

Addressing the GP vocational training crisis in remote Australia: Lessons from the Northern Territory

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Abstract

Objective: GP vocational training enrolments are declining Australia-wide and, in the Northern Territory (NT), considered by some as ‘...the litmus test for the national scene’ the decline is precipitous. This research investigates the drivers of declining GP training uptake in the NT and identifies and ranks potential solutions.

Setting: NT, Australia.

Participants: Ten senior medical students, 6 junior doctors, 11 GP registrars, 11 GP supervisors and 31 stakeholders.

Design: Mixed methods: scoping review of Australian literature mapping key concepts to GP training pathway stages and marketing/communications; secondary data analyses; key informant interviews; and a stakeholder validation/prioritisation workshop. Interview data were thematically analysed. Workshop participants received summarised study findings and participated in structured discussions of potential solutions prior to nominating top five strategies in each of five categories.

Results: Highly prioritised strategies included increasing prevocational training opportunities in primary care and selecting junior doctors interested in rural generalism and long-term NT practice. Also ranked highly were: [Medical School] ensuring adequate infrastructure; [Vocational Training] offering high quality, culturally sensitive, flexible professional and personal support; [General Practice] better remunerating GPs; and [Marketing] ensuring positive aspects such as diversity of experiences and expedited GP career opportunities were promoted.

Conclusion: Multifaceted strategies to increase GP training uptake are needed, which target different stages of GP training. Effective action is likely to require multiple strategies with coordinated action by different jurisdictional and national key stakeholder agencies. Foremost amongst the interventions required is the urgent need to expand primary care training opportunities in NT for prevocational doctors.

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KEYWORDS

career choice, family medicine, medical speciality choice, postgraduate education, primary care, vocational training

1 | INTRODUCTION

Comprehensive and well-functioning primary health care (PHC) services are critical to the effectiveness of the Australian health system, as PHC is associated with more equitable and better health outcomes and is the most efficient and cost-effective part of the health system.¹⁻⁵ PHC is especially important for Aboriginal and Torres Strait Islander peoples living in remote Australia, who experience higher prevalence of chronic health conditions, higher rates of hospitalisations and poorer health outcomes than non-Indigenous Australians.^{4,6,7} However, access to GPs is much more difficult for people living in remote Australia than for their metropolitan counterparts.⁸ A key reason for this is the difficulty in ensuring an adequate and well-distributed GP workforce in remote areas. This has been a persistent and pressing issue with which policy-makers Australia-wide have grappled for decades.⁹ Despite extensive action taken over many years by national and jurisdictional governments, the relative geographical distribution of the GP workforce has, over time, worsened.¹⁰ Supply and geographical mal-distribution of the GP workforce remain arguably Australia's most important medical workforce issues, and the extent of this is particularly evident across northern Australia.¹¹

The Northern Territory (NT) faces ongoing and substantial challenges in ensuring an adequate GP workforce supply, especially in remote and very remote areas, which require different models of PHC delivery to the more traditional, private general practice (discrete) model found elsewhere in Australia.¹²⁻¹⁷ GP registrars make a significant contribution to the NT workforce. In 2005, GP registrars comprised one-quarter of the NT GP workforce, increasing to one-third by 2010.¹⁸ In 2019, there were 203 Full Time Equivalent (FTE) GPs in the NT and 127 GP registrars, suggesting that the NT remains similarly heavily reliant on GP registrars as was the case in 2010.^{19,20} This heavy reliance on GP registrars has for many years been substantially higher in the NT than for any other jurisdiction. Training GP registrars, however, is only one part of a pathway that produces GPs with the skills needed to work effectively in NT. Conceptually, the training pathway comprises several distinct phases: selection and training of medical students; internship; prevocational training; and general practice vocational training, all of which are important for longer term retention of junior doctors in the NT (see Figure 1).

What is already known on this subject?

- Aboriginal and Torres Strait Islander peoples living in remote Australia experience higher prevalence of chronic health conditions and therefore have a higher need for comprehensive primary health care than other Australians.
- Precipitous declines in GP vocational training enrolments in the Northern Territory have been observed since 2016.
- The decline in enrolments is already having a negative impact on the ability of Northern Territorians to access primary care as the NT is more heavily reliant on GP registrars for delivering GP services than other jurisdictions. It also threatens NT's future GP workforce supply.

What does this study add?

- Foremost amongst the multiple interventions required to address the decline in GP vocational training enrolments in NT is the urgent need to expand primary care training opportunities in the prevocational stage of training.
- Other highly ranked solutions include offering portable employment benefits during vocational training and ensuring that GP registrars receive high quality culturally sensitive, flexible professional and personal supports.
- Also ranking highly was the need for improved infrastructure in remote NT to accommodate and support learning teams in primary health care at all stages of the GP training pathway.

