

Assessment and modelling of general practice and community setting capacity for medical trainees in northern New Zealand

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ABSTRACT

AIMS: To estimate the capacity of general practice to accommodate undergraduate and postgraduate medical trainees, and model efficient ways to utilise identified capacity and increase capacity.

METHODS: We conducted an online survey, with phone follow-up to non-responders, of all general practices in the northern half of New Zealand. The main outcome measures were current placements and future intentions for taking medical trainees; factors influencing decisions and possible incentives to take trainees.

RESULTS: Sixty percent of existing practices take no medical trainees. On average, practices take trainees for 50% of available cycles per year. Postgraduate trainees displace undergraduate student placements due to space limitations. Only 1.9% practices demonstrate current capacity for full vertical training by taking all three types of trainee (undergraduate, PGY, registrar). Modelling on current use means 69 additional practices will be needed to be recruited by 2020.

CONCLUSIONS: A number of strategies are presented aimed at increasing short-term undergraduate teaching practice capacity in New Zealand, but also relevant to Australia and elsewhere. In the long-term, establishment of the proposed School of Rural Health would enable integrated vertical teaching and address the GP training capacity issues.

New Zealand needs more general practitioners (GPs). There is an ageing workforce,¹⁻³ two decades where few GPs trained,⁴ more part-time GPs,⁴⁻⁸ plus increasing demands for GP services. Training is complex, with universities, district health boards (DHBs) and the Royal New Zealand College of General Practitioners (RNZCGP) independently recruiting and accrediting training general practices, and allocating medical students, postgraduate year (PGY) doctors and registrars to practices respectively.

All medical students at Auckland and Otago Universities need general practice placements throughout their training to qualify. Auckland places students in the eight northernmost DHBs, with all remaining DHBs in Otago's 'catchment'.

Doctors employed by DHBs during their two prevocational intern years now also complete a three month community-based attachment, mostly in general practice.⁹ GP registrars undergoing vocational training by the RNZCGP have two six-month practice attachments, followed by two years as senior registrars working in practices. The number of government-funded medical students has increased annually, reaching a cap of 600 (300 per university) entering Year 2 in 2016. Steady state will be achieved in 2019. At the same time, PGY and registrar numbers are also increasing, placing pressure on available teaching practices.

Not all practices can or will train. Reasons include lack of consulting rooms with computer and software licences; insufficient patient workload in small solo

practices; no vocationally trained doctor to supervise; choice not to train due to increased workload, insufficient time or cost-effectiveness issue; or practices deemed unsuitable following accreditation visits or negative feedback from trainees. When capacity issues force practices to choose between undergraduate students or postgraduate registered doctors who can take clinical responsibility, including independent prescribing, whose salary is paid by the DHBs and who can generate practice income, many choose the latter. Auckland University now has insufficient good quality attachments for medical students, with practices preferentially taking PGY and registrars, while student numbers continue to rise. Lack of coordination between universities, DHBs and RNZCGP impinges on the ability of the system to meet these multiple training requirements. This project aims to estimate the capacity of general practice to accommodate undergraduate and postgraduate medical trainees in the University of Auckland catchment area, and to model efficient ways to utilise identified capacity and to increase capacity.

Methods

A questionnaire was developed with input from the New Zealand Medical Association (NZMA), General Practice New Zealand (GPNZ), the Rural GP Network, RNZCGP and HWFNZ. The University of Auckland Human Participants Ethics Committee approved the study (Ref. 015962). Datasets identifying New Zealand general practices provided by universities, RNZCGP, Rural GP Network, GPNZ and information from the internet were merged. Practices were invited to complete an online questionnaire, with non-responders followed up by phone. The University of Auckland surveyed practices in the eight DHBs in which we place students, and the University of Otago conducted a similar survey for the southern half of the country. We used University of Auckland and RNZCGP datasets on actual practice placements of medical students and GPEPs in 2015, but location of PGY placements was unavailable. The final dataset was cleaned and checked for accuracy, including removal of duplicate practices, with descriptive and modelling analyses conducted.

