



# ASMS RESEARCH BRIEF



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## Forecasting New Zealand's future medical specialist workforce needs

### Summary

Ministry of Health workforce and service demand modelling show New Zealand's need for health services is projected to increase at a higher rate than the projected growth of the specialist workforce during the next 10 years. The modelling is conservative as it does not take into account current unmet health need.

This means the current estimated workforce shortage of approximately 1000 specialists is projected to continue and indications are that for most specialties the gap between the specialist workforce capacity and health service need will widen by 2028. This 'service gap' may include longer waiting times for specialist assessments, longer waits for treatment, higher thresholds for accessing services, continuing high levels of burnout among specialists, increased pressures to displace critical non-clinical work such as training and continuing education, and missed opportunities to apply specialists' experience and expertise to develop more innovative and efficient models of care.

Some specialties will be affected more than others. In two case studies using data on workforce and service use data produced by the Ministry of Health, the workload per orthopaedic surgeon will need to increase by 6% by 2028 to match current service levels. This does not take account of the already significant unmet need today. Workloads per ophthalmologist will need to increase by 20%, which again is likely to see a worsening of current levels of unmet need.

Despite increases in medical school intakes, New Zealand has a low number of medical graduates per capita among countries of the Organisation for Economic Co-operation and Development (OECD). There will continue to be a heavy reliance on overseas recruitments - or International Medical Graduates (IMGs) - to provide specialist services.

Specialist workforce growth rates are hampered by poor retention rates, especially among newly qualified specialists and IMG specialists.

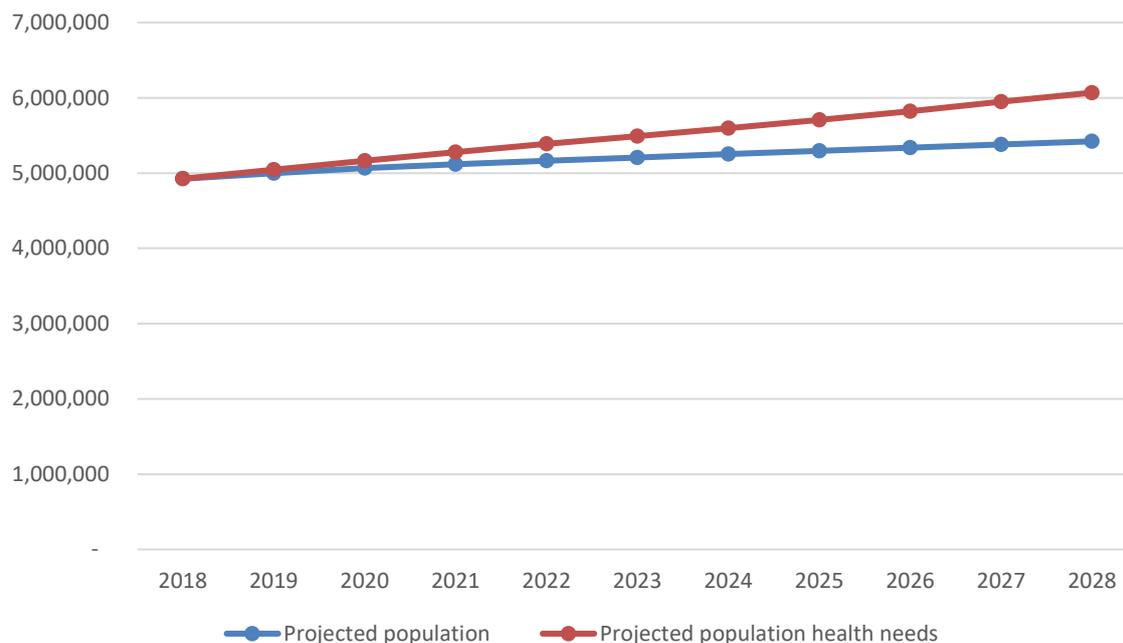
There is potential to make significant inroads into addressing workforce shortages by designing and implementing effective retention measures, taking into account the specific needs of different sections of the workforce.

The medical workforce literature highlights the need for health service organisations to consider the reputation of their organisation as an employer and as a place to work, in order to create a climate that will attract and retain staff.