In recent years, there have been reports from Australian Regional Training Organisations (RTOs) of declining numbers of enrolments in GP training, with the Chairperson of Northern Territory General Practice Education (NTGPE) concluding '...we often are the litmus test for the national scene. The drop in numbers of doctors choosing to do General Practice training nationally is very worrying'.^{21,22} With the current transfer of GP training responsibilities back to the relevant colleges, the Menzies School of Health Research health systems research group

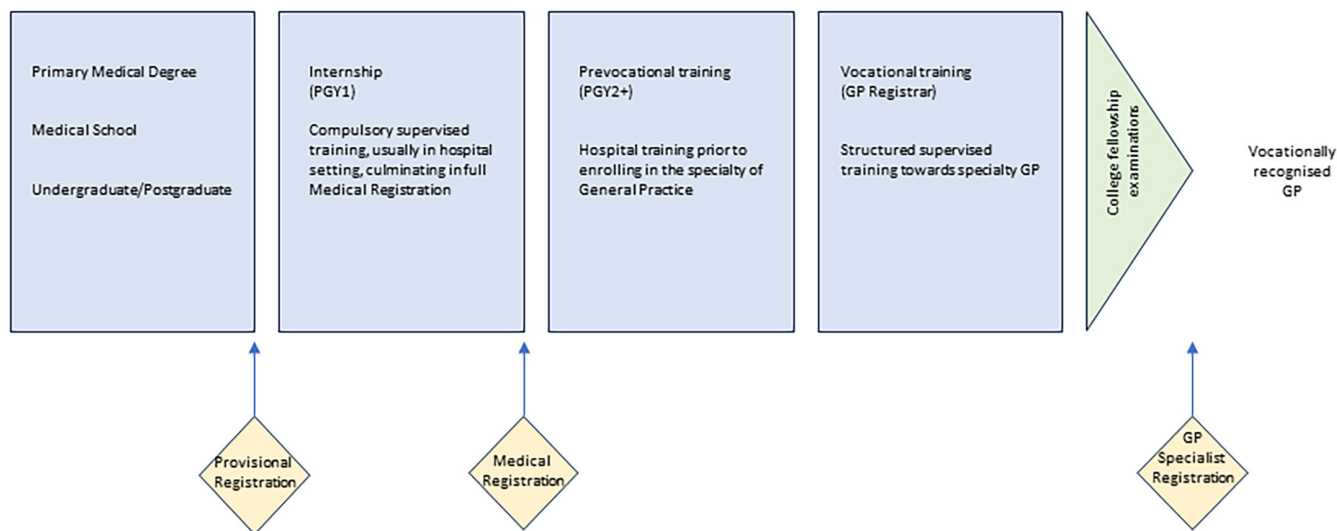


FIGURE 1 Schematic representation of education and training pathway to becoming a vocationally recognised GP. Source: Adapted from The Way Forward Report.¹

was commissioned to design and implement a study to better understand the decline in GP training uptake in the NT and what to do about it. The aims of this paper are to examine and document trends in GP training commencements in NT and nationally, identify the major factors driving these trends and document and prioritise a range of potential solutions.

2 | METHODS

A mixed methods approach was used, comprising (i) a scoping review of Australian literature; (ii) secondary data collation and analyses; (iii) medical student, junior doctor, GP registrar and stakeholder interviews; and (iv) a validation and prioritisation workshop with key stakeholders.

The scoping review of Australian literature which mapped existing knowledge about GP training uptake was primarily guided by the questions, 'What are the drivers of uptake of GP vocational training uptake in Australia and the NT?' and 'What potential strategies could increase GP vocational training uptake?' Inclusion and exclusion criteria are summarised in Table 1.

Searches were conducted in Medline (Ovid), CINAHL (EBSCO), Web of Science, Scopus and INFORMIT (see File S1). Grey literature was sourced from the knowledge of researchers, websites of key stakeholder organisations and directly from stakeholder representatives. The process of study selection (Figure 2) comprised collation, removal of duplicates and then a two-stage screening process. First, titles and abstracts were screened against the inclusion criteria. Second, articles that were unable to be excluded were retrieved as full texts and assessed against inclusion criteria. Both stages involved independent assessments by

two reviewers who met to resolve any differences. Data including characteristics of included studies were extracted and collated using NVivo 12 Pro (QSR International, Melbourne, Australia). The framework for the narrative synthesis was based on the distinct phases of the training pathway shown in Figure 1.

Administrative data provided by NTGPE were used to document changes in numbers of enrolling GP registrars. Data were analysed graphically.