Results

From the 590 general practices identified in the University of Auckland catchment region, 432 responded (73% response rate) (Figure 1). Twenty-one percent of responding, compared with 9% of non-responding practices had hosted medical students, and 28% and 7% respectively had hosted GP registrars in 2015. Thirty-five percent of responding practices reported also hosting non-medical students, predominantly nursing. Of the 40% of responding practices that took trainees, 12% took UG students, 17% took GPEP and 7% took a UG plus either a PGY or GPEP, with only 1.9% demonstrating current capacity for full vertical training by taking all three types of trainee (Figure 2). Practices took on average medical students for 3/6, PGY for 1/4 and registrars for 1/2 cycles.

Fifty-eight percent (249) practices showed interest in sharing supervision with another practice, and 11% indicated interest in assistance in adding on or converting a room into an additional consulting room for training purposes. Many practices had additional consultation sites in their communities that they regularly visited. Of the 432 practices, 53 reported using a satellite practice and 129 ran clinics in a variety of other sites: 39 school-based, 28 marae-based and seven prison-based clinics, 100 rest homes and 33 not otherwise specified. Availability of such sites increases potential capacity for trainees.

In order to forecast future student/trainee numbers, current and projected undergraduate student numbers were provided by the University of Auckland for 2016–2020. Projected PGY numbers for the eight DHBs were provided by the MCNZ. Because no numbers were available from RNZCGP on estimated GPEP numbers for 2016 and onwards, figures were estimated using straight line growth through to 2020. Overall numbers of placements rise from 1,094 in 2015 to 1,507 by 2020 (38% increase). This equates to an additional 69 practices required to take trainees full-time in 2020. The numbers of medical students and PYG and should not vary significantly from these estimates. However, because the number of registrars (both government-funded and self-funded) each year is unknown, these estimated numbers could change and would need to be remodelled accordingly.

Figure 1: Flowchart of practice responses.

