

Interprofessional Rural Learning Hubs

Report for the Ministry of Health

section 9(2)(a)

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Glossary

Abbreviation

ANUMS

DHB

GP

IDM

IRLH

JMU

MMPO

NOSM

NSW

PGY

QRGP

RCSWA

RHMT

RNZCGP

VBS

WHO

Stands for

Australian National University Medical School

District Health Board

General practitioner

Index of Multiple Deprivation

Interprofessional Rural Learning Hub

Jichi Medical University

Midwifery and Maternity Provider Organisation

Northern Ontario School of Medicine

New South Wales

Postgraduate Year

Queensland Rural Generalist Pathway

Rural Clinical School of Western Australia

Rural Health Multidisciplinary Training

Royal New Zealand College of General Practitioners

Voluntary Bonding Scheme

World Health Organization

Executive summary

We were asked to undertake strong stakeholder engagement over the options for an interprofessional rural learning hub or hubs, with a view to the Ministry of Health developing a bid for the 2020 Budget. We set out three options to address the problem we identify, but only one of them, a longitudinal approach to training the rural health workforce, is likely to address that problem. This is also the higher cost option although there may be material offsetting costs.

A clear problem definition

We identify four aspects to a working problem definition that any solution needs to address. We summarise these as follows:

- 1. The current training regime does not address inequity:** The current training provision does not provide a workforce that is effective in addressing inequities for Māori, with stark differences in life expectancy and experience of illness between Māori and other populations. Nor does the current training provision effectively provide a workforce for rural populations, with workforce shortages and recruitment challenges widespread in several health professions for New Zealand's rural communities. This in turn has an impact on access to and effectiveness of service delivery in rural areas.
- 2. There are pressures on the rural workforce:** Indications are that the rural workforce is relatively aged, and that a high proportion of clinicians are approaching retirement. There is no clear pool of candidates for replacing the rural clinicians, and there is a risk of service degradation and failure if action is not taken to maintain the rural workforce.
- 3. The training model is not meeting rural needs:** The current model for training health professionals is not well aligned to the needs of a rural health workforce. The content of training courses can have limited relevance to a rural environment, and the scope of training does not always match the range of challenges involved in delivering rural health care.
- 4. There are barriers to building a rural training workforce:** The workforce needed to train the rural workforce—the teachers and trainers needed to deliver effective clinical training—can be difficult to attract to rural areas. There are limited opportunities for researchers and academics, and clinical teachers and researchers may have partners who also need to find employment opportunities that are not readily available in many rural areas.

Strengthening the rural workforce has a joint aim of improving healthcare outcomes and, also, contributing to the robustness of New Zealand's rural communities.

Three options were identified

We identified three models that aim to address the problem definition.

The first is a collaboration of district health boards (DHBs) and training providers in local, rural training hubs. These training hubs provide short stay training therefore giving both rural exposure and training with peers. However, this option, although positive, has limited exposure to living rurally.

A second option was put forward by academic institutions collaborating on a proposal for a model of undergraduate and postgraduate training for a range of healthcare professionals, using the existing

rural hospital network and other rural healthcare services. We understand this second option has been rejected because of particularly high per student cost.

The third option providing longitudinal training from undergraduate to postgraduate, is seen as the only option addressing the problem definition fully. That option means students that live rurally are trained locally, via different training modalities, with block courses and reach in to hospitals. The cost of this is uncertain due to the following reasons:

- We have based our cost estimates off the second option as it is the only point of reference available to us.
- There are possible significant cost off-sets, for instance if the existing medical and other trainees are displaced to rural areas with the training budget allocated to rural training body.
- There would still be increased cost of running a devolved model in this manner but potentially not as great as the cost for the second option. At this point, however, it is difficult for us to judge.

Assessing the short list

We assessed our short list against a set of key criteria.

Assessment criteria	Status Quo	National Interprofessional School of Rural Health	Rural Health Professional School
1. Reduces inequity	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
2. Links with local communities	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
3. Improves rural workforce resilience	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
4. Provides a solid, enduring institutional foundation	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
5. Is cost effective	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

The financial costs vary, and prioritisation is needed

section 9(2)(b)(ii)

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Both the National Interprofessional School of Rural Health and the Rural Health Professional School score similarly against the assessment criteria, although the Rural Health Professional School will likely see greater chance of the workforce remaining in rural areas due to the longer period of time spent training rurally.

The significant difference between the two is in the scale of workforce produced, and consequently the cost of provision. The scale of the intervention desired and its subsequent affordability is the important variable.

Recognising that there are many competing goals for funding, prioritisation of spending will be required. Scaling the third option might be a viable option, but reduced scale may increase the average cost of provision. An alternative may be some form of prioritisation across the different professional groups covered by a hub.

1. We undertook a rapid assessment of interprofessional rural learning hubs

Interprofessional rural learning hubs (IRLHs) are education environments that enable students from a range of health professions to learn with and from each other in the rural context.

Hubs are intended to encourage health professionals to practice rurally and exercise a broad generalist scope within a service model that emphasises teamwork. This approach is thought to increase the chances of students pursuing a career in rural health as well as providing an important interdisciplinary experience in clinical training. The overall aim of the hub model is to grow an effective rural health workforce, and by doing so, improve access to health services and address inequities for rural communities, particularly Māori.

The purpose of this project was to facilitate and co-ordinate input from sector stakeholders to deliver a report that:

- defines the interprofessional rural learning hub model
- comments on the feasibility of the model in the New Zealand context
- provides information on what would be required to establish one or more hubs
- provides cost options for delivery of those hubs.

Sector stakeholders include the Ministry of Health, Tertiary Education Commission, the Ministry for Primary Industry, DHBs, iwi health providers, other government agencies, rural communities and sector experts.

We took a pragmatic step-wise approach with a clear focus on three key elements; strong engagement with stakeholders, solid cost analysis and engagement around the options development and assessment.

- **Literature scan:** We reviewed and synthesised policy documents provided to us and literature identified from a literature scan of grey and academic literature. From that literature review, we identified what existing interprofessional rural learning hubs looked like in other countries (particularly Australia and Canada) and assessed the benefits they provided.
- **Stakeholder interviews and engagement:** We facilitated and co-ordinated input from sector stakeholders on the scope and feasibility of an interprofessional rural learning hub and what would be required to establish the hub. Fifty interviews were undertaken in a short period of time.
- **Options development:** Workshops were run both to define the problem and options, and to deepen our understanding of one option emerging from stakeholder engagement.
- **Costing development:** A cost model was developed, and information sought from a range of sources.

While we have had extensive stakeholder engagement and developed a strong range of options, we have not gained same degree of insight into the cost model due to the information provided.

1.1 Alignment with wider government objectives

There is strong alignment between the development of IRLHs and government priorities in reducing inequity and inequality, and in building rural resilience. Table 1 provides an overview of government priorities and the alignment of IRLHs to these priorities.

Table 1 Government priorities and the alignment of interprofessional rural learning hubs to each priority

Area of Government	Objective	Alignment with interprofessional rural learning hubs
2019 Government Priorities	<ul style="list-style-type: none"> • Improving child wellbeing • Taking mental health seriously • Supporting Māori and Pasifika aspirations • Building a productive nation • Transforming the economy. 	Design of the IRLHs will take note of the importance of mental health services to community wellbeing, and will take into account Māori and Pasifika requirements in rural health.
Rural Communities portfolio	<p>The Rural Communities work programme aims to help rural people to:</p> <ul style="list-style-type: none"> • have a higher quality of life • have access to social and economic opportunities • be just as able to reach their potential as urban New Zealanders. 	Rural Communities is a Government portfolio that recognises the importance of New Zealand's rural communities and the unique challenges they face so that they can be vibrant, resilient and sustainable. IRLHs are intended to address the unique health workforce shortages that rural communities face, making them more resilient and sustainable.
Ministry of Health, New Zealand Health Strategy: Future direction (2016)	<p>The strategy has five themes:</p> <ul style="list-style-type: none"> • people-powered • closer to home • value and high performance • one team • smart system. 	Good health begins at home and in communities. IRLHs have the potential to impact on all five themes particularly closer to home. IRLHs could be a mechanism to supporting rural communities to grow their local health workforce to improve resourcing of health services that are closer to home.
Ministry of Health, 2019/2020 work programme	<p>The work programme has five health priorities and an overarching goal of achieving equitable outcomes for all people.</p>	This programme recognises that people have differences in health that are not only avoidable but unfair and unjust, and that people with different levels of advantage require different approaches and resources to get equitable outcomes.