Fifty-one semistructured interviews were conducted with 10 senior NT medical students, 6 NT junior doctors, 11 NT GP registrars or recent GP registrars, 11 GP supervisors and 31 key informants from NT and national stakeholder organisations (note that these categories of participants aren't mutually exclusive). Interviews were mostly conducted by video/teleconferences. Interviews explored participants' perceptions about the main drivers of falling numbers of doctors enrolling in GP vocational training, both across Australia and in the NT, and possible strategies to address these issues. Purposive and snowball sampling were used. A constructivist lens was used to design, collect and analyse data. A thematic analysis process as described by Braun and Clarke was used to analyse data.^{23,24} A coding framework was iteratively developed by three researchers (Authors 2–4) drawing on data from 10 interviews. The framework included a combination of deductive and inductive codes. Subsequently, data from all the interviews were read and re-read by the third researcher (author 4) and coded against the coding framework. Upon completion of the coding process, similar and different patterns and categories were identified, and themes were developed for reporting. The data analysis process was managed using NVivo version 12 (QSR International, Melbourne, Australia).

TABLE 1 Inclusion and exclusion criteria.

	Include	Exclude
Year published	2010 or later	Prior to 2010
Participant types	Medical doctors, medical students and key stakeholders in junior doctor training	Other health professional groups, school students
Setting	Australia	Not Australia
Outcomes	Describes patterns of uptake of General Practice or GP vocational training (e.g. preferences for GP speciality, interest in General Practice and attitudes towards general practice, intentions) Describes drivers of uptake of General Practice or GP vocational training or interventions which increase GP uptake (including rural generalist uptake) Describes factors that have an impact on progression through GP vocational training to qualifying as a GP Describes patterns, drivers and factors associated with rural/remote GP/other speciality training uptake/entry/completion Describes solutions to increase GP training uptake/interest/valuing of the profession	Lack of relevant outcomes
Study types	Peer reviewed: Qualitative, Quantitative, Perspective pieces, Editorials, Review articles. Non-peer-reviewed: Reports, articles in medical or mainstream media that add additional new information to what was known from other sources	Non-peer-reviewed commentary in social media or in response to media articles, articles in medical or mainstream media that were citing a known study but not reporting anything additional to the study
Language	English	Non-English

A workshop was convened to consider and validate strategies for increasing enrolments; to prioritise these strategies; and to provide advice regarding implementation of prioritised strategies. Approximately 1 week prior to the workshop, participants were provided with a table summarising potential strategies (see File S2). Participants had the option of attending the workshop face-to-face in Darwin or virtually, via an online video-conferencing platform. The validation and prioritisation workshop of stakeholder experts utilised a modified nominal group technique to identify the top five strategies in each stage of the training pathway. Each workshop participant then independently ranked the top five strategies via an online poll. The average score for each of the five strategies was calculated (5.0 = ranked as most important by all participants; 1.0 = ranked least important [of the top 5] by all participants). The analysis used a pathways framework, considering factors related to medical school training; internship; prevocational training; vocational training; general practice; and marketing and communications.

Ethics approvals were obtained from the Human Research Ethics Committee of the NT Departments of Health and Menzies School of Health Research (Ref 2020-3695) and from the Central Australian Human Research Ethics Committee (Ref CA-20-3706).

3 | RESULTS

The scoping review searches identified 1157 papers (Figure 2). After duplicates were removed, 899 papers remained. Seven hundred and ten articles were excluded by title and abstract screening, and 189 articles underwent full-text assessment. Seventy-seven were excluded, leaving 112 articles. The main reason for exclusion on full-text review was a lack of relevant outcomes (62 articles, 81%). The following summary of results synthesises and summarises enrolment data, in NT and nationally; the scoping review of the literature; qualitative findings from interview data; and the prioritisation of suggested strategies by the stakeholder validation and prioritisation workshop participants.

3.1 | Declining enrolments in GP training

Between 2017 and 2022, new enrolments in Australian General Practice Training (AGPT) declined by approximately 10% nationally (Figure 3).

In NT, new enrolments in GP vocational training declined by more than 80%, from a peak of 74 in 2016 to only 14 in 2023 (Figure 4).

