42 Primary Health Care Limited also suggested that the Quality Framework was not supported by evidence:

...the supervision rules proposed in the 'Quality' framework with regard to non-contrast CT imaging services are not evidence based, and will have a negative impact on the affordability and accessibility of diagnostic imaging

36 Dr Slater, *Committee Hansard*, 13 December 2017, p. 4.

37 Dr Gary Cohen, Radiologist, Private Health Care Limited, *Committee Hansard*, 13 December 2017, p. 32.

38 Primary Health Care Limited, *Submission 8*, p. 9.

39 Primary Health Care Limited, *Submission 8*, pp. 9–10.

40 Primary Health Care Limited, *Submission 8*, p. 10.

services. In fact, an independent report did not support a rules based approach to supervision of non-contrast CT.⁴¹

4.43 ADIA strongly disagreed with the arguments raised by Primary Health Care Limited. ADIA reassured the committee that the Quality Framework was developed to apply to metropolitan centres and reiterated that the on-site supervision requirement would not affect practices in rural and regional Australia from being able to provide CT or MRI services.⁴²

4.44 ADIA also pointed out that most radiology practices already employed a full-time on-site radiologist, that current rules require a radiologist to attend on a patient personally if required and that 81.2 per cent of CT services were bulk billed in 2016–17.⁴³

4.45 The Department advised that the Quality Framework would have significant implications for the diagnostic imaging sector and that the Commonwealth Government made a 2016 election commitment to the Quality Framework and is currently considering implementation of the Quality Framework.⁴⁴

Number of radiologists

4.46 A further concern raised by Primary Health Care Limited was that there are not enough radiologists to meet current or future supply.⁴⁵

The practical reality is that Australia does not have enough radiologists in the country to provide the level of supervision outlined in the RANZCR 'Quality' framework for current diagnostic imaging services around the country, let alone for the [diagnostic imaging] services that will be needed over the next decade as the population grows and ages.⁴⁶

4.47 ADIA refuted that suggestion, claiming that there is a sufficient number of radiologists to meet both current and future demand:

Based on the number of radiologists currently in practice and in training, there are enough radiologists in Australia to meet the proposed supervision requirements for CT, and meet future demand for radiology services.⁴⁷

41 Primary Health Care Limited, *Submission 8*, p. 9.

42 ADIA, *Statement to Senate Standing Committee of Community Affairs References Committee*, 13 December 2017, [p. 1] (tabled 13 December 2017).

43 ADIA, *Statement to Senate Standing Committee of Community Affairs References Committee*, 13 December 2017, [p. 1] (tabled 13 December 2017).

44 Department, *Submission 18*, p. 32; Mr David Weiss, First Assistant Secretary, Department, *Committee Hansard*, 13 December 2017, p. 63.

45 Primary Health Care Limited, *Submission 8*, p. 10.

46 Primary Health Care Limited, *Submission 8*, p. 9.

47 ADIA, *Statement to Senate Standing Committee of Community Affairs References Committee*, 13 December 2017, [p. 1] (tabled 13 December 2017).

4.48 Mr Jim Aspinwall, Director of X-Ray and Imaging disagreed with ADIA's assessment and provided the committee with a graph that demonstrated the gap between the actual number of radiologists and a projected number required to meet future need.⁴⁸

Graph 4.1—Radiologist workforce projection



Source: Mr Aspinwall, *Radiologist Shortage* (Tabled 13 December 2017).

4.49 The above graph demonstrates that there is a disparity between the number of radiologists currently employed in Australia and the number that is likely to be required to meet Australia's future radiology need.⁴⁹

4.50 Health Workforce Australia undertook workforce planning for the health system to help address shortages and growing demands for healthcare prior to its abolition in 2014. The Department considered that there was an undersupply of radiologists and radiation oncologists in 2014.⁵⁰ In 2016, the Department's modelling forecast that by 2030 there would be a workforce undersupply of radiologists and radiation oncologists of 25 per cent and 63 per cent respectively.⁵¹