		Training locally in IRLHs could support Māori to “grow their own” health professionals locally.
Ministry of Health, Equity Work Programme	The Ministry’s Equity Work Programme aims to facilitate an equity focus across the health system’s operational landscape while promoting the cultural shift needed to affect the system change that achieves equity in health outcomes.	Collaboration is a key part of making equity real. The intention of IRLHs is for communities and organisations to work collaboratively to improve the rural health workforce, which in turn will make health outcomes more equitable.
Ministry of Health, Health and disability workforce strategic priorities	Growing the Māori and Pasifika health and disability workforce and creating environments in which Māori and Pasifika peoples can thrive.	Evidence shows Māori and Pasifika health and disability practitioners treating/helping Māori and Pasifika peoples results in better health outcomes. IRLHs will have a location-specific focus on attracting and retaining health professionals that can best meet the needs of their community (e.g. growing a workforce that reflects demographics and needs of the local population).
	Strengthening shared skills and values across professions and working better as teams across the system.	Health care should be based around people’s needs rather than professional or service boundaries. Improved workforce flexibility and integration across professions and models of care will improve patient outcomes and workforce productivity. IRLHs will encourage interprofessional learning environments that break down barriers between professions and roles.
	Ensuring a sustainable rural health workforce.	Currently there are issues with access to health services in rural areas due to a lack of health professionals working in those areas. Difficulties attracting practitioners into rural areas are complex and improving access to health services for rural communities will require multiple solutions.

		IRLHs provide an opportunity to attract and retain health professionals in rural settings.
Ministry for Primary Industries	<p>Rural proofing aims to achieve the Rural Communities work programme aims and consider the challenges faced by the rural sector when designing and implementing Government policy.</p> <p>Policy makers should consider the effects of isolation and low population density on:</p> <ul style="list-style-type: none"> • connection of rural communities • rural communities' access to services • the difficulties associated with compliance in rural areas. 	<p>IRLHs will be an opportunity for the local rural community to improve access to services, by improving delivery of health professionals into rural areas, both during and after training.</p> <p>It will also improve access to services by placing students into rural health providers.</p>

2. Our rural healthcare faces workforce challenges

Stakeholders agree there is a problem with the rural healthcare workforce but differ on the extent and cause of that problem. Some believe that the issue is one of workforce distribution with others focused on a workforce crisis emerging.

2.1 Stakeholders in rural areas highlight a workforce crisis

We heard a strong consensus that there are many primary problems, the first is that there is a health workforce shortage/crisis in rural areas.

The biggest thing is it is now critical, we need 58 GPs in rural practices and the ones that are there are ageing. They want to cut hours and don't want to do afterhours. This really needs to be done in a hurry. (Stakeholder)

There is a shortage of rural general practitioners

There are several sources evidencing a shortage of general practitioners working in rural settings:

- The *Health of the Health Workforce 2015* highlighted issues with the maldistribution of doctors across rural areas, with a number of rural DHBs (using a classification based on DHB population densities¹) identified as hard-to-staff communities, based on the 2015 Voluntary Bonding Scheme (VBS) (Ministry of Health, 2016).
- Vacancies are a particular problem in rural practices, with the most recent figures from the Royal New Zealand College of General Practitioners (RNZCGP) Workforce Survey showing 39 per cent of survey respondents in rural practices reporting a current GP vacancy, an increase from 35 per cent in 2017 (Royal New Zealand College of General Practitioners, 2019).

2.2 Other professions are under stress in rural settings

The following professional groups were commonly highlighted by the stakeholders:

- nurses and nurse practitioners
- pharmacists
- counsellors

¹ The three groups defined were:

- Main urban – areas with 100 or more people per square kilometre
- Secondary urban – areas with between 21 and 99 people per square kilometre
- Rural – areas with 20 or fewer people per square kilometre.

- allied health professionals in general, particularly physiotherapists, dentists and midwives.

Other relevant issues to rural GPs highlighted by the survey's results included:

- excluding registrars, 34 per cent of GPs intend to retire in the next five years and 57 per cent in the next 10 years
- more than half of GPs are over 52 years old
- 36 per cent of rural GPs intend to retire in the next one to five years
- rural respondents were twice as likely to identify as short-term employees or contractors than those in urban centres
- 52 per cent of rural respondents are providing medical training for others, compared with 36 per cent in urban centres
- international medical graduates now make up nearly half (46 per cent) of rural GPs
- 75 per cent of rural GPs also provide after-hours care, significantly higher than for those in urban centres (Rural General Practice Network, 2019).

Other health professions are also facing difficulties that are negatively impacting their rural workforces.

- **Physiotherapists suffer rural shortages:** 81 per cent of physiotherapists work in metropolitan and main urban centres, and there is a big discrepancy in the ratio of physiotherapists to population in rural areas. Feedback from physiotherapists suggest that rural shortages are worsening and that they are finding it increasingly difficult to attract applicants to fill roles in rural areas (BERL, 2018).
- **Dentists are maldistributed:** There are enough dentists in New Zealand overall, but there remains a geographical maldistribution, particularly affecting rural areas. Distribution varies from 134 dentists per 100,000 people in Otago and 101 per 100,000 in Auckland, through to 30 per 100,000 in Tairāwhiti (Ministry of Health, 2016).
- **Nurses are hard to find:** Alongside ongoing reported rural shortages of nurses, 22 per cent of GP respondents to the RNZGCP Workforce Survey reported that they are working in a practice with a practice nurse vacancy (Royal New Zealand College of General Practitioners, 2019). Several specialities were also identified as hard-to-fill in 2015, including aged care, mental health care and primary care, which are typically relevant specialities for rural areas. The 2015 hard-to-staff communities for nurses were identified as the West Coast DHB and South Canterbury DHB (Ministry of Health, 2016).
- **Midwife workforce is vulnerable:** About three-quarters of practising midwives work in the North Island, where a number of DHBs report staff shortages, according to the Midwifery and Maternity Provider Organisation's (MMPO) mapping of the midwife workforce in 2013 (Kyle & Aileone, 2013). The South Island's workforce is more stable, but rural communities across the country are vulnerable to shortages if a midwife retires or leaves the area. It can take up to two years to recruit a replacement – especially if an experienced midwife with a large caseload departs (Ministry of Health, 2016).

2.3 Inequities in training opportunities for Māori and Pasifika peoples

Several stakeholders raised training inequities for Māori and Pasifika peoples in most health disciplines as another significant problem to address. There is a need to remove barriers to accessing training opportunities and to develop workforce pipelines from within communities to 'grow their own'.

A clear problem definition:

- 1. The current training regime does not address inequity:** The current training provision does not provide a workforce that is effective in addressing inequities for Māori, with stark differences in life expectancy and experience of illness between Māori and other populations. Nor does the current training provision effectively provide a workforce for rural populations, with workforce shortages and recruitment challenges widespread in several health professions for New Zealand's rural communities. This in turn has an impact on access to and effectiveness of service delivery in rural areas.
- 2. There are pressures on the rural workforce:** Indications are that the rural workforce is relatively aged, and that a high proportion of clinicians are approaching retirement. There is no clear pool of candidates for replacing the rural clinicians, and there is a risk of service degradation and failure if action is not taken to maintain the rural workforce.
- 3. The training model is not meeting rural needs:** The current model for training health professionals is not well aligned to the needs of a rural health workforce. The content of training courses can have limited relevance to a rural environment, and the scope of training does not always match the range of challenges involved in delivering rural health care.
- 4. There are barriers to building a rural training workforce:** The workforce needed to train the rural workforce—the teachers and trainers needed to deliver effective clinical training—can be difficult to attract to rural areas. There are limited opportunities for researchers and academics, and clinical teachers and researchers may have partners who also need to find employment opportunities that are not readily available in many rural areas.