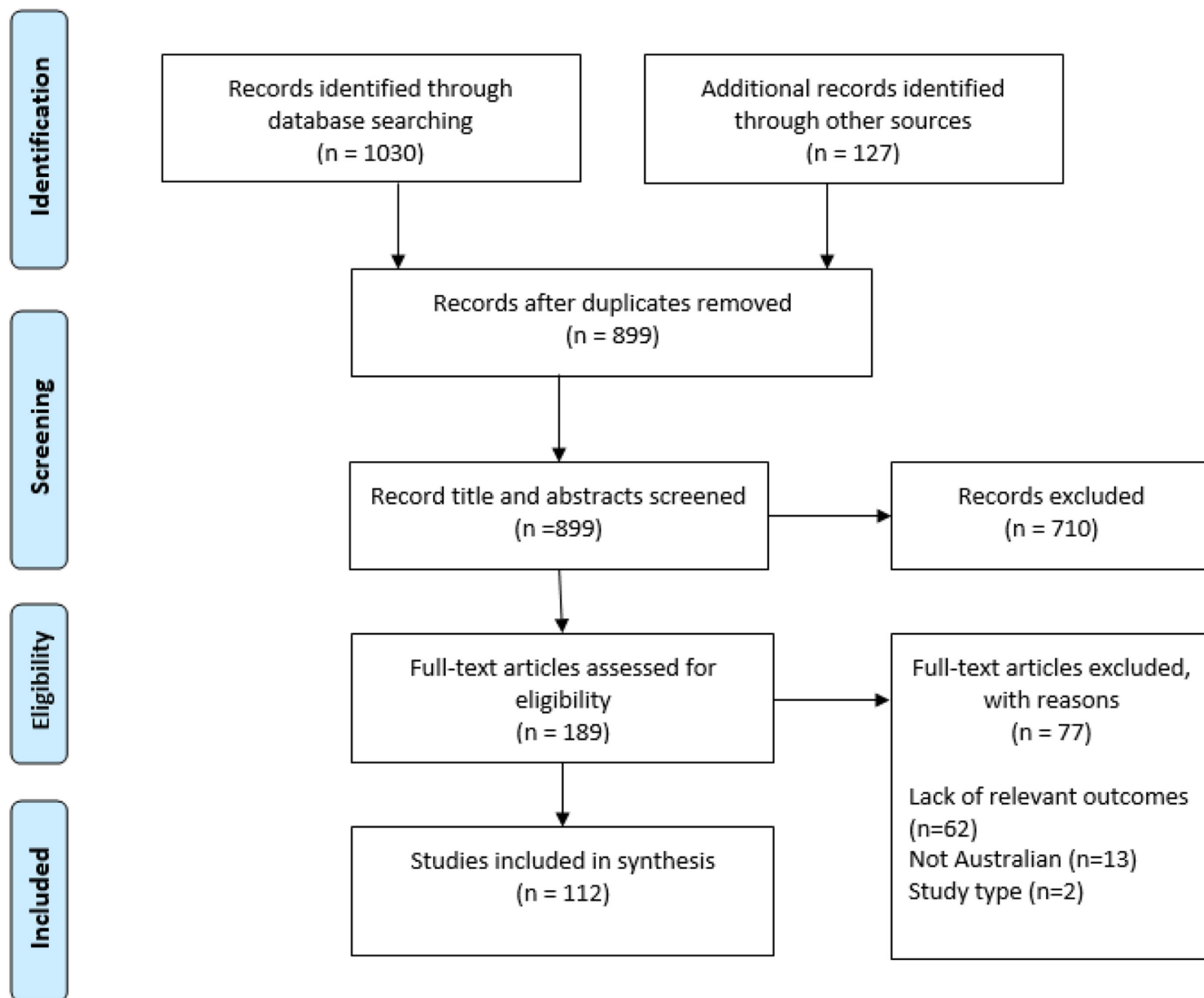


FIGURE 2 PRISMA flow diagram for the process of study selection.

3.2 | Drivers of decline in enrolments in GP training

3.2.1 | Medical school training

The scoping review indicated that characteristics of medical schools have a strong impact on graduates' choice of a general practice career. The combination of a medical school's commitment to social accountability, student selection strategies, tailoring of curricula, ensuring inspiring general practice role models have a high profile in teaching and supervision and using distributed educational models (to ensure rural and remote immersion or substantial rural exposure from the outset of medical school) is strongly associated with subsequent rural and remote generalist training and work.^{25,26} Interviews were consistent with this result.

....the med school really impacts things... I think, Flinders, JCU, Uni of Newcastle and Armidale, Uni of Wollongong, they [graduates] all end up going to regional areas, whereas the med schools based in capital cities, most of them end up in the capital cities (registrar3)

Timing of general practice exposure, duration of general practice exposure, the nature of general practice work and the overall quality of students' general practice experiences are important influences on medical student and junior doctors' consideration of general practice as a career.^{27,28}

So I went through a 6 year [capital city-based university] program ... in terms of