## Projected specialist workforce and health needs

New Zealand's population is projected to increase by 11% between 2018 and 2028. However, forecasts weighted for proxies of health need (age, ethnicity and deprivation levels) show that by 2028 health needs will have increased over and above the actual population increase by the equivalent of nearly 647,000 people – an increase of 23% between 2018 and 2028 (Figure 1).<sup>i</sup> That is a conservative estimate, however, as it assumes current health services are adequately meeting health needs.



Source: Ministry of Health 2019.

**Figure 1: Forecast New Zealand population and weighted health need**

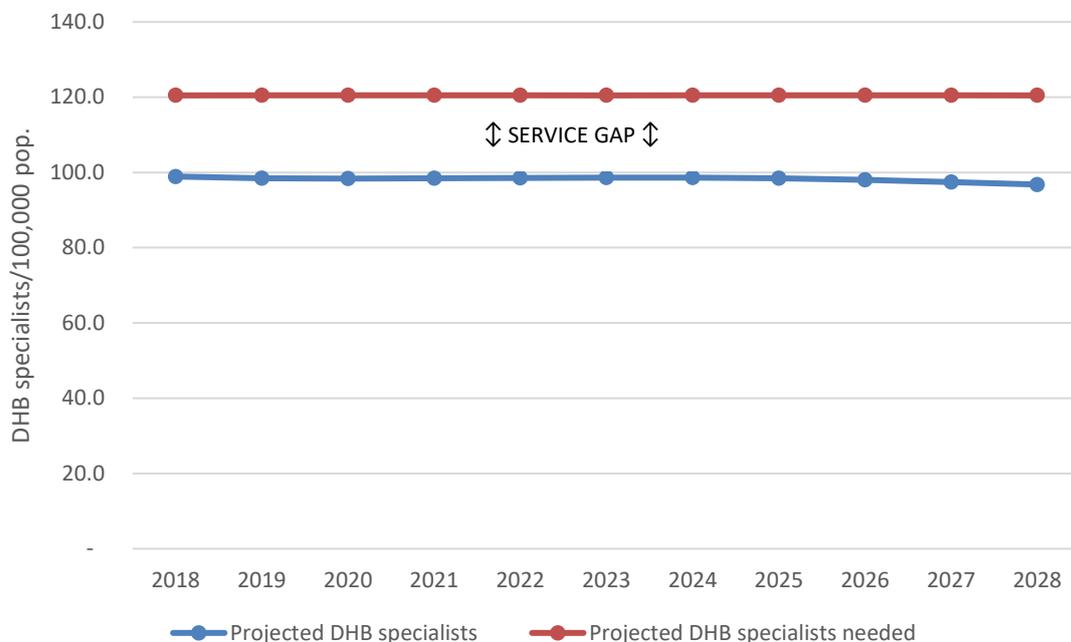
Over the same period the Ministry of Health has projected New Zealand's medical specialist workforce (public and private) to increase by 21%, based on projections of historical trends of workforce entry and exit rates by age group, using data on vocational registrations and annual practising certificates.<sup>ii</sup>

<sup>i</sup> These unpublished data are used by the Ministry of Health for its Population-Based Funding Formula (PBFF), which is designed to distribute the bulk of district health board funding equitably according to estimated need.

<sup>ii</sup> Ministry of Health 2019, unpublished. Excludes primary health care practitioners – ie, general practitioners and urgent care practitioners.

Assuming DHB specialist workforce trends follow total specialist workforce trends, this means the estimated shortfall of DHB-employed specialists overall (21.8%) as at 2016 will deteriorate further by 2028 (Figure 2).<sup>1,2</sup> The resulting 'service gap' may include longer waiting times for specialist assessments, longer waits for treatment, higher thresholds for accessing services, continuing high levels of burnout among specialists, increased pressures to displace critical non-clinical work such as training and continuing education, and missed opportunities to apply specialists' experience and expertise to develop more innovative and efficient models of care.

Assuming the exit rate for the DHB specialist workforce is similar to that for the total specialist workforce (5%), in 2018 approximately 240 left the workforce and 380 entered it (with projections averaging just over 400 per year up until 2028). In order to address the estimated DHB workforce shortage overall by 2028, the average growth rate would need to increase to approximately 250 per year for the period 2018-2028. That would require the average workforce entries to increase to over 500 a year – about 100 more per year than current projections.