3. Training hubs are part of the solution

To solve the issues identified, it is clear rural training hubs will form an integral part of the solution. Appendix A provides detail on the research findings about what keeps clinical staff working in rural areas. It should be noted that a holistic approach will encompass more aspects than the training aspects identified in this section.

3.1 Training for rural health care is different

There can be no doubt that the description of issues relating to rural health as described by the *Cairns Convention on Rural Generalist Medicine* (2013) are applicable to a New Zealand context:

These (rural) settings share a context of relative isolation from large population centres and major healthcare facilities and typically suffer health inequities and unmet healthcare needs. In such locations, community members and healthcare personnel alike require resourcefulness, independence, inter-reliance and a focus on local community healthcare priorities. While much is shared, rural communities...are also diverse. (p. 1)

3.2 Three rural workforce influencers

Stakeholders identified three main aspects that influence the health workforce shortage problem in rural areas, these are as follows.

- **Attracting and recruiting:** There was consensus that a major issue is attracting health professionals to work in rural areas. It was also highlighted that in some rural areas, it can be challenging to attract workforce with qualifications beyond a basic level.
- **Retention:** Once recruited there are a number of barriers to being a health professional in rural regions that impact retention rates, these include: a lack of a career pathways, being isolated from others in the same profession and therefore often working with professional support from other disciplines, the requirement to be a generalist rather than a specialist and a lack of opportunities for other family members (e.g. secondary school options for children and work for spouses).
- **Training and development (upskilling and maintenance of professional requirements):** We heard from several stakeholders that a contributor to the challenge of retaining professionals in rural areas is a lack of professional and academic support for rural generalist health professionals. In many cases, professional competency requirements cannot be fully maintained without travel to urban areas. Currently, there are a very small number of rural health academics, and the way training is siloed creates issues for innovation and working in an interprofessional manner.

Rural training hubs, preferably inter-disciplinary, are part of the solution.

3.3 Stakeholder identified benefits

We asked stakeholders to tell us what the benefits of a rural training hub solution would be. We note that most stakeholders believe hubs are the solution to the workforce problem that has been identified. Below we highlight some common responses about the benefits of hubs:

- a better chance of attracting and retaining people to work rurally
- improved outcomes for inequitable health care in rural areas
- more opportunities for community involvement in health care
- awareness of other disciplines and collaborative working styles is encouraged
- hands on rural learning experiences.

3.4 Māori stakeholders are aligned with the need for a rural hub

Specific feedback from Māori welcomed the opportunity to be engaged in the process and reiterated the importance of continued engagement as the hub design and location decisions were made.

Māori stakeholders stated that recruiting and retaining Māori health practitioners in local rural areas is often based on Whakapapa and recruiting young. Therefore, the rural training pipeline needs to start early and rural locations need to “grow their own” health professionals to avoid travelling to train in an urban setting. This means not only starting at undergraduate training but putting effort into encouraging young local school students to train as health professionals. This could be made easier by enabling the majority undergraduate training to be completed by distance in rural areas with short blocks of travel to urban areas where necessary. This would allow greater pastoral support from whānau while students are training.

The stakeholders expressed that it can also be challenging to attract people with post graduate and specialist skills, but if a location can provide research opportunities and research funding this does attract people to work in rural settings. Therefore, a hub with post graduate training and research capabilities would be needed. Other essential elements to a hub would be a good coordinator, mentoring capabilities and virtual capabilities.

3.5 Domestic evidence shows promising results

Domestic evidence of the benefits of training in rural locations has largely been positive, yet anecdotal. However, a set of provisional data was provided by the Medical Schools Outcomes Database and Longitudinal Tracking Project and the University of Auckland that showed the geographic distribution of Postgraduate year 1 (PGY1) and Postgraduate year 3 (PGY3) graduates. The data was split between those that had participated in the Pūkawakawa programme and those that had not.

Those that had participated in the Pūkawakawa programme were much more likely to be based in Northland than those that had not. PGY1 doctors 25 per cent compared to 8 per cent, respectively and PGY3 doctors 35 per cent compared to 3 per cent, respectively.

In addition, Pūkawakawa graduates were more likely to express a preference for working rurally than non-Pūkawakawa graduates; 11 per cent compared to 6 per cent for PGY1 and 15 per cent compared to 7 per cent for PGY3 graduates.

Despite these positive results, they do not address the rural workforce issue for general practitioners even though the situation would be worse without these efforts.

3.6 International evidence shows there are real benefits in rural learning hubs

There has been some research into the impacts of rurally placed-based training and placements for medical students and early career doctors, and the impacts these have had on medical workforces. Given that a rural learning hub will aim to develop medical training in-place, these could provide some insight into the potential benefits of a learning hub system:

- The NSW Rural Resident Officer Cadetship Program which provided bonded scholarships in exchange for recipients spending two of their first three postgraduate years in the NSW rural health network, resulted in 43 per cent of its cadets working in rural locations compared to 20.5 per cent of medical practitioners more broadly (Dunbabin, McEwin, & Cameron, 2006).
- Univariate analysis of independent variables showed graduates who had undertaken Rural Clinical School placements in NSW of at least one year were over six times more likely to be practicing in a rural location in their postgraduate years three to five (May, Brown, & Burrows, 2018).
- A study of 2,451 medical students from Victoria, Australia who undertook their training in a rural setting found that overall, 15 per cent of these graduates would continue on to work rurally (for up to nine years post-graduation), of which a quarter were working in the same rural region as where they did rural training (McGrail, O'Sullivan, & Russell, 2018).
- Among specialty doctors, exposure to the region of New Brunswick during undergraduate training had no effect on location of practice. Family and specialty doctors who had been exposed to New Brunswick during postgraduate residency were 5.9 and 3.2 times more likely, respectively, to practise in the province than doctors without postgraduate exposure. (Landry, Schofield, Bordage, & Bélanger, 2011).
- Moore et al (2018) looked at the graduating cohorts from the Australian National University Medical School (ANUMS) from 2007–2017. In the third year of training, 25 per cent of the cohort are selected to spend a year practicing in a rural town ('rural stream'). Analysis found that rural stream graduates (24.6 per cent) were significantly more likely than non-rural stream graduates (9.3 per cent) to be working in rural areas. More than twice as many rural stream graduates (34.7 per cent) were working in rural locations in the 6–11 years after their graduation than in the first 1–5 years (16.1 per cent) (Moore, Burgis-Kathala, Barnard, Hall, & Marks, 2019).
- An analysis of medical graduates from the University of Western Australia (including the Rural Clinical School of Western Australia, RCSWA) between 2002 and 2009 found that of 258 RCSWA graduates, 42 (16.3 per cent) were working rurally compared with 36 of 759 controls (4.7 per cent). Of 195 RCSWA graduates from urban backgrounds, 29 (14.9 per cent) were working rurally compared with 26 of 691 urban background controls (3.8 per

cent). Of 63 rural-background RCSWA graduates, 13 (20.6 per cent) were working rurally, compared with 10 of 68 rural-background controls (14.7 per cent). (Playford, Evans, Atkinson, Auret, & Riley, 2014).