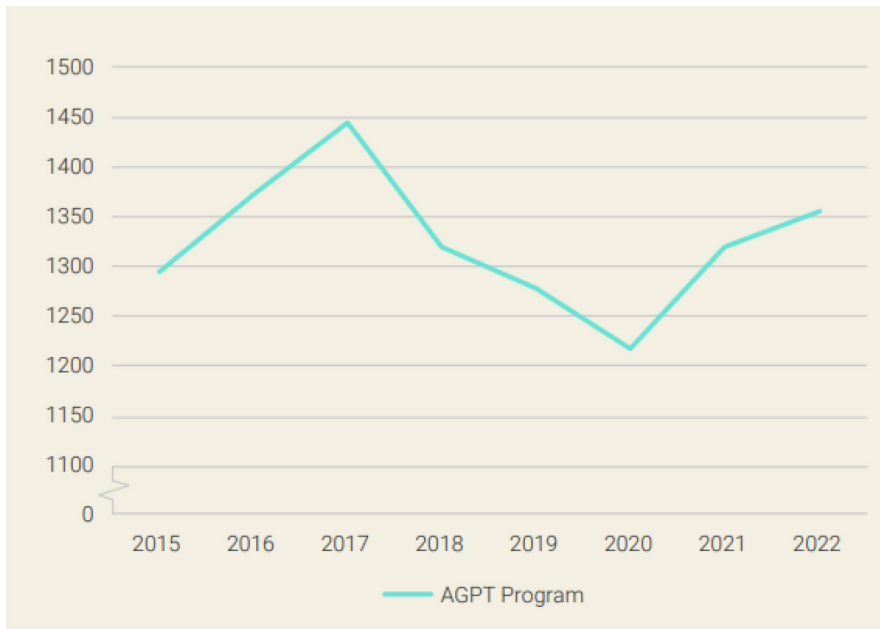


FIGURE 3 Australian General Practice Training program new enrolments, 2015–2022. Source: General Practice: Health of the Nation, RACGP 2022.

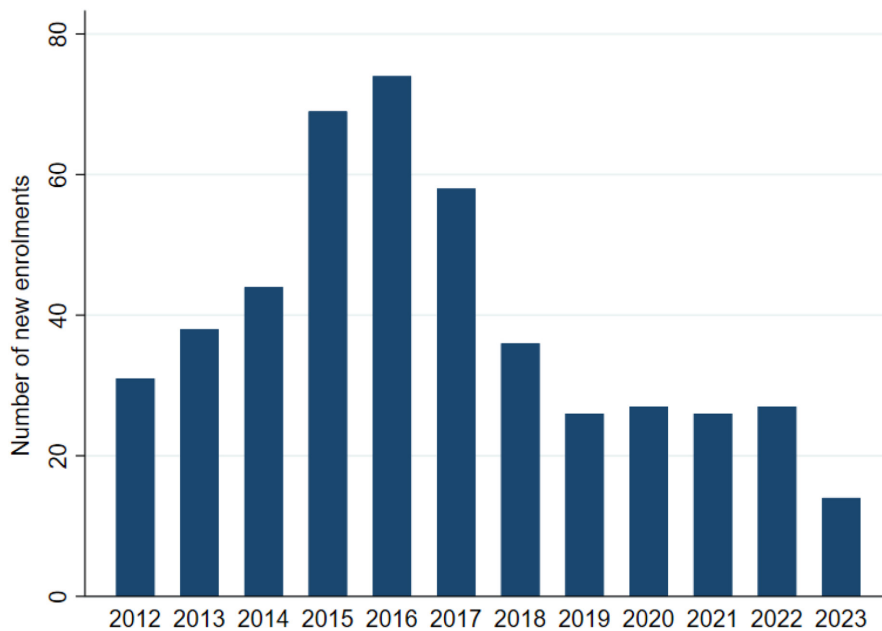


FIGURE 4 GP training commencements with NTGPE, 2012–2023. Source: NTGPE internal data.

overall exposure [to general practice], I'd ... had maybe 6–8 weeks, probably... I don't think it was adequate

(stakeholder27)

...I ended up sitting in a seat in the corner of this GP's consult... there wasn't a spare room for me to consult in... I distinctly remember I did one blood pressure and one urine dipstick... I was just like, oh, this isn't very enjoyable

(supervisor2)

However, only relatively modest proportions (~15%) of final-year Australian medical students have a first preference for a career in general practice, suggesting that experiences during medical school are failing to inspire sufficient numbers to choose general practice.²⁹ Specific experiences of a speciality as a medical student and general medical school experiences both have strong influences on students' speciality preferences.^{28–30} Nationally, medical students train predominantly in acute care settings and in cities, with limited exposure to general practice and visibility of general practice role models, which are known to be important influences on speciality

decision-making.^{30–32} Student interviews were consistent with this finding:

So, like at JCU [James Cook University], we have a lot of general practitioners as our sort of clinical coaches in years 4 and 5 and I think that helps because you hear about their cases ... they have such good GPs as our clinical coaches
(student1)

3.2.2 | Internship and prevocational training

The prevocational (including internship) period is a key time when most junior doctors decide upon their speciality pathway.³³ The literature indicates that the decision-making process about speciality choices is complex and involves consideration of many factors.^{28,32} Importantly, individual preferences may change over time as individuals move through different life stages, and the training pathway and the influence of different factors shifts, as does the relative importance of those factors. One particularly important factor during the prevocational period is personal experiences of different specialities. The lack of exposure to general practice and to GP registrar role models during prevocational years as a result of the cessation of the Prevocational General Practice Placement Program (PGPPP) has had a large and ongoing negative impact on enrolments in GP training across Australia.^{27,28,34}