Source: Ministry of Health 2019; ASMS 2018

**Figure 2: Projected DHB specialists per 100,000 health-needs-weighted population**

Lack of data prevents precise estimates to be made at specialty level. However, using as broad indicators the projected growth for overall population health need (23%) and the estimated shortfall of DHB-employed specialists overall (21.8%) and assuming the proportion of private provision remains constant, the 34 specialties listed by the Ministry can be divided into three groups:

- The growth rates for six specialties - the main ones being emergency medicine, intensive care medicine and pain medicine - are projected to exceed the growth rate of overall population health need by 2028, as well as grow sufficiently to address the gap in the DHB workforce shortage estimates.

- The projected growth rates of a further seven specialties, including diagnostic and interventional radiology, internal medicine, paediatrics and palliative medicine, will meet or exceed projected growth rates of overall health need levels but fall short of addressing overall workforce shortage levels.
- For 21 specialties, workforce projections fall short of addressing overall shortage levels and projected overall health needs, meaning current access to a range of services may worsen unless the trends are reversed. Of these specialties, eight (cardiothoracic surgery, radiation oncology, vascular surgery, musculoskeletal medicine, orthopaedic surgery, public health medicine, urology, and sexual health medicine) are projected to see a decrease in specialists per population.

The effects of these trends on access to services to many specialties are indicated in two examples – ophthalmology and orthopaedic surgery – for which the Ministry of Health has estimated specific projections of need,<sup>3</sup> assuming the models of care remain unchanged.

## Ophthalmology

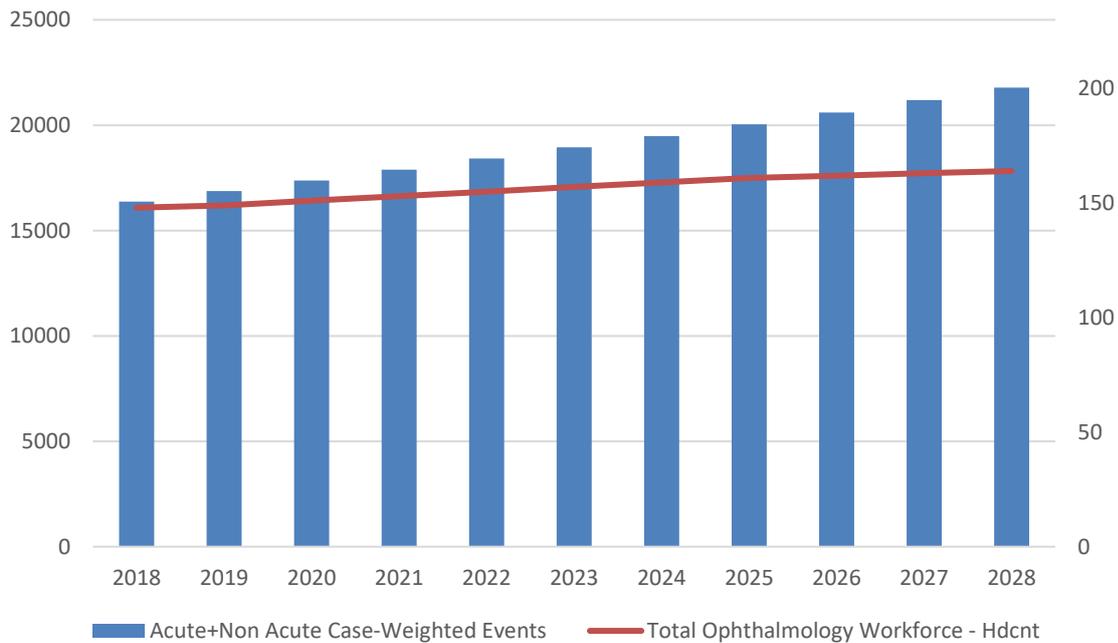
In 2016 there were approximately 3 ophthalmologists per 100,000 population in New Zealand, the lowest number among nine comparable countries<sup>i</sup>, which averaged more than 5/100,000.<sup>4 5 6 7</sup>

In the year to 30 June 2018, 6266 patients referred to DHB ophthalmologists (10% of referrals) were declined a first specialist assessment (FSA), mostly owing to the DHBs' lack of capacity to provide treatment or because the patient is below the DHBs' 'clinical threshold' for acceptance. Those figures are likely to understate the extent of unmet need, however, as they do not capture all aspects of unmet need.<sup>8 9</sup>

This unmet need is forecast to worsen with the need for ophthalmology hospital inpatient services projected to increase by 32% between 2018 and 2028, based on current trends, complexity of procedures, and demographic changes. Over the same period, the ophthalmology workforce is forecast to grow by 11% (virtually static on a per capita basis). The Ministry's data indicates that by 2028 the inpatient workload per ophthalmologist will need to increase by 20% to match the level of service delivered in 2018 (Figure 3).