- A longitudinal analysis of Rural Clinical School of Western Australia (RCSWA) from 1980 to 2011 found that 78.7 per cent of those who had participated in the RCSWA were currently practicing in outer regional/very remote locations, in comparison to 52.4 per cent of students who had not participated in the RCSWA (Playford, Nicholson, Riley, & Puddy, 2015).
- An analysis of Flinders University School of Medicine's Parallel Rural Community Curriculum, which allowed medical students to spend their entire third year in a small rural town, was found to have significant impacts on ongoing rural practice, with approximately 70 per cent (9/13) of PRCC graduates practicing in rural communities and 62 per cent (8/13) specializing in primary care. This compares with 18 per cent (8/45) of tertiary hospital-trained students choosing rural practice, and 38 per cent (15/40) choosing primary care. (Worley, 2008).
- Seventy per cent of Northern Ontario School of Medicine (NOSM) graduates are training in predominantly rural family medicine and the others are training in various other specialties and subspecialties. Follow-up studies of family medicine residency graduates from Northern Ontario show that 67.5 per cent of the graduates are practising in Northern Ontario or similar rural areas (Centre for Rural and Northern Health Research, 2008).
- A comparison of the rural practice rates of NOSM graduates compared to graduates from other Canadian Medical Schools also revealed a noticeable difference. Of the 535 physicians examined, 67 had completed UG and/or PG medical education at NOSM. Over two thirds of physicians with any NOSM education were practicing in northern areas and 25.4 per cent were practicing in rural areas of Ontario compared with those having no NOSM education, with 4.3 and 10.3 per cent in northern and rural areas, respectively (Wenghofer, Hogenbirk, & Timony, 2017).
- Jichi Medical University (JMU) adopted a 'home prefecture recruiting scheme' in which students are required to work nine years post-graduation in their home prefecture in exchange for having their six years of undergraduate tuition fees waived. An analysis of graduates who completed their contract by 2000 found that 69.8 per cent of graduates settled in their home prefectures, with a higher settlement rate in prefectures with lower population densities or physician-to-population ratios (Matsumoto, Inoue, & Kajii, 2008).

4. Required characteristics of IRLHs are clear

There are clear lessons from overseas and from stakeholders about what an IRLH needs to look like.

4.1 Common themes from overseas

The wide range of initiatives seen in Australia and Canada targeted at improving the rural healthcare workforce highlight the many different factors that must be taken into consideration. Some of the common themes that emerged in the literature include:

- **Rural training hubs need to be attuned to the healthcare issues facing the local community** – Successful rural health workforce solutions must be contextualised within the challenges that rural communities face, and to the strengths that rural communities possess. In so doing, we can ensure that the solutions are fit for purpose and responsive to the diverse needs and aspirations of the communities that they are part of (Baxter & Crampton, 2018). When consulted on a Rural Health Plan for Otago, the rural health sector expressed a preference for an ‘all of systems approach’, a national and cooperative solution that included the existing medical schools and tertiary training providers, the professional colleges, rural communities and healthcare providers (Nixon, et al., 2018).
- **Rural training needs to be a partnership between training institutes, healthcare organisations and the community** – Creating partnerships between the key local education, training and health providers—the local GPs, local hospital, Rural Clinical School, universities and Regional Training Provider—is essential for a sustained and integrated training effort (RACGP, 2014).
- **Critical student mass is needed for sustainability of the teaching program** – Building community connectedness by establishing training communities across health disciplines is critical to attract the critical mass of students needed for sustained success. This approach will enable trainees (at all career stages) to maintain a link to a specific rural community and enable a more supported and positive rural training experience with tailored options appropriate to the learning stage and in line with community health needs (RACGP, 2014).
- **Local autonomy has positive impacts on outcomes** – Experience shows that a move to partnerships that permit regional autonomy and better local support structures have positive impacts on numbers training in the area and translate to workforce retention (Gupta & Hays, 2018). Investment into a coordinator position can help to address major local barriers, including navigation of the system for the learner and the administrative burden placed on the teachers/supervisors.
- **Building a learning culture is essential** – Campbell et al (2012) identified that professional isolation and lack of supervision were drivers of healthcare workers choosing to leave rural practice. Given the resource constraints of rural areas, healthcare workers need to be involved in teaching, and a culture of learning cultivated in the town. This approach encourages innovation and is general practice-based and community led, so that sense of belonging will prevail.
- **Interprofessional education should be built into the teaching philosophy** – If the rural workforce is to work in teams, then training should be in teams. Training hubs provide that critical mass of students working together. Scenario-based training, working with nursing

and allied health students through cases and understanding the roles and learning to communicate and work together to get the best outcomes is needed (Whelan, Spencer, & Rooney, 2008).

- **Accreditation and remuneration are important factors, and should not be neglected** – One of the key factors identified by stakeholders that contributed to the success of the QRGP was the recognition being given to the profession of rural generalist by Queensland Health and the associated industrial and remuneration packages that accompanied this recognition (Ernst and Young, 2013).

4.2 Stakeholders provide a firm direction

Stakeholders have recognised that hubs may be part of the solution and have been considering them for some time. Stakeholders views were strong, and we outline the common features of an IRLH as represented to us below.

- **Strong central leadership, a common governance structure and common funding structure are important:** There was consensus that the Ministry of Health needs to have a strong, overarching, hands on leadership role to bring partners together for hubs to be successful. A network of hubs would need a common governance structure (cross governance structure)/joint governance and a governance team (that would include community, universities and tertiary institutions, providers, DHB, iwi). There should be a common funding structure across all the hubs with ring fenced funding for hubs and input from a range of health and tertiary providers. There needs to be equity of funding across professions for interprofessional training to work (i.e. a ring-fenced sum of money that its equitable divided across the disciplines for training).
- **Multiple hubs that can support a minimum number of core disciplines:** There was strong consensus that one hub would not be a solution. Some stakeholders felt that, at a bare minimum, two hubs would suffice in the initial stages, but ideally this would grow to around 20 hubs. There would need to be minimum capacity levels to support a hub, including the ability to support four to six core disciplines minimum at each hub. The core disciplines include pharmacy, nursing, medical, occupational therapy, physiotherapy, oral health and dentistry and paramedics. The scope of a hub needs to cover undergraduate training at a minimum but should include postgraduate training and research/academic capacity. There is considerable discussion around the necessary term of placement.
- **Longitudinal training:** The current interdisciplinary training is for short periods whilst the longer-term immersion training is for one year, for medical training. However, there is considerable debate over whether this is enough or not. There is a mixed view from stakeholders, with some believing that enough is being done and others, particularly those experiencing shortages, wanting longitudinal training, including rurally based undergraduate programmes. The evidence points to considerable leakage of urban trainees back to urban environments. Longitudinal training must be the goal.

5. Hub location is important in addressing community needs

The location of a learning hub is important. The most critical factors from stakeholders were based on:

- Community need and rurality: population profile (Māori and Pasifika peoples), high deprivation, workforce issues, poor population health statistics/characteristics and health inequities.
- Capacity and preparedness: require enough clinical capacity to support training in core disciplines (and discipline requirements are likely to vary by location) and a local readiness to work collaboratively.

The overall rankings place Northland, Lakes, Waikato, Hawke's Bay and Tairāwhiti DHBs as the most likely areas to put rural hubs. These DHBs also align with those suggested by stakeholders. We note that Lakes DHB population of 110,000 (2018/2019 Ministry of Health projection) is dominated by the Rotorua and Taupo urban areas (~70,000 and ~25,000 respectively). Its proximity to Waikato DHB suggests a joint model to service the Lakes DHB rural areas may be appropriate.