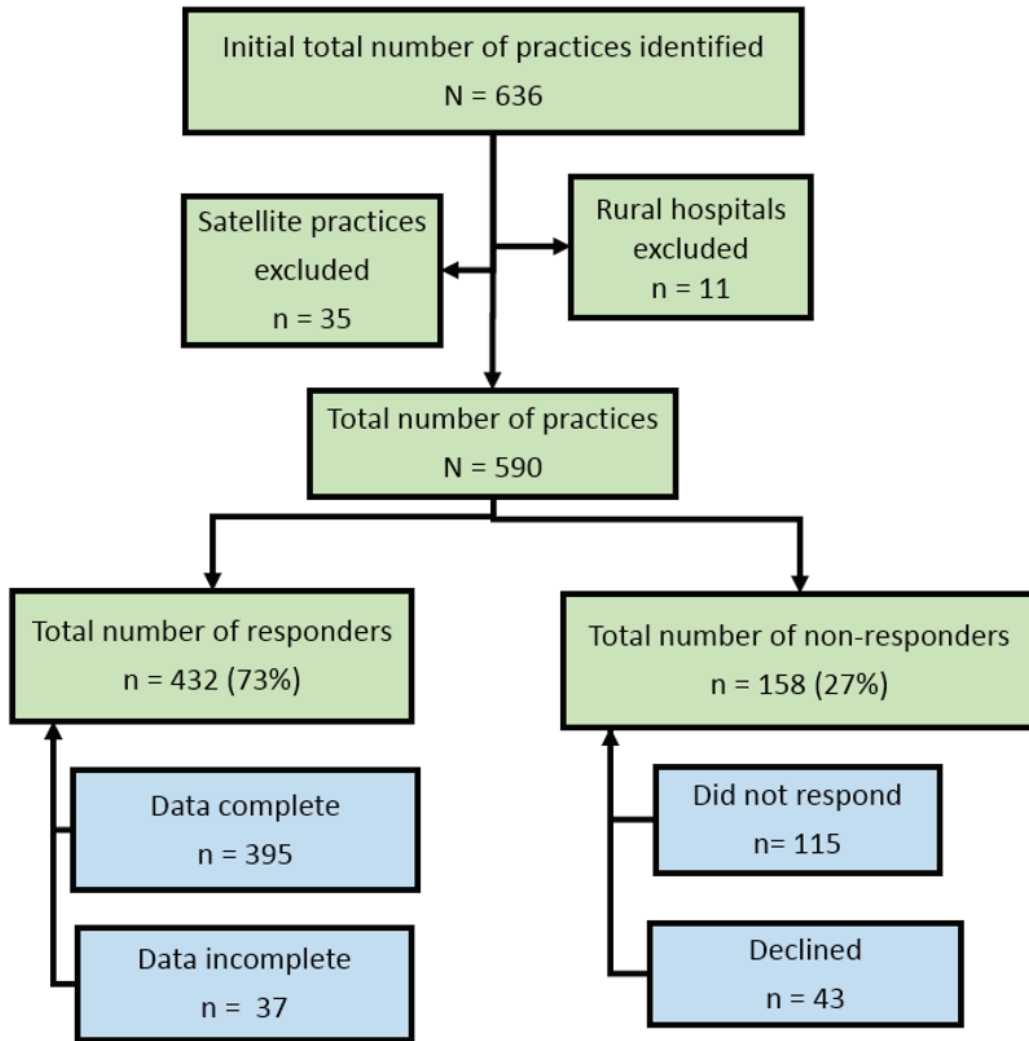
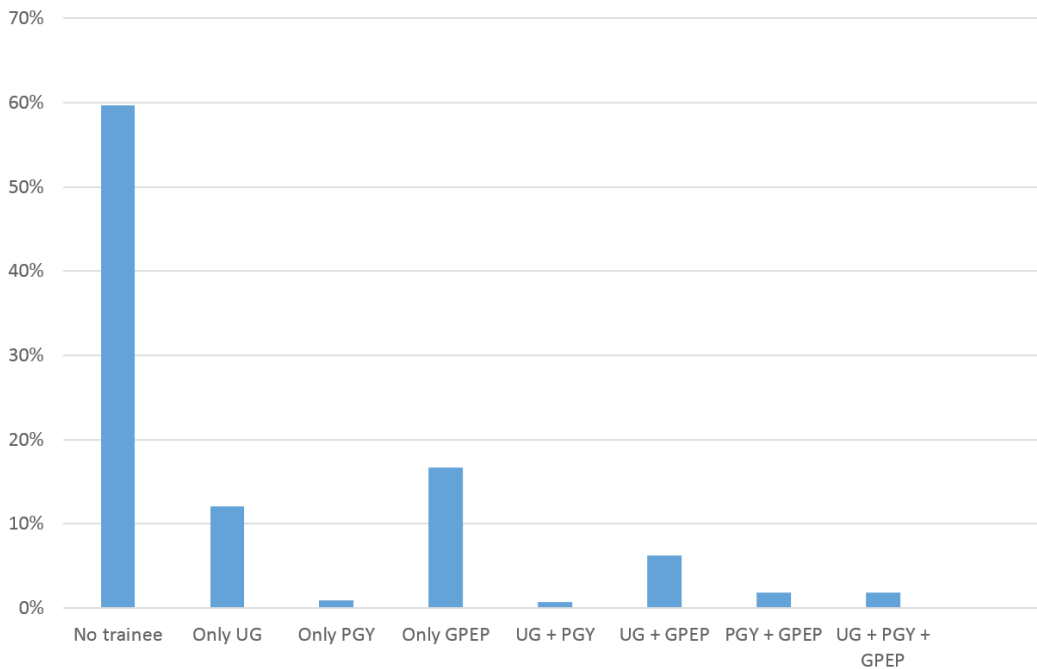


Figure 2: Percentage of practices taking one, two or three types of trainees (total n=432).



The extra number of teaching practices needed was modelled based on the assumption that each practice can take six medical students, two PGY or one GPEP per year. Table 1 summarises practice number forecasts. The best-case scenario is modelled on only 66% of PGY being in general practice

attachments (based on current figures), and the current proportions of practices that take combinations of two types of trainees or all three types. The worst case scenario is based on the assumption that the current proportion of cycles that practices take trainees continues.

Table 1: Projected increased numbers of teaching practices needed 2016, 2017 and 2020.