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<sup>i</sup> Australia, Canada, France, Germany, Netherlands, NZ, Norway, Sweden, UK.



Source: Ministry of Health 2019

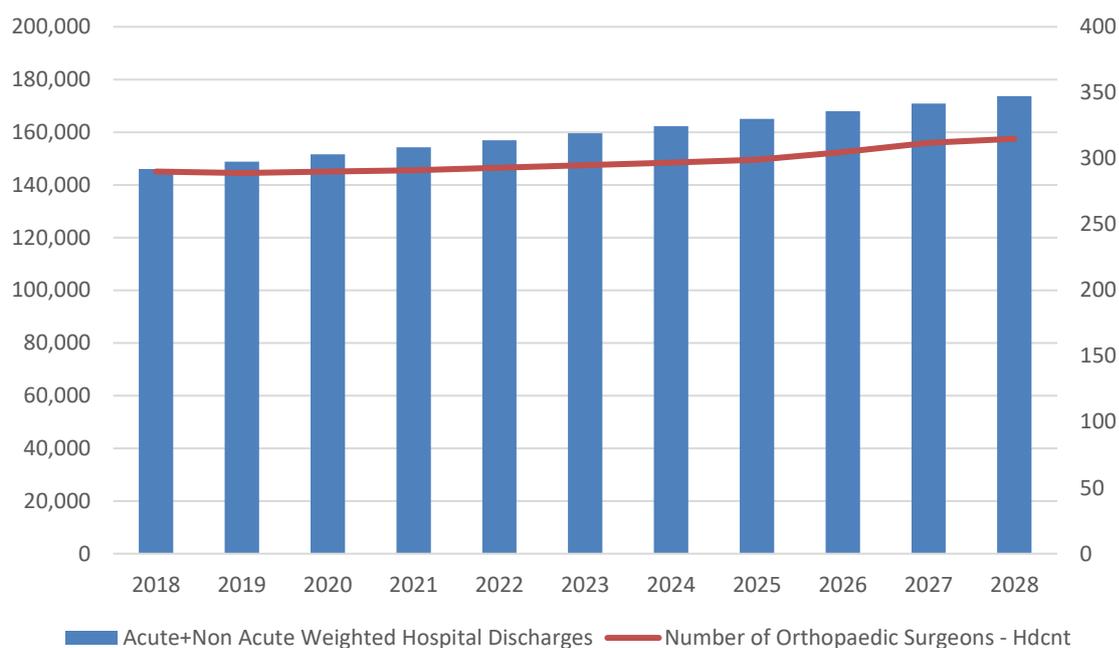
**Figure 3: Forecast ophthalmology case-weighted events against forecast ophthalmologist workforce**

### Orthopaedic surgery

In 2018 there were approximately 5.9 orthopaedic surgeons per 100,000 population in New Zealand, which is projected to fall to 5.8/100,000 by 2028.<sup>10</sup> The British Orthopaedic Association has aspired to provide a consultant to population ratio of 6.7/100,000 by 2020.<sup>11</sup>

In the year to 30 June 2018, 11,793 patients referred to DHB orthopaedic surgeons (12.5% of referrals) were declined a first specialist assessment (FSA), mostly owing to the DHBs' lack of capacity to provide treatment or because the patient is below the DHBs' 'clinical threshold' for acceptance. As with the ophthalmology data, however, those figures understate the extent of unmet need, as they do not capture all aspects of unmet need. One New Zealand study estimated the true unmet need for treatment of hips and knees could be closer to 50%.<sup>12 13 14</sup>

As discussed above, and again despite high levels of unmet need, the Ministry of Health estimates service needs will outpace orthopaedic surgeon workforce growth over the next decade. The need for orthopaedic surgery is projected to increase by 17% based on current trends, complexity of procedures, and demographic changes. Over the same period, the orthopaedic surgeon workforce (headcounts) is forecast to grow by 9%, assuming an additional 15 trainee positions planned from 2019 are filled. The Ministry's data indicates that by 2028 the inpatient workload per orthopaedic surgeon will need to increase by 6% to match the level of service delivered in 2018 (Figure 4).