5.1 There are a wide range of possible locations for rural hubs

Our stakeholder engagement presented a wide range of locations that could be considered:

Hubs	<ul style="list-style-type: none"> • Whangarei, Kawakawa, Kerikeri, Dargaville, Bay of Islands • Whakatane, Opotiki, Whitianga • Gisborne • Rotorua • Tokoroa, King Country • Hawera • Whanganui • Levin • Wairarapa • Greymouth • Nelson, Blenheim • Kaikoura, Methven, Timaru, Ashburton, Blenheim • Dunstan, Queenstown
Spokes	<ul style="list-style-type: none"> • Hokianga • Wairoa • Taumaranui, Thames • Cheviot • Gore, Oamaru

Advocacy for stakeholders' local regions was strong, and to be expected. However, regions in the North Island, such as Northland, Lakes, Waikato, Bay of Plenty and Tairāwhiti were commonly mentioned as independent locations.

5.2 Northland and Waikato amongst the highest on the health deprivation index

We profile these areas to suggest where training activity might be located.

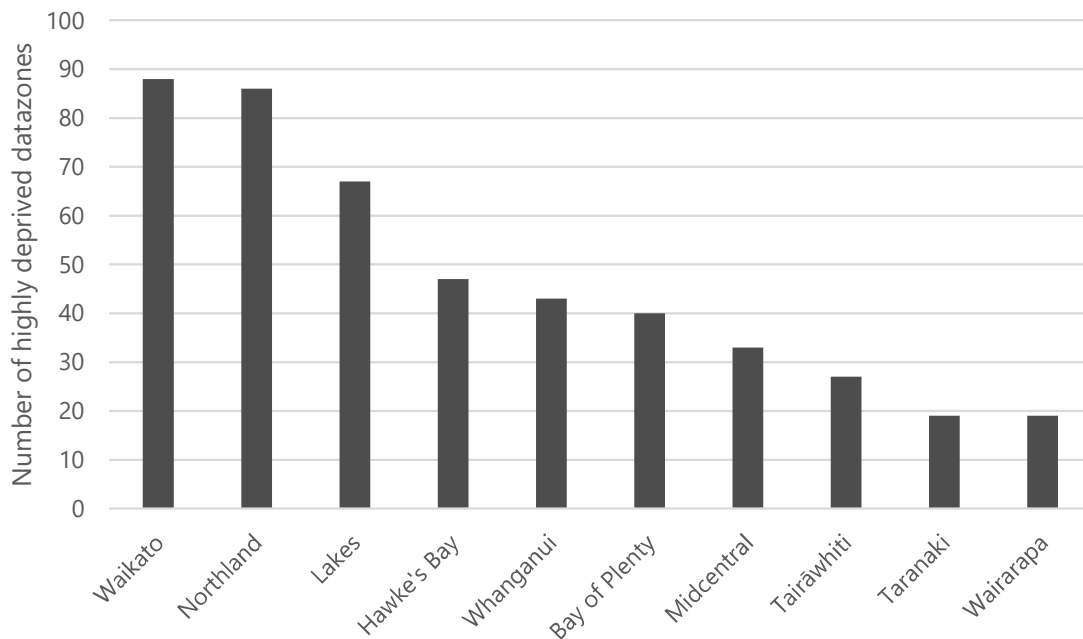
The University of Auckland has developed the New Zealand Index of Multiple Deprivation (IMD). The IMD is a set of tools for identifying concentrations of deprivation in New Zealand. It measures seven indexes of deprivation, one of which is health, at a data zone level. The data zone is an aggregation of census meshblocks and contains an average population of 712 people. There are 5,928 data zones defined in New Zealand. This IMD measures health outcomes for each data zone, and each data zone can be ranked on a national basis. The IMD also links the data zones at a DHB level. Figure 1 shows areas of high health deprivation, with highest quintile of deprivation in dark purple.

Figure 1 Health deprivation index, University of Auckland, IMD



Waikato and Northland have more datazone profiled with health deprivation. We assessed the 500 data zones that featured the highest levels of deprivation (disregarding datazones in the predominately urban DHBs, such as Capital and Coast, as well as other urban areas such as Invercargill for example) and tracked which DHBs had the most areas of high deprivation, with the ten highest DHBs shown below:

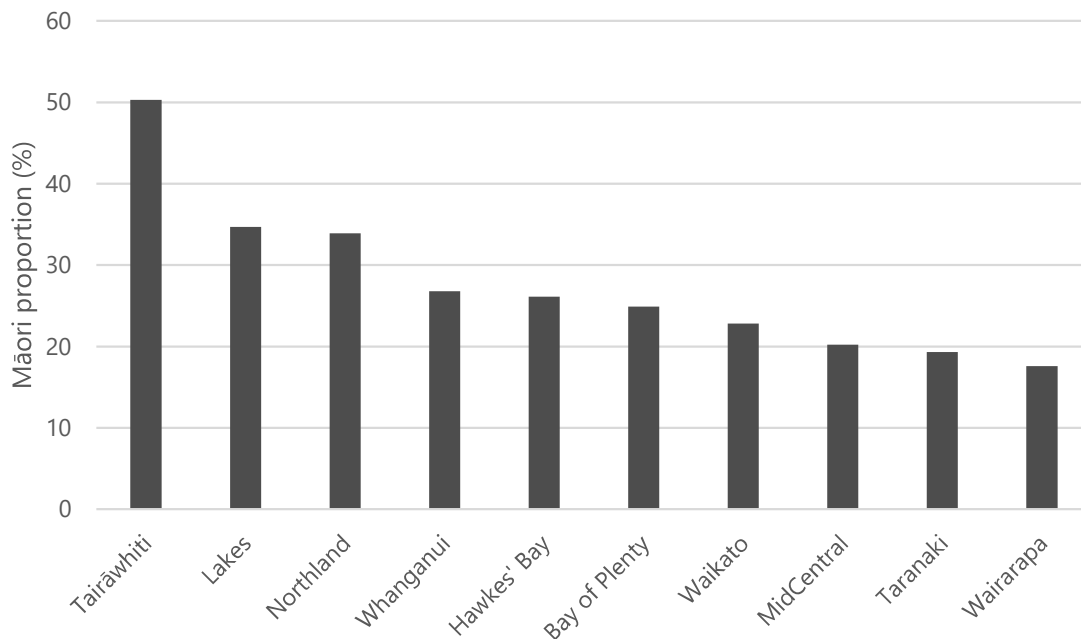
Figure 2 DHBs with highest number of deprived datazones (health)



5.3 DHBs with higher proportions of Māori should be prioritised for rural learning hubs

The Ministry of Health publish DHB population statistics, including proportion of Māori living in each DHB. DHBs with higher proportions of Māori will be stronger candidates for hosting rural learning hubs. The DHBs with the highest Māori proportions are:

Figure 3 Proportion of Māori by District Health Board



Combining the rankings of Deprivation Index and Māori proportion gives the following table:

District health board	Health deprivation rank	Māori population proportion rank	Total
Northland	2	3	5
Lakes	3	2	5
Waikato	1	7	8
Hawkes' Bay	4	5	9
Tairāwhiti	8	1	9
Whanganui	5	4	9
Bay of Plenty	6	6	12
MidCentral	7	8	15
Taranaki	9	9	18
Wairarapa	10	10	20

5.4 Northland and Waikato suggested as priority areas for rural hub locations

The first hub locations will likely be Northland and Waikato, with either Hawke's Bay or Tairāwhiti as candidates for further expansion. Regional equity is also an important consideration, with North Island locations likely to be less attractive to South Island communities. Significant consideration should be given to an early hub in DHBs such as the West Coast, Southern or South Canterbury. Choice of hub

and spoke locations will need to be confirmed at a later stage, however there are factors to be considered including:

- community engagement and willingness to accept students and staff into local and surrounding clinical practice
- existing infrastructure and ability to support a sizeable training institution
- area attractiveness to staff and students to ensure training places are taken-up
- (relative) proximity to larger hospitals.