... a really big thing we've lost, is exposure to general practice in the postgraduate years and the hospital years. Really, in those years – and the drop-off does correspond pretty exactly to the cancelling of the PGPPP program – in fact, as soon as it was cancelled, the numbers started to plummet

(stakeholder23)

This is compounded by the negative perceptions of general practice frequently promulgated in hospital settings:

The hospital perception of general practice can sometimes be quite toxic ... the way that it is disparaged as a career choice as being ... the easy option or you couldn't get into something else

(stakeholder19)

The comparatively small scale of the Rural Junior Doctor Training Innovation Fund (RJDTIF) initiative, its restriction to the intern year and to hospital (albeit rural generalist) settings, is associated with limited impact on

GP training uptake.³⁵ The More Doctors for Rural Australia Program (MDRAP), which commenced mid-2019, enables prevocational doctors to work in rural regions and access Medicare, but is yet to be implemented at scale in the NT to provide prevocational primary care exposures for junior doctors.³⁶ The consequences of these and other prevocational training factors are that junior doctors are under-prepared for general practice, daunted by the prospect of learning about an unfamiliar part of the health system, unsettled about having high levels of independence and fewer resources to draw upon and reluctant to take up opportunities outside hospitals and in rural and remote locations.³⁷

3.2.3 | Vocational training

A range of social factors interact with the nature of vocational training programs to influence choice of speciality. Graduates who are married or partnered, who have children, are International Medical Graduates or who are older (having entered medicine through a postgraduate pathway) are more likely to choose a speciality with a shorter training period such as general practice.^{32,38–40} Flexibility of employment arrangements and work/life balance, both during training and after fellowship, are key drivers of speciality choice.^{32,40}

Speciality colleges, training programs and RTOs offering flexible vocational training arrangements (e.g. ability to train part-time and to take breaks) and few restrictions on locality of placements are attractive to vocational trainees, with one participant observing:

I think that speaks to the national decline... the lack of flexibility in the fact that they [GP Registrars] need to travel, they need to move around, it's particularly with the rural pathway on AGPT

(stakeholder16)

Increasing inflexibility in AGPT program requirements and a (subsequently abolished) NTGPE requirement to move to remote or very remote locations during training in NT were identified as additional deterrents to enrolling:

The big changes that happened in 2015/16, though, that hit really hard and really quickly ... were the really draconian changes to AGPT policy... But the bigger thing is that the very reason people choose general practice [flexibility] was the thing that those policies took away

(stakeholder17)

Prospective GP registrars seek flexibility of training to better meet family and life circumstances and seek clarity about valid exemptions to different training requirements:

there's always been a lack of clarity around what's a valid exemption to some of those [NT RTO remote placement requirement] policies, and that can definitely put people off

(stakeholder19)

Poorer pay and employment conditions (e.g. Leave entitlements) when moving from hospital to community-based vocational training and then being required to move regularly between different community placements are a further strong deterrent:

So if I become a surgical registrar and I'm based in Royal Darwin Hospital for the next 4 plus years, I've got the benefits, I've got the leave entitlements, everything accumulates and I'm working towards long service and all of those type of things. If I go to general practice, I rotate and I lose them every – potentially every 6 months

(stakeholder16)

3.2.4 | General practice

General practice is perceived as having more 'family friendly' work arrangements (e.g. control over hours worked and workflow, prescheduled appointments, less or no on-call) which is attractive for individuals who highly value family considerations.⁴¹ In contrast to these positive perceptions, junior doctors and medical students also perceive general practice to be comparatively uninteresting, bogged down in administration and with high patient 'churn'.^{28,42} Rural generalism, though, is perceived as offering a broad variety of challenging and interesting procedural work which is valued highly, though at the expense of increased professional stress and being less lifestyle friendly.^{28,43–45} Continuity of patient care and being able to provide comprehensive, holistic care are additional factors that attract graduates to general practice, though these factors overall have less influence on career choice than lifestyle, flexibility and diversity of work offered by general practice.^{28,42,45} Regrettably, widespread negative messaging about general practice, such as general practice being a 'fallback' speciality, influences medical students and junior doctors to choose other specialities:

You know, the concept that if you don't quite have enough intelligence, well you could be a GP

(stakeholder23)

Participants perceived the comparatively lower remuneration of GPs and lower prestige as negative influences on choice of general practice speciality as were the payment structures and broader concerns about the financial viability of general practice:

...people don't see general practice as a prestigious career ...