Source: Ministry of Health 2019

**Figure 4: Forecast orthopaedic case-weighted events against forecast orthopaedic surgeon workforce**

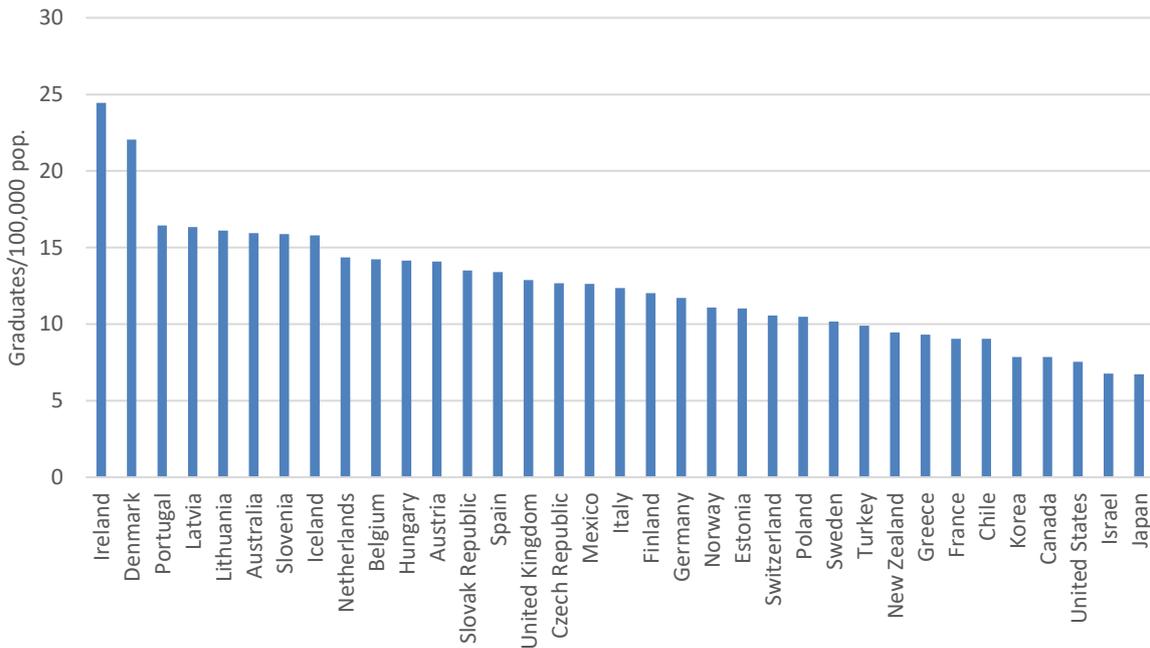
### Supply of medical specialists

Supply of medical specialists has three rudiments:

- newly trained New Zealand specialists joining the specialist workforce
- recruitment from overseas
- retention

### Supply of specialists from New Zealand-trained doctors

The entrenched, long-term shortage of specialists in New Zealand is due in part to decisions on the supply of doctors in the past. In 1982 the capped number of medical school places was reduced by over 50, to 285 per year, and remained at that level for 22 years. A series of increases between 2004 and 2015 saw the number of medical school entrants doubled, yet in 2016 New Zealand still had a low rate of medical graduates per capita compared to other OECD countries (Figure 5). By 2020 there are expected to be about 570 medical graduates annually, though New Zealand would continue to be in the bottom half of the table even if other countries' rates remained at 2016 levels.