6. Weighing training options

Stakeholders provided us with a range of previous proposals for addressing rural health issues. In addition, we have included the current interprofessional programmes, as well as an emerging option developed during the engagement process (via stakeholders and engagement with Ministry of Health officials). The six options we considered were:

- the status quo
- integrated rural health professional development centres – short inter-disciplinary training centres
- a National Centre for Rural Health Research – a research-oriented proposal
- a National Interprofessional School of Rural Health – a university led proposal
- a community engaged graduate entry medical school
- a rural health professional school (a new proposal).

A brief explanation of each option is presented in Appendix C.

6.1 The first assessment criteria is reducing inequities

In developing options, a set of assessment criteria is required to differentiate between the options:

1. Reduces inequity	Any solution needs to reduce inequalities and improve the health of Māori and Pasifika populations, particularly where they are rural.
2. Links with local communities	Strong links to local communities, including partnership with local iwi, are critical to the success of any rural training hub. Engagement with the local community will ensure that hubs are designing the content and the workforces needed in local areas.
3. Improves rural workforce resilience	Central to the problem is the future state of the rural workforce, and its ability to deliver health outcomes needed by rural communities. A successful hub would see improved recruitment and retention in the rural setting, with an appropriate mix of professions tailored for local needs.
4. Provides a solid, enduring institutional foundation	Any solution must be designed for the longer term partnering the commissioning of training with the delivery of training, with a range of training organisations.
5. Is cost effective	Affordability is important. Innovative solutions to rural and remote training needs will be required give the expense of training rurally.

6.2 Three options dominate

The table below summarises and compares key elements of the three shortlisted options, considering governance, training coverage, multidisciplinary focus, potential lead providers, Māori health impact, length of placements, student choice, location of training, community activity, funding and

implementation implications. This table is necessarily long and extends over two tables. In summary, the differences are:

- status quo provides interdisciplinary training, for short periods only
- the National Interprofessional School of Rural Health provides undergraduate and post graduate training in two hubs, at a high cost
- the Rural Health Professional School locates training predominantly in rural areas, with different training modalities, with reach in to hospital and university campuses.

Status Quo	National Interprofessional School of Rural Health	Rural Health Professional School
Short description		
Short placements in currently two, but proposed three, rural localities. Placements are for five weeks. Builds on the existing programmes in Whakatane (Rural Health Interprofessional Programme) and Tairāwhiti (Tairāwhiti Interprofessional education programme)	Two hubs focussing on undergraduate and postgraduate training for a three-year period.	Full rural training option from undergraduate, to graduate, to teaching.
Governance		
Collaborations between local DHBs and training organisations.	Governed by 5 establishing bodies (3 universities (Auckland University of Technology, University of Auckland and University of Otago) and RNZCGP, NZRGPG The Governance Group will include both Māori and community stakeholder leaders.	Two layers of governance: The overall programme is jointly governed by DHBs, universities and other training providers. Led by an independent chair (non-DHB, non-training provider) Each hub (and associated spokes) to be overseen by the local DHB, with the regional input, including local community and iwi representation.
Training coverage		
Focus is on undergraduate study, across range of disciplines.	Focus is on undergraduate and postgraduate training, across disciplines important to rural communities Will develop a rurally based academic health research community.	Primary focus (and student numbers) is on longitudinal study from undergraduate students to postgraduate.
Lead training provider		

Whakatane: University of Auckland Tairāwhiti: University of Otago South Island: University of Otago	Collaboration between: <ul style="list-style-type: none"> University of Auckland University of Otago Auckland University of Technology 	A rural training director would locate training partners with localities.
Māori health considerations		
Student clinical placements include hauora Māori settings Students also undertake a local community health project (~10 hours) with focus on local iwi/community health issues.	Input into programme by iwi and Māori health providers. Clinical placement for students in kaupapa Māori providers.	Interdisciplinary training to feature significant student project, consisting of 8 to 10-week project for students to understand He Korowai Oranga (New Zealand's Māori Health Strategy), demonstrate literacy and understanding of cultural safety competency, identify and apply Māori Health models in a rural context. Aspects of training programme will see students placed in kaupapa Māori organisations for clinical training. Project scope to be developed by DHB and local iwi in partnership to ensure applicability of project to specific local health needs.
Length of placement		
5-week programme rural programme. 1.5 – 2 days per week in training. Remainder of time on clinical placement.	Vary by profession with full year placements for medical and pharmacy students. Undergraduate nursing and physiotherapy students 8 weeks.	Training to be undertaken predominately rurally, with reach back into regional hospitals and urban centres as required. Co-design of programmes by tertiary institutions will be important to ensure validity of multidisciplinary options.
Student choice		
Majority of participating institutions/disciplines interview students following an internal application process or will handpick students.	A rural upbringing, by selecting rural origin students (and involving rural communities in the selection process).	Students most likely to return to rural areas post training would be prioritised, with places reserved for students with local links, rural upbringing and/or Māori/ Pasifika heritage.
Location of training		

<p>Mix between in class activity in central area, and time on clinical placement.</p>	<p>Based on a 'hub and spoke' model, use the current rural hospital network linked with surrounding rural healthcare services such as primary care providers and rural pharmacies Hub locations to be determined.</p>	<p>Regional hubs with local spokes, implemented where there is a local champion. Training is provided through distance learning with local clinical supervision. All training is local with short outplacements to hospitals if appropriate and required.</p>
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Community activity

<p>Accommodation and other pastoral support provided by the programme.</p>	<p>Communities to engage in health professional education in their communities, with feedback to the tertiary institutions. Communities to integrate students from the programme into their communities during their stay. Accommodation and other pastoral support provided by the programme.</p>	<p>Local area to set the scope of training, with a consortium of local DHB, PHO, iwi, local government envisaged as driving the concept. Community pastoral support and integration into the community. Initial setup of hub including infrastructure to be driven in collaboration with community.</p>
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Funding and cost

<p>Funding covered under existing allocations, with new hub to be confirmed.</p>	<p>Funding of section 9(2)(b)(ii) over three years, for two hubs. Annual running costs of approximately section 9(2)(b)(ii) per annum.</p>	<p>Funding for student training is as per other courses (funding allocated from central student, i.e. Universities for medicine) with a premium from central government for remote training. A per person payment will be made to the practice housing the student. Administration and support staff located in local communities, with small central staff to assist in administration and cross hub learning dissemination. Likely number of students is 192 per year per hub, split into professions. The student numbers will be built up over time.</p>
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Implementation







Continue current programmes, with anticipated new hub in South Island.	Implement two hubs for an initial three year period. Hub location to be determined by consultation with stakeholders including local communities.	Implement in regions progressively, with regions prioritised on need and areas with high Māori population percentages. Economies of scale to be considered as hub rollouts increase, fixed overheads likely to decrease. The training course is provided by existing providers but through different modalities allowing students to remain in rural areas.
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6.3 Assessing the short list against the five criteria

Our summary is as follows:

- Status quo is affordable, being extended, and has a positive impact, but not material enough to address stakeholder concerns or, indeed, the problem definition.
- The second option goes further but is unaffordable and has previously been rejected because of cost. However, that could be revisited.
- The third option, of establishing a rural health professional school, and then commissioning inputs from universities, is ambitious, but directly addresses the problem definition. The cost is uncertain – if all of the cost is new money, then clearly this is the most expensive option, however we discuss other offsets in the next section.

Assessment criteria	Status Quo	National Interprofessional School of Rural Health	Rural Health Professional School
1. Reduces inequity			
2. Links with local communities			
3. Improves rural workforce resilience			

4. Provides a solid, enduring institutional foundation			
5. Is cost effective			

The option assessment suggests similar performance against criteria for the second and third options. The critical differences are in the length of time spent rurally in training.

- National Interprofessional School of Rural Health, students come out from the city for a part of their study. This is for a whole year in medicine and lower to start with in other disciplines, but growing to a year eventually. The curriculum is delivered for in the rural period by a rural clinical school distributed over a number of hubs or nodes. Students return to their existing institutions for the remainder of their training.
- Rural Health Professional School, students spend their entire training in a rural community, with teaching done rurally, but with virtual training also provided by host institutions. Where required, students return to a base hospital or the urban academic locations for brief attachments, such as specialist training.