48 Mr Jim Aspinwall, Director, X-ray and Imaging, *Radiology shortage*, December 2017, [p. 1] (tabled 13 December 2017).

49 Mr Aspinwall, *Radiology shortage*, December 2017, [p. 1] (tabled 13 December 2017).

50 Department, [Review of the Specialist Training Program and the Emergency Medicine Program](#), March 2017, p. 40.

51 Department, *Review of the Specialist Training Program and the Emergency Medicine Program*, March 2017, p. 40.

Table 4.1—2014 workforce undersupply and 2016 Department workforce forecast for 2030

Speciality	Table 4: 2014 workforce undersupply colour and assigned percentage	2016 Department workforce oversupply undersupply forecast for 2030
Anaesthesia	5%	-3.19%
Anatomical pathology n.a.	5%	-3.62%
Cardiology n.a.	0%	4.40%
Dermatology	5%	-5.82%
Endocrinology n.a.	5%	4.77%
Gastroenterology and hepatology n.a.	0%	15.04%
General medicine n.a.	10%	3.74%
General surgery	5%	-5.53%
Geriatric medicine	5%	1.45%
Intensive Care	0%	1.97%
Medical oncology n.a.	10%	8.96%
Nephrology n.a.	5%	-8.79%
Neurology n.a.	0%	3.70%
Obstetrics and gynaecology	5%	-10.47%
Ophthalmology	5%	-14.81%
Orthopaedic surgery n.a. (incl in general surgery)	0%	-13.52%
Other (clinical) pathology(a) n.a.	5%	-13.68
Other surgery(b)	0%	2.08%
Otolaryngology n.a. (incl in general surgery)	0%	25.25%
Paediatrics and child health	5%	-2.67%
Plastic surgery	0%	20.74%
Psychiatry	10%	-8.41%
Radiation oncology	10%	-63.70%
Radiology	5%	-23.53%

Source: Department, *Review of Specialist Training Program and Emergency Medicine Program*, March 2017, p. 40.

4.51 Dr Evan Jones, Director, Morayfield Family Doctors, told the committee that he believed that RANZCR was restricting the number of radiologists in Australia:

...we see as general practitioners that there's a protectionism within the specialist colleges. If you limit supply into your specialty, you can then command higher incomes. And we see this in numerous professions, not just radiology.⁵²

4.52 Dr Jones explained that specialist colleges are able to do this because they are able to control how many graduates they take each year:

52 Dr Evan Jones, Director, Morayfield Family Doctors, *Committee Hansard*, 13 December 2017, p. 44.

They're limiting the number of graduates who actually qualify, and they can do that in various ways: training positions, who actually passes the exam or doesn't pass the exam—all sorts of things. As a general practitioner trying to provide services into rural Australia, this is galling, because specialists want to stay in the cities; they want to command high incomes. And who loses out? Patients lose out.⁵³

4.53 A review of the Special Training Program and Emergency Medicine Program by the Department of Health recommended that the quota of training places for specialist radiologists be increased from 47 to 82 (54 for radiology and 26 radiation oncology).⁵⁴

Committee view

4.54 The committee considers that radiographers are an important part of the diagnostic imaging workforce, but also understands that hospitals operate under cost pressures. The committee commends Queensland's Health and Hospital Services on working with its existing workforce and using technology to ensure that patients in non-metropolitan centres continue to get access to x-ray services, even if the images have to be interpreted by teleradiology.

4.55 The committee understands that having a radiologist on-site, as required by the Quality Framework, may lead to better outcomes for patients as an on-site radiologist can advise on the radiology procedure. However, the committee also understands that more flexible ways of working may have their advantages but quality patient outcomes must be a priority.

4.56 The committee is concerned by the prospect that Australia may be facing a workforce shortage in radiology, especially as it is likely to further exacerbate the health disadvantage that is already experienced by Australians who live in regional and rural areas.

4.57 The committee welcomes the prospect that more training places for radiologists will become available under the Specialist Training Program. However, the committee calls on the RANZCR to do more to help increase the supply of Australian radiologists.

53 Dr Jones, *Committee Hansard*, 13 December 2017, p. 44.

54 Department, *Review of Specialist Training Program and Emergency Medicine Program*, Final Report, March 2017, p. 81.