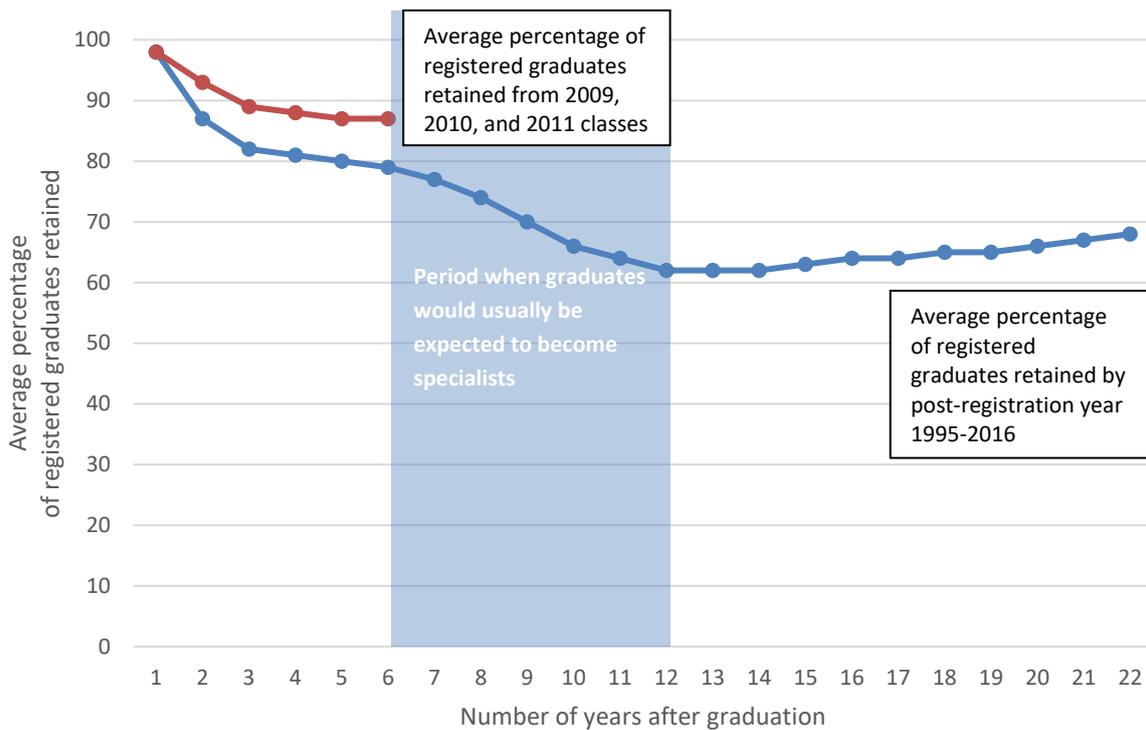
Source: OECD Health Data 2018

**Figure 5: Medical graduates per 100,000 population in OECD countries, 2016 or nearest year**

It generally takes between six and 12 years to become a medical specialist following graduation from medical school - and there will be losses along the way.

Medical Council data show that since 1995 an average of 21% of graduates who registered in New Zealand following graduation were no longer registered six years later; 38% were not registered 12 years later (Figure 6). The steep drop in retention 6 to 12 years post-registration indicates a surge of doctors leaving around the time they qualify as a specialist, consistent with data on retention of doctors after obtaining a vocational registration, discussed below. Over recent years the attrition rates have improved. An average of 87% of graduates from the 2009, 2010 and 2011, for example, were retained six years after registration. This may be largely a result of reduced opportunities for specialist training in Australia – the destination for the vast majority of New Zealand doctors who head overseas.

In addition to the loss of registered graduates, some graduates – around 5%-6%, including in particular overseas fee-paying students – do not register in New Zealand after graduation.<sup>15 16 17</sup>



Source: MCNZ

**Figure 6: Average percentage of registered graduates retained by post-registration year**

### Recruitment from overseas

Medical Council data for the last five years show international medical graduates (IMGs) make up 55% of new vocational registrations for hospital specialists. Assuming about 180 of the current estimated average of 400 specialists entering the DHB workforce annually are New Zealand graduates, that number is estimated to start rising to approximately 240 from 2026 as a result of New Zealand graduates increasing from next year. This assumes current attrition rates continue, and approximately 40% of new vocational registrations are for primary care medicine, based on recent trends. Given that projected DHB specialist intakes are estimated to average around 400 per year up until 2028, and will need to be approximately 500 specialists per year to address the current shortages over 10 years, the heavy dependence on IMGs will continue.