	Year 5	Year 6	PGY	GPEP	Total
2015					
Number of trainees	240	206	21	95	562
Number of full-time practices needed*	40	34.3	5.3	95	174.6
Adjust for only 66% PGY in GP	40	34.3	3.5	95	172.8
Adjust for taking multiple trainees [∇]	36.6	31.3	3.3	85.6	156.8
Adjust for mean students actually taken 2015 [¥]	54	70.8	3.5	95	223.3
Adjust for mean PGY & GPEP actually taken [♣]	54	70.8	5.4	145	275.2
2016					
Number of trainees	252	236	57	104	649
Number of full-time practices needed*	42	39.3	14.3	104	199.6
Adjust for taking multiple trainees [∇]	38.3	35.8	13.7	93.7	181.5
Adjust for only 66% PGY in GP	42	39.3	9.4	104	194.7
Adjust for mean students actually taken 2015 [¥]	56.7	81.1	9.4	104	251.7
Adjust for mean PGY & GPEP actually taken [♣]	56.7	81.1	14.4	149	301.2
2017					
Number of trainees	252	248	97	107	704
Number of full-time practices needed*	42	41.3	24.3	107	214.6
Adjust for taking multiple trainees [∇]	38.3	37.7	23.2	96.4	195.6
Adjust for only 66% PGY in GP	42	41.3	16	107	203.6
Adjust for mean students actually taken 2015 [¥]	56.7	85.2	16	107	264.9
Adjust for mean PGY & GPEP actually taken	56.7	85.2	24.5	153	319.4
2020					
Number of trainees	284	282	233	116	915
Number of full-time practices needed*	47.3	47	58.3	116	268.6
Adjust for taking multiple trainees [∇]	43.1	42.4	55.7	104.5	245.7
Adjust for only 66% PGY in GP	47.3	47	38.4	116	248.8
Adjust for mean students actually taken 2015 [¥]	63.9	96.9	38.4	116	315.3
Adjust for mean PGY & GPEP actually taken [♣]	63.9	96.9	58.8	166	385.6

*Assume six medical students, four PGY or one GPEP.

[∇]Assume that 8.8% of practices that take UG; 4.4% of practices that take PGY & 9.9% of practices that take GPEP, also take other types of trainees (based on 2015 figures).

[¥]In 2015, practice took mean 4.4 Year 5 & 2.9 Year 6 out of maximum of six students per year.

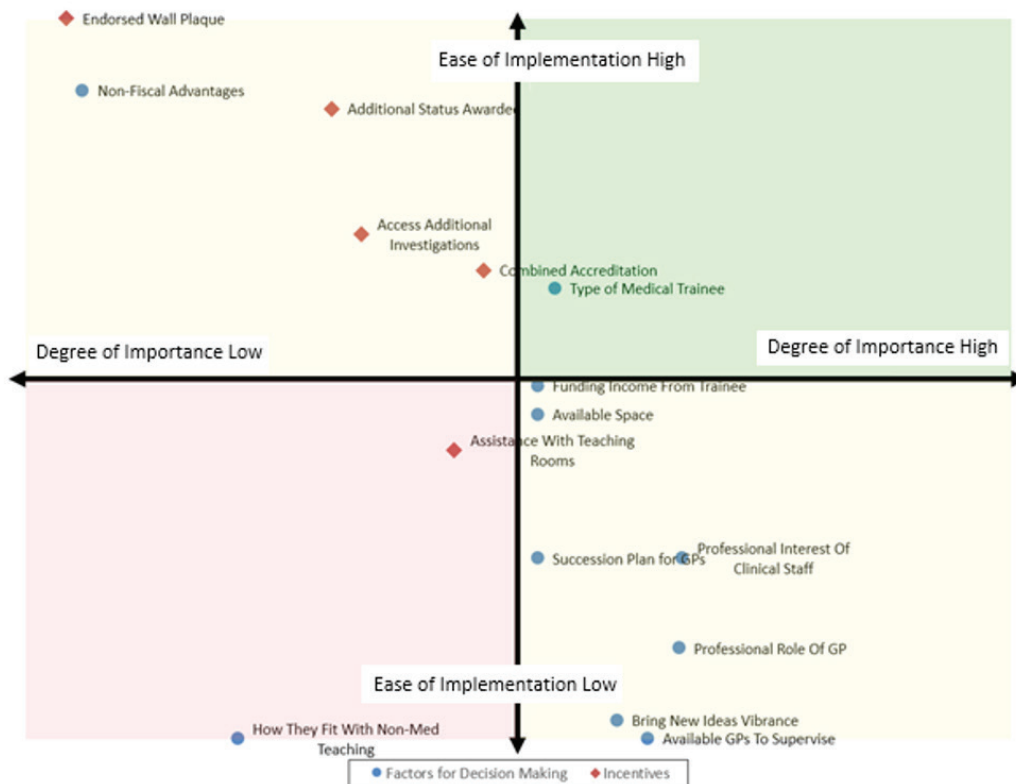
[♣]In 2016, practices took mean 2.6 PGY out of maximum four, and in 2015 practices took mean 0.7 GPEP out of maximum one (ie, some practices took GPEP for only six months of the year).