Other variables such as the governance structure, methods of funding, local community involvement are potentially interchangeable between the options. A longer time spent in rural settings will encourage greater recruitment and retention benefits.

The scale of the intervention will influence the scale of the individual hubs, as well as the eventual long term size of the hub network. Stakeholders are clear, a network of two hubs would not be sufficient and would not address the requirements of New Zealand's many rural communities.

6.4 More detailed comments on the three options

We comment on the three options further below.

On the status quo:

- The existing interprofessional hubs send approximately 60 students per hub per year through rural areas on five-week rotations. Anecdotal evidence suggests that a limited number of students (~10-15%) from the Tairāwhiti programme return to Tairāwhiti for post graduate roles. Additionally, our interview evidence suggested that the current system, while successful locally is not fully addressing the rural workforce problem
- The scale of the training is limited to five week per rotation, which only provides an introduction to rural locations and interprofessional learning.

- Student clinical placements include hauora Māori settings. Students also undertake a local community health project (~10 hours) with focus on local iwi/community health issues.
- The current framework has each hub governed separately by the lead institutions. Less likely to lead to a coherent national plan that addresses the needs of the diverse rural locations.
- This option provides the lowest cost, as the scope of training, and training numbers is the lowest. The costs of this proposal are included in existing baselines.

National Interprofessional School of Rural Health

- Inclusion of postgraduate training and research in this option is strong.
- Evidence from the Pūkawakawa programme (year long undergraduate rural training) shows strong improvement in local placements and intentions to work rurally, therefore moving to a longer immersion model will deliver improvements in student appetite for rural placements.
- Community involvement in design of learning, focussing on each location and community needs will strengthen links between students, teachers and the community.
- Focus on interprofessional learning will better equip graduates for rural health requirements.
- Benefits from clinically based education are passed to the rural clinics. These benefits will then flow to the local rural community.
- Training to include placements in kaupapa Māori organisations.
- Training in rural and/or Māori settings will benefit rural and Māori communities at the time, as well as equip those students that return to provide appropriate care for the future.
- An established hub will model future employment pathways for local youth.
- National model with a focus on collaboration between tertiary institutions will contribute to a national approach to interprofessional learning, with a focus on national outcomes.
- Middle cost option, but trains similar numbers of students per hub for longer placements.

Rural Health Professional School

- This option has the largest scale of students and academics involved, with the long-term pipeline once four hubs are running to full capacity of 192 health professionals trained per year.
- Students trained rurally for their full training will enhance the attraction and retention benefits.
- To service the students, teaching and research positions will be created. This will increase the attractiveness of rural locations to a wider work force, rather than solely practicing positions.
- Community involvement in hub governance is an important factor and leads to community resilience as well as workforce resilience.
- Creating specific training priority for both rural and Māori students creates a close alignment with the local area and a clear model for local people providing local healthcare.

- Increased access for local communities in short term and long term – scale of hubs (and spokes) will be significant, allowing the greatest number of communities to have access to students training in locations.
- Specific requirements for significant student project, consisting of 8 to 10 week project for students to understand He Korowai Oranga (New Zealand's Māori Health Strategy), demonstrate literacy and understanding of cultural safety competency, identify and apply Māori Health models.
- The additional benefit of a hub model is the presence of learning hubs in the local community creates the opportunity for young people to see role models that may influence future career choices.
- National model that takes students from a range of disciplines and teaching potentially from a range of tertiary providers.
- The scale of the hub model, with four hubs planned in the first five years of operation, leads to a critical mass of students and academics that will assist in creating a strong pipeline of rurally trained staff interested in working rurally.
- Most expensive option, though reflective of the long duration of training, the large numbers of students running through the hub, and the increased number of hubs.
- There may be offsets in other budgets as this school displaces medical and other placements.

7. Costing the options

The cost of the first two options are known and are as follows:

1. The Ministry of Health estimate the annual cost of each hub as being **section 9(2)(b)(ii)** per annum. With two hubs established, and a third in advanced stages, an annual cost of **section 9(2)(b)(ii)** per annum is estimated.
2. The costs of setting up and running the two hubs in the proposal were estimated as needing funding of **section 9(2)(b)(ii)** over three years. Annual running costs are approximately **section 9(2)(b)(ii)** per annum.

7.1 A Rural Health Professional School will not be cheap

We estimate the total cost of Option 3 to be **section 9(2)(b)(ii)** over 10 years (exclusive of GST). This includes **section 9(2)(b)(ii)** in setup costs, which incorporates a combination of fitting out facilities, IT infrastructure, legal and finance costs and consultation with the rural communities where the hubs would be proposed to be established. The bulk of the spending is in operational expenses, particularly staff costs. The year-on-year distribution of costs is as follows:

section 9(2)(b)(ii)

The **section 9(2)** required in Year 0 is made up of:

Table 2 Setup costs

Cost category	Amount
Finance and legal expenses	section 5
Fit out central office	section 5
Local consultation (two hubs)	section 5
Fit out (two hubs) – IT	section 5
Other (including contingency)	section 5
Total	section 5

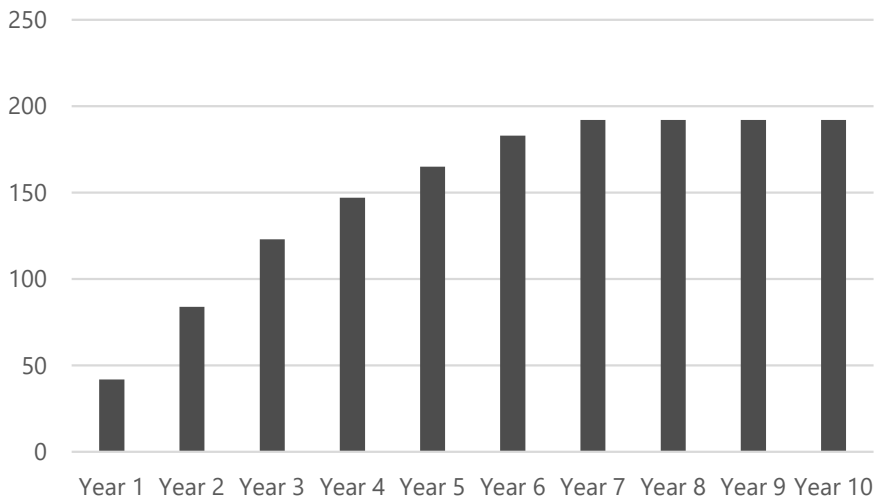
Source: Sapere workings

7.2 Option 3 grows in cost over time

Spending increases significantly over time. This is because the hub has been modelled to begin with year one students only, seeing those students progress through the hub as they move through successive years of training. Year two courses will be added as year one students move to the next year rather than having students start at the hub midway through their degrees. An exception is made for post-graduate medical students and nurse practitioners who are accounted for from the beginning.

The student profile looks as follows:

Figure 5 Growth in student EFTS for a single hub



Source: Sapere workings

7.3 A bottom-up approach to costing was required

We have broadly followed the cost categories used by proposal underpinning Option 2.² Emphasising that the University bid was not a “binding offer capable of acceptance”, the joint respondents provided a budget template that detailed the expected costs by category. We looked at each category, focusing on those areas of costs that were most material.