While overall IMGs make up 43% of New Zealand’s specialist workforce, dependency on IMGs is much greater in the provinces. A survey of ASMS members in August 2016 indicated IMGs in larger urban district health boards (DHBs) comprised approximately 37% of the senior medical officer (SMO) workforce on average, compared with approximately 66% in the smaller provincial DHBs. The Medical Council’s Medical Workforce Survey data shows a similar pattern for the total medical workforce.<sup>18</sup>

There is a dearth of research on the reasons why doctors migrate between countries. However, recent studies concerning New Zealand’s main source of IMGs – the United Kingdom – indicate doctors’ motivations for moving here are influenced largely by ‘push’ factors related to unpopular health policies at home that are having a negative effect on the morale of the medical workforce,

and 'pull' factors related to a perceived better quality of life and working conditions in New Zealand.<sup>19 20</sup>

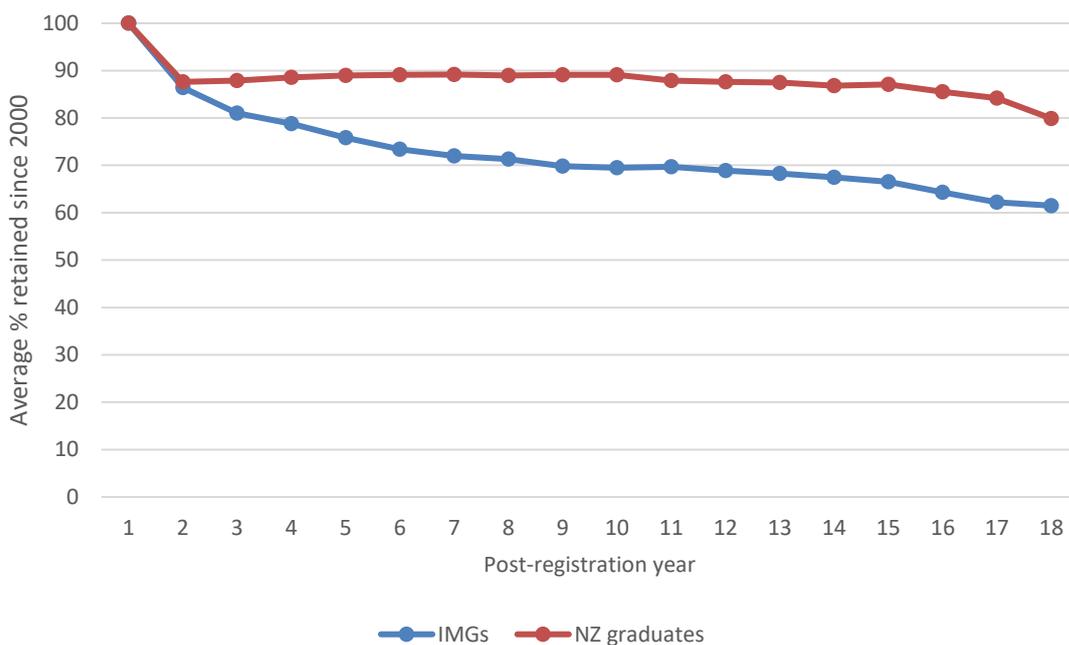
New Zealand's perceived lifestyle and working conditions appear to play a big part in attracting around 500 doctors a year from the UK and around 340 a year from North America. However, many do not stay for long.<sup>21</sup>

## Retention

Although the retention rate for both New Zealand graduates and IMGs is on average between 85% and 90% one year after registration in a vocational scope, the retention rate for New Zealand graduates stabilises, while the retention rate for IMGs continues to drop after the first year. A quarter are lost by the fourth year (Figure 7).<sup>22</sup>

From 2010 to 2016, more than 800 doctors who gained vocational registration over that period were lost to the New Zealand workforce by the end of it (258 New Zealand graduates; 569 IMGs).

A Medical Council-commissioned survey of a small number of IMGs (51) requesting a Certificate of Good Standing and who were leaving New Zealand found that 41% of respondents had only intended to stay in New Zealand for a short period at the time of arrival; 24% left New Zealand for family reasons, 22% left to take up other professional opportunities or higher training, and 16% left for higher remuneration.<sup>23</sup>



Source: MCNZ 2019

**Figure 7: Retention of IMGs and New Zealand graduates after obtaining vocational scope of practice**

## Discussion/comment

A common observation about medical workforce planning internationally is the lack of it. So often it appears the challenges that are involved – not least the need to plan two decades ahead to account for the length of time needed to train specialists – leads to a policy stasis with workforce planning ending up in the ‘too hard’ basket. This in turn falls to depending essentially on introducing incremental changes in staffing on a year-to-year basis and making short-term adjustments to services and staffing in response to emerging health demand. In New Zealand’s case the medical workforce gaps have been closed to some extent by importing IMGs.