(stakeholder16)

I don't know – unless you are about billing, billing, billing, billing [in general practice] whether you get the same kind of payout, like financial gain out of it as you would in some of the other specialty programs... the other sub-specialities may be more financially appealing

(student7)

Comparative remuneration (between specialities) is important for full fee-paying medical students though may have less importance for other groups.^{32,38,40,41} A policy simulation using discrete choice experiment data from the Medicine in Australia: Balancing Employment and Life (MABEL) study indicated that increasing GP earnings by \$50 000 per annum (while specialist incomes did not change) could increase the proportion of junior doctors choosing to become GPs by a substantial 16.5%.⁴⁵

3.3 | Ranking potential strategies to address the decline in enrolments in GP training

A broad range of strategies that could increase GP training enrolments was identified and provided as background reading prior to the stakeholder workshop (see File S2). While the literature identifies many interventions that *could* influence medical student and junior doctors' decision-making about GP training uptake, there is a lack of analysis of the costs, effectiveness and cost-effectiveness of these. Given the high reliance on GP Registrars and on short-term fly-in fly-out (FIFO) PHC workers for service delivery in remote NT, together with the high associated costs and low cost-effectiveness of a FIFO workforce, it is likely that effective initiatives to increase GP training uptake in NT will represent high-value investments.

Workshop stakeholders agreed that in the NT the highest priority area of the training pathway to address was prevocational training. They prioritised (scored) the following: introduce/investigate additional PHC training opportunities for junior doctors (4.33); when selecting candidates for prevocational training positions (e.g. internships) include a rural generalist focused assessment and consider interest and likelihood of staying in NT longer term (3.78); ensure adequate infrastructure in general practice/remote clinics (2.78); remove the requirement to change rotation locations regularly (2.11); and ensure rotations required for entry to general practice training are readily accessible (2.00).

The five most important actions at the medical school stage were to ensure infrastructure to accommodate and support learning teams in PHC (3.33); offer more remote and PHC exposures (3.22); ensure that GPs/Remote Generalists are in key leadership (and mentoring) roles (2.89); ensure high-quality, well-trained supervisors (2.89); and increase awareness and integration of the NT Remote Generalist pathway throughout the training continuum (2.67).

The five prioritised actions affecting graduates at the vocational training stage were as follows: provide high quality culturally sensitive, flexible professional and personal support (3.38); support the portability of employment benefits during vocational training (3.38); employ flexible and innovative supervision models (3.13); increase flexibility so that training fits with registrars' life circumstances (3.13); and offer generous and flexible financial incentives to GP registrars to work in remote communities (2.00).

Prioritised actions that have an impact predominantly on general practice were to use a broader range of funding levers to better remunerate GPs and rural generalists (3.89); reform general practice funding to reduce its disparity with remuneration of other specialists (3.44); improve remote resources and pool funding streams or develop block-funding models for these areas (3.38); change negative messages about GPs during hospital training (2.56); and increase career opportunities for GPs, for example leadership roles and research opportunities (1.67).

The issue of perceptions of general practice by the public and by the profession was frequently raised and therefore also considered. The prioritised actions with respect to marketing and communications strategies were to ensure marketing promotes positive aspects of GP practice in NT (3.78); promote NT GP and remote career opportunities, for example to Northern Territory Medical Program (NTMP) and other students on NT placements (including students doing final year electives) (3.67); ensure strong professional and personal support networks for GP registrars and awareness of these (3.00); use peer leaders to

garner interest in student and junior doctor events (2.67); and directly address common negative misperceptions about general practice in NT (1.89).

Implementation principles were emphasised by workshop participants, with a collaborative, noncompetitive and strengths-based approach needed with early active engagement of key stakeholders, especially NT Health, to ensure commitment to action. A current potential vehicle for progressing actions is the NT Workforce Alliance, convened by NT Primary Health Network/Rural Workforce Agency NT, with representation from key stakeholder organisations. Early and genuine engagement with remote communities was also considered essential, with rigorous documentation, monitoring and evaluation of implemented strategies targeting increased GP vocational training uptake highly recommended.

4 | DISCUSSION

The high unmet need for well-trained GPs in NT, coupled with ongoing precipitous declines in numbers of junior doctors enrolling in GP vocational training in NT, calls for strategic and coordinated action, both locally in NT and nationally, by governments and the many stakeholder organisations involved in training doctors across all training pathway stages (medical school, prevocational training, vocational training and general practice). This enormous decline is occurring despite the fact that graduates from the NTMP have been entering their third postgraduate year—a time when junior doctors often enrol in GP vocational training—since 2017. The comparative data indicate that the decline in junior doctors enrolling in GP vocational training has much more severely affected NT than Australia as a whole. The NT has served as the 'canary in the coal mine', signalling a grim outlook for GP supply in rural and remote Australia despite proportionally large increases in Australian domestic medical graduates over the past decade and despite the excellent training opportunities available in the NT.