This model does not allow for the fact that after GPEP1, practices may host registrars at GPEP2 and GPEP3 (ie, for a further two years) and therefore may significantly overestimate capacity. A practice hosting a registrar may have no capacity to host medical students or other trainees for three years, whereas our model only accounts for one year.

The questionnaire sought to identify important factors for decision making when selecting a student/trainee and possible incentives to increase practices' willingness and ability to undertake supervision responsibilities. The factors for decision making and incentives based on 'degree of importance' (derived from survey) and 'ease of implementation' (derived anecdotally) are summarised (Figure 3). The green zone represents opportunities that are both easy to implement and have a high impact; options here are the most desirable. Alternatively, the red zone represents opportunities that are difficult to implement and have low impact. The two yellow zones represent trade-off opportunities between ease of implementation and impact.

Strategies that might increase the status of being a teaching practice, including an endorsed plaque or notice for the wall, non-fiscal advantages such as honorary academic status with the Department of General Practice & Primary Health Care and companying access to University of Auckland databases, subsidised post-graduate education and the ability to earn Maintenance of Professional Standards continuing medical education and peer group credits for RNZCGP Fellowship accreditation were not ranked highly by participants in the survey as incentives to take on teaching. A combined accreditation process, instead of the University of Auckland, the RNZCGP and the MCNZ all conducting their own accreditation of practices for teaching purposes, was also seen as reducing a barrier to teaching. Assistance with increasing numbers of available teaching rooms ranked as important. Practices rated highly the funding they receive from trainees and available space as important considerations, as well as the intrinsic value of having trainees in the practice, and their possible contribution to future succession planning.

Figure 3: Factors for decision making and incentives with respect to degree of importance and ease of implementation.



Discussion

The response rate was 73%. Non-responding practices were less likely to host trainees than non-responding practices. Only 40% hosted any type of trainee, with only 7% taking both undergraduate and postgraduate trainees, and <2% providing full vertical training (taking UG, PGY and registrars). On average, practices hosted trainees for only half the year. Many practices consulted in additional community-based sites, increasing potential training capacity. Funding received for having trainees was important. Available teaching space also rated highly, and financial aid to achieve this might increase capacity.

Once a practice has taken a trainee they may have no additional available room, regardless of size. The trend over the past decade has been for several smaller practices to amalgamate into a new centre with other services (eg, laboratory, radiology, community pharmacy, other co-located allied health and social services). Our data supports anecdotal evidence that this may reduce training capacity. Whereas individual smaller practices each hosted medical students, the new enlarged practice takes one student for the entire group.

There is insufficient capacity to accommodate the increasing number of medical trainees over the next five years. A 2007 New Zealand study warning that the capacity issue should be addressed prior general practice rotations made compulsory for all PGYs was not heeded.¹⁰ In Australia it was identified in 2008 that general practice lacked the resources, infrastructure, including consulting rooms and collegiality required to accommodate PGY training, with associated income losses to the practice, and recommended support to fund additional consulting rooms.¹¹

We are attempting to implement a number of strategies to assist in increasing training capacity suggested by our findings. These generic solutions may assist other regions in augmenting medical training capacity.