The results of the different methods are illustrated below:

Table 3 Results of costing – total spend in year 10 (\$2019 excl. GST) and capital comparison

Approach	Bottom-up	Top-down	SAC + Tuition fee
Set up cost	section 9(2)(b)(i)	■	NA
Year 10 cost	section 9(2)(b)(ii)	■	■

Source: Sapere workings

The *bottom-up approach* was a reassessment of the costs in Option 2. We looked at each area of the costing, identified those which were unlikely to change, and focused on the ones that would change. There are areas of costs that differ significantly in Option 3, principally because of the increased numbers of students, but also the model of teaching involved:

Table 4 Cost categories that change significantly

Cost category	Description
Academic staff	The Joint Proposal was for hubs of 24 EFTS, focused on students in final years of study for short periods. We are building up a hub that caters to multiple years of study with different needs for placement, tutorials and laboratory. We have factored in those differences and costed up from first principles.
Travel times	With an increase in students, travel time and distances also increase. However, types of travel also change based on students being based full-time at the hub and travelling from there to placements. Less travel between host institutions is required; but more travel for academic staff is factored in.
Fit out and IT costs	We are pricing for a 10-year period we have factored in “hard fit-outs” for a central office for the school and for the hubs. We have also factored in the IT capability for high quality video feeds to remote lectures.
Student accommodation	Unlike Option 2 we have not factored in student accommodation as a cost to the school because of the full-time nature of the tuition. The student lives rurally.

² The University of Otago, the University of Auckland, Auckland University of Technology, the Royal New Zealand College of General Practitioners, and the New Zealand Rural General Practice Network

Source: Sapere workings

The *top-down approach* took the costs set out in Option 2 and separated the costs into fixed (does not change with EFTS) and variable (does change with EFTS). We then inflated the numbers based on the expected EFTS numbers that we would get for each year of study.

In the case of this project, we believe a bottom-up approach to costing is more appropriate, as there were a significant number of components that contribute to the total project cost, as well as the availability of data to allow for a reasonable estimation of those costs.

Finally, we looked at the SAC funding component and current tuition fees to assess what funding would be available for a school of a similar size with the same professions. We note that our costing does not consider a risk premium or a profit margin (although it does allow for contingencies) which could explain why the bottom-up approach and the expected revenue calculation are relatively close.

7.4 Academic staff costs are the largest category of cost

Under the *bottom-up approach*, costs could be broadly classified into three types of costs:

- **School costs** – These include costs associated with the operation and governance of the school, and include salaries of directors, administrators, placement staff, finance and legal staff, staff travel costs and office space rental
- **Hub costs** – These are costs associated with the establishment and ongoing operation of the rural hubs and include salaries of academic staff, Māori and Pasifika representatives, administration and pastoral staff, staff travel and overheads across all hubs
- **Student costs** – These are costs associated with the accommodation and logistics of each of the student cohorts at each of the rural hubs and includes accommodation, allowances for travels to (but not from) placements and central places of learning.

Each of these cost categories also includes a contingency of 10 per cent to allow for any unexpected or unbudgeted items.

- As mentioned previously, and as seen in Figure 6 below, the bulk of spending is on operational costs, the majority of which are captured in the hub costs. The largest category of these costs are academic staff costs, which account for [section 9\(2\)\(b\)\(i\)](#) in Year 10, or 50 per cent of total costs. This reflects the breadth of disciplines that the hub is intended to provide and includes consideration for the number of staff needed to deliver lectures, tutorials, laboratories, placements and supervisory roles across all disciplines.

section 9(2)(b)(ii)

- Other staff costs, which include the school director, administrators, placement staff, finance and legal staff, Māori and Pasifika representatives and administration and pastoral staff at the hubs total **section 9(2)(b)(ii)** in Year 10, or 14 per cent of total costs.
- Travel costs are also form a significant component of the ongoing operational costs for the school, both for staff and students. In Year 10, travel costs are estimated to account for **section 9(2)(b)(ii)** or 9.2 per cent of total costs, with staff travel to and from hubs accounting for the majority of this cost.

Table of assumptions and exclusions

Table 5 Assumptions and exclusions

Assumption	Explanation	
Common assumptions		
Phasing	We assume that the first two hubs are commissioned in 2021, with the next to follow in 2023, and a fourth in 2025. First year students only are catered to in the first year (with the exception of nurse practitioners and post-graduate medical). Other years are added in as students progress.	
Inflation	2.1% (driven primarily by labour costs)	
Contingency	A contingency of 10% has been added to all costs	
Assumptions driving staff costs		
Professions and number of students in each year	Nurses	6
	Nurse practitioners	3
	Doctors	6
	Doctors post-graduate	3

Assumption	Explanation
	Pharmacists 3 Mental health (psychologist) 3 Dentist 6 Physiotherapists 3 Midwives 3 Paramedicine 3 Medical laboratory scientists 3 Once fully operational, each hub would produce 42 professionals per annum
Full time annual teaching hours (when not on placement)	480 hours – 160 hours of distance learning; 320 hours of in-person teaching (including tutorials and laboratories)
Placement hours	As per requirements of each course and each level of study
Lecturer salaries	section 9(2)(b)(i)
Salary cost-loads	36% (as per Joint Proposal)
Required preparation per hour of tuition	2 hours for lecture; 1 hour for each tutorial (laboratory, etc.)
Placement compensation	Time spent on placement compensated for hours of “active supervision” required, assumed to decrease as students advance in their study. Medical and dental supervision at section 9(2)(b)(i) equivalent per annum; and other professions at section 9(2)(b)(i) per annum.
Payment for distance learning	For the 160 hours of distance learning it has been assumed that each hub will compensate for 15% of total lecturer time
Fit out, IT and property assumptions	
Leases	Assume a lease for a central school location in Wellington at section 9(2)(b)(i) (as per Colliers regional report); and hub locations at section 9(2)(b)(i) (as per Colliers regional report for Christchurch suburban)
Fit-out	Assume fit out costs of section 9(2)(b)(i)
IT costs	Assume desktop computers for one-third of all students; video conferencing facilities for 11 class rooms per hub; phone infrastructure for central location and for staff at hub
Travel assumptions	
Central staff	Assume 12 trips from central location to each hub per annum by air and including transfers
Academic staff	Assume 120 journeys between hub and university and/or polytechnic location per profession by vehicle
Student placements	Assume payments at IRD rates of reimbursement for travel to placements for each day of placement
Exclusions	

Assumption	Explanation
Profit margin / risk premium	No allowance has been made for a profit margin or a risk premium – a contingency of 10% has been made, however
Consultants' costs	Apart from consultation with local communities, all costs associated with developing tender documentation, responding to a tender; and any other advice have been excluded
No reduction in costs	This costing does not take into account cost savings that will occur in other parts of the system, e.g. transfer of tutorials from other education locations to hubs
Costs borne by other parties	This costing does not make any assumptions as to who will bear and require compensation for the costs (e.g. there is a cost allocation for organising placements which may be partially borne by a DHB, which could seek compensation for it – the costing acknowledges the total cost but does not allocate it)

A key asset that will be needed is student access to wet laboratories. These wet laboratories likely will not be found outside of provincial towns if not urban settings. Students will need to attend block courses where there is need for such facilities.

7.5 Possible off-set costs

We have provided a full costing and there may be offsets from other budgets. For instance, we understand the director in at least one Australian state was given the budget that otherwise was to go to universities. The director used that sum of money to fund rural placements. Universities also gained because they could increase their take of international students. We have not set out any offset costs.

7.6 From concept to reality

The third option is a "concept" built up out of stakeholder discontent about two other options. There are considerable challenges to this option. And clearly early appointment of a credible rural health director would be crucial. That director would need to have international credentials (and several names were mentioned). The challenges that stakeholders identified to us of running a rural training hub are as follows:

- co-operation and collaborative work between tertiary institutions and between health providers
- sector commitment to the concept
- local communities being ready and willing to deliver the infrastructure required
- ensuring a sustainable pipeline of roles for students post training
- training in a rural setting will cost more
- significant shift in model of care away from medical model
- curriculum approval
- structured environment of Universities makes innovation difficult
- ensuring this model of learning is considered high quality

- ensuring funding allows for a collaborative training approach
- ensuring the pipeline of students from secondary schools.

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Appendix A: Evidence on building and retaining a rural workforce