This is a complex multifaceted problem and will require a bundle of interventions along the training and practice pathway. Foremost amongst the multiple interventions required is the urgent need to expand primary care training opportunities in the prevocational stage of training beyond the narrow scope and scale of those currently taken up in NT through Australian government initiatives such as the Rural Junior Doctors Training Innovation Fund (RJDTIF) and the MDRAP.^{35,36} Addressing the lack of primary care infrastructure—which is known to also be associated with poor retention of health professionals—in remote NT to support learners at different stages of training is also imperative.⁴⁶

Portability of employment benefits during vocational training is important. It could be achieved through mechanisms such as a national entitlement fund or the scaling up of a single employer model as implemented by the Murrumbidgee Rural Generalist Training Pathway, which NSW Health is now extending to all GP Registrars training in rural NSW.⁴⁷ A similar model is being trialled in Tasmania.⁴⁸ Without a national funding scheme, however, there are likely to be differences in entitlements between jurisdictions, which may further impede the ability of some states or territories to attract GP Registrars. Also important is ensuring high-quality vocational training experiences by offering bespoke professional and personal supports and flexible training arrangements that fit with registrars' life circumstances. With the current transition back to college-led training, opportunities abound to reinstitute training program flexibility that had been eroded in recent years and ensure training meets registrars' needs. However, there are risks. In the NT, NTGPE was highly regarded and effective at providing the bespoke supports needed by its registrars. The transition to college-led training may be associated with loss of skills and reduced capacity to support registrars, as not all staff may move to employment with the colleges.

Stronger leadership, role modelling and mentoring by GPs during medical school and prevocational training are needed in more Australian medical schools and health services. Additionally, only in a minority of regionally based universities ensure substantial remote and PHC exposures for their medical students, suggesting a need to find a more appropriate balance in where and how medical students are trained. 'Flipping the model' so that most teaching during medical training occurs in remote or rural settings, with rotations into urban hospitals (rather than the reverse) could attract and train a medical workforce more willing to consider careers in remote and rural general practice.

Changes to general practice funding models and remuneration received by GPs (including in remote settings) are also urgently required to reduce disparities with other specialist groups and ensure general practices are financially viable. The model of PHC practised in much of the NT is somewhat unique and vastly different from rural and urban private general practice elsewhere in the country.¹⁷ There is a need for specific marketing and communications targeting medical students and junior doctors which highlight the great opportunities in remote areas for accessing high-quality and personalised training experiences which lead to well-remunerated and interesting careers as remote medical practitioners, even while being based in large towns and cities. There is also scope for increasing the number of medical school places and 'home-grown' graduates, with NT currently the only Australian

jurisdiction without its own medical school. The CDU Menzies School of Medicine proposes to establish a locally led, governed, designed and delivered medical program and is currently advocating for government funding.⁴⁹ Until such expansion of medical places takes place, NT will remain reliant on interstate and overseas trained doctors for its GP workforce and gaining the attention of this market will require investment and expertise.

The findings reported here are NT-specific, though many of the underlying issues affecting enrolments in general practice vocational training are relevant elsewhere in rural Australia. It is likely that lessons from this NT study may therefore be generalisable to other less-remote settings, albeit with sufficient care being taken to ensure appropriateness for any differences in context.

5 | CONCLUSION

The decline in enrolments in NT GP training is a complex problem that is accelerating. It occurs in the context of the most severe PHC workforce shortage experienced in NT and other remote areas over the past 30 years. This crisis results in increased presentations and admissions to hospitals. This decline can be turned around, but there is no 'silver bullet'. Addressing this decline will require investment, implementing multifaceted strategies targeting each of the different parts of the GP training pathway, and will be dependent on the cooperation and support of a range of key stakeholder organisations within a fragmented health system. Nevertheless, the findings of this study shed light on what can be done. Drawing on available evidence and engaging with a range of key stakeholders with in-depth knowledge of the NT GP training context, this study was able to validate and prioritise a range of strategies most relevant to the NT context. These findings have relevance to other remote and rural areas which are experiencing similar problems. Policy-makers need to act urgently to halt the deterioration of access to PHC for the neediest populations in this country.

AUTHOR CONTRIBUTIONS

Deborah Jane Russell: Data curation; supervision; conceptualization; investigation; funding acquisition; writing – review and editing; visualization; validation; methodology; formal analysis; project administration; software; resources. **Devaki Monani:** Investigation; writing – review and editing; methodology; formal analysis. **Priya Martin:** Investigation; methodology; writing – review and editing; formal analysis. **John Wakerman:** Conceptualization; investigation; funding acquisition; writing – original draft; methodology; validation; formal analysis; project administration; supervision.

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CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest.

ETHICAL APPROVAL

Ethics approvals were obtained from the Human Research Ethics Committee of the NT Departments of Health and Menzies School of Health Research (Ref 2020-3695) and from the Central Australian Human Research Ethics Committee (Ref CA-20-3706).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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