Strategies to increase capacity

- All relevant bodies, including universities, RNZCGP, MCNZ and HWFNZ work cooperatively to accredit teaching practices and share placement information of their respective trainees. Initial discussions are underway.
- Increase capacity for vertical training: Coordination between the universities, MCNZ and RNZCGP could facilitate development of a vertical curriculum.¹² Registrars are routinely involved in undergraduate teaching in hospitals, and GP registrars in Australia have this role.¹³ The need to increase and upgrade infrastructure, including consulting rooms and information technology, to accommodate rising numbers of trainees has long been identified.^{11,12}
- Some practices have the ability to convert a pre-existing room (such as one used for paper files) or build on an additional consulting room. In 2009, the UK allocated £100m to assist up to 600 practices to upgrade to teaching premises.¹⁴ The Australian government provided funds to upgrade and/or extend the existing regional or rural general practice premises by adding additional consultation rooms for medical training.¹⁵
- Increase capacity by engaging with non-training practices. All practices have been mapped and allocated to specific academic and administrative staff to contact and recruit where appropriate, as well as liaising with Primary Health Organisation practice networks for assistance. A preferred provider status has been introduced for practices taking students for the entire year, including bonus payment, which has the potential to double capacity.
- A model of teaching has been developed offering an alternative to the requirement for a consulting room, while still maintaining good engagement with community-based patients. Dissemination of this strategy is via face-to-face presentations to practices, written documentation and a Youtube video.¹⁶
- Students may engage with patients at satellite, school, prison, rest-home, occupational and other clinics, freeing up space at the main centre.
- Until the capacity issue has been resolved, PGY community-based attachments should be restricted to non-general practice settings (eg, hospice, urgent care, community-

devolved specialist services such as mental health) unless the site also takes medical students, to prevent their displacement by PGY.

- Two neighbouring practices share trainees, each hosting for two or three days per week.
- Postgraduate education in teaching and learning can assist GPs and other practice staff supervise trainees. In the UK, universities have training programmes for teaching GPs who get maintenance of professional standards credits and in most cases are also paid to attend. Some universities offer free enrolment in postgraduate courses, certificate or diplomas in medical education to assist practice-based staff to upskill. The Australian model of funding academic registrar posts means they start general practice with educational competencies.¹⁷
- New Zealand universities pay a small access fee to practices for hosting medical students, but it is insufficient to cover time and resources required to supervise. Postgraduate trainees can generate the practice some income from consultation fees. An Australian study demonstrated that taking medical students represents a net cost higher than taking PGYs or registrars, in a comparable system.¹⁸ A realistic teaching infrastructure payment fund for general practices would ensure that practices are not out of pocket when they take students. Both Australia and UK governments fund practices to incentivise and facilitate training opportunities. In Australia this is part of the Practice Incentives Programme, with practices paid \$200 per three-hour session for teaching medical students.¹⁹
- A cultural transformation is required for the value of teaching practices to be recognised in New Zealand. Practice staff need to recognise the many intrinsic advantages of teaching, which include increasing job satisfaction; fostering reflective practice; benefiting patients from increased attention and involvement in their care; students contributing

to the practice knowledge base, and possible succession planning. Strategies include educating practices at conferences and face-to-face visits, providing certificates and wall plaques, and offering honorary university lectureships to teaching staff. In the UK, patients afford teaching hospitals and practices special status as places providing high-quality services and hence desirable to attend for health care. Promoting public awareness and appreciation of teaching practices in New Zealand would further assist.

The GP workforce shortage is far more pronounced in rural areas.²⁰ The University of Auckland and University of Otago, in partnership with the RNZCGP and the New Zealand Rural General Practice Network, are proposing the creation of a national School of Rural Health to address the country's chronic shortage of rural health professionals.²¹ This will require new government money invested in rural communities, including academic positions and teaching spaces to enable both horizontally (inter-disciplinary) and vertically integrated training, whereby medical students, PGY and GP registrars learn together, alongside nurses and other health professionals. A coordinated rural pathway, with repeated and prolonged exposure to the rural context, is more likely to deliver the desired increase in the health workforce. Establishing this school with the necessary investment will be a long-term solution to GP training capacity issues.

Conclusion

Rising numbers of medical students and displacement by PGY and registrars means the University of Auckland has insufficient teaching practices for general practice attachments. In the long-term, a whole of system change is needed, addressing issues of general practice resourcing, funding and service delivery, to ensure teaching capacity across the learning continuum. In the short-term, we suggest strategies to address the shortfall in medical student placements. This study modelled the increasing number required to accommodate all medical trainees and offers strategies to increase capacity. Time will tell whether these actions will be sufficiently timely and effective to address the problem.

Competing interests:

Dr Goodyear-Smith is the Head of the Department of General Practice & Primary Health Care, University of Auckland, and has the responsibility of all University of Auckland medical students completing their required general practice attachments.

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