The limited planning to date in New Zealand is marked by an apparent aversion to the possibility of training too many doctors, hence the cut in medical school places in 1982 which remained in place for 22 years and which has contributed to today’s specialist workforce shortages.

These days the solutions to increasing workforce needs are seen in ‘changing models of care’ – a catch-phrase for health service ‘reformers’ internationally – which are now considered “essential to ensure a sustainable, affordable medical workforce into the future”. This is leading to a concerted drive towards service redesign and workforce re-engineering. However, paradoxically, the models of care for which there is best evidence for improving the efficiency and effectiveness of services are those that require sufficient specialist workforce capacity to enable genuine patient-centred care, integration of services and distributed clinical leadership.

Projecting future health needs and the necessary medical workforce is by no means an exact science and relies on various assumptions holding true. Such projections therefore are qualified with a big question-mark. However, there is more than enough information and data on the New Zealand specialist workforce today to provide policymakers with guidance on specific issues to be addressed in the short to medium term, which could relieve workforce pressures in the longer term. For example, there are well-reported:

- long-term specialist workforce shortages
- studies showing high specialist burnout rates
- continuing high dependence on IMGs
- an aging workforce
- a growing proportion of female specialists
- attitudinal changes about the importance of work-life balance.

Underlying all of these factors is a chronic retention issue.

Given the length of time and effort necessary to become a medical specialist, one would not expect attrition rates to be high relative to other health workers – an argument sometimes used to justify inaction by DHBs. Career changes are not common, and alternative employment is limited, so attrition from the DHB workforce for medical specialists would usually relate to death, moving (or returning) overseas, retirement or moving exclusively to the private health sector. Ministry of Health data show that about 70% of exits from the New Zealand specialist workforce (private and public) are doctors aged under 60, therefore ruling out moves to the private sector as a reason for attrition and largely ruling out retirement for this portion of doctors. Some of those doctors will return to the workforce at a later stage in their career, though MCNZ retention trends over a 17-year period indicate most do not.

That New Zealand can lose 800 medical specialists within seven years of their registering as a specialist suggests that, while adequate recruitment remains critical, an even more important issue today is addressing poor retention, taking into account the changing composition and needs of the workforce. This could potentially make major inroads into fixing workforce shortages over the medium term.

It is recognised that health service employers have little influence over some of the reasons why doctors leave the New Zealand workforce. They can address at least one critical factor, however: the working conditions in which doctors practise.

The medical workforce literature highlights the need for health service organisations to consider the reputation of their organisation as an employer and as a place to work, in order to create a climate that will attract and retain staff. A major report on health professional mobility in Europe identifies three key factors that influence whether staff will stay or go:<sup>24</sup>

- employment quality
- work quality
- organisational quality.

Employment quality relates not just to pay but also to terms and conditions, such as opportunities for flexible working arrangements and conditions that enable a reasonable work-life balance.

Work quality includes matters concerning inappropriate or unsafe work. Many studies report negative effects of work-related stress in health care, particularly from high workload. Studies show that the consequences of continued high levels of stress for health professionals, including doctors, include not only reduced efficiency but higher error rates and higher staff turnover.

The literature on retention has a particular emphasis on the relationship between leadership and staff satisfaction. Dissatisfaction with management styles has been shown to be a major driver in job dissatisfaction. On the one hand, doctors have reported dissatisfaction with their level of influence over their work, the perception of not being heard, disconnection between management and clinical work, lack of shared decision-making and lack of recognition. On the other hand, participation in decision-making processes has been found to enhance job satisfaction.

Many of these issues are well recognised in New Zealand's DHBs. The knowledge is there. The question is one of political will to make use of it.

## Conclusion

From the available information and data, New Zealand's need for health services is projected to increase at a higher rate than the projected growth of the specialist workforce during the next 10 years. That is a conservative estimate as it does not take into account current unmet health need. It means the current estimated workforce shortage of approximately 1000 specialists will continue - and the working conditions that have contributed to a reported 50% burnout rate among specialists will also continue. Some specialties will see the rate of service needs increase above workforce growth.

Despite increases in medical school intakes, New Zealand will continue to have a relatively low number of medical graduates per capita among OECD countries and there will continue to be a heavy reliance on IMGs to provide specialist services.

Specialist workforce growth rates are hampered by poor retention rates, especially among newly qualified specialists and IMG specialists.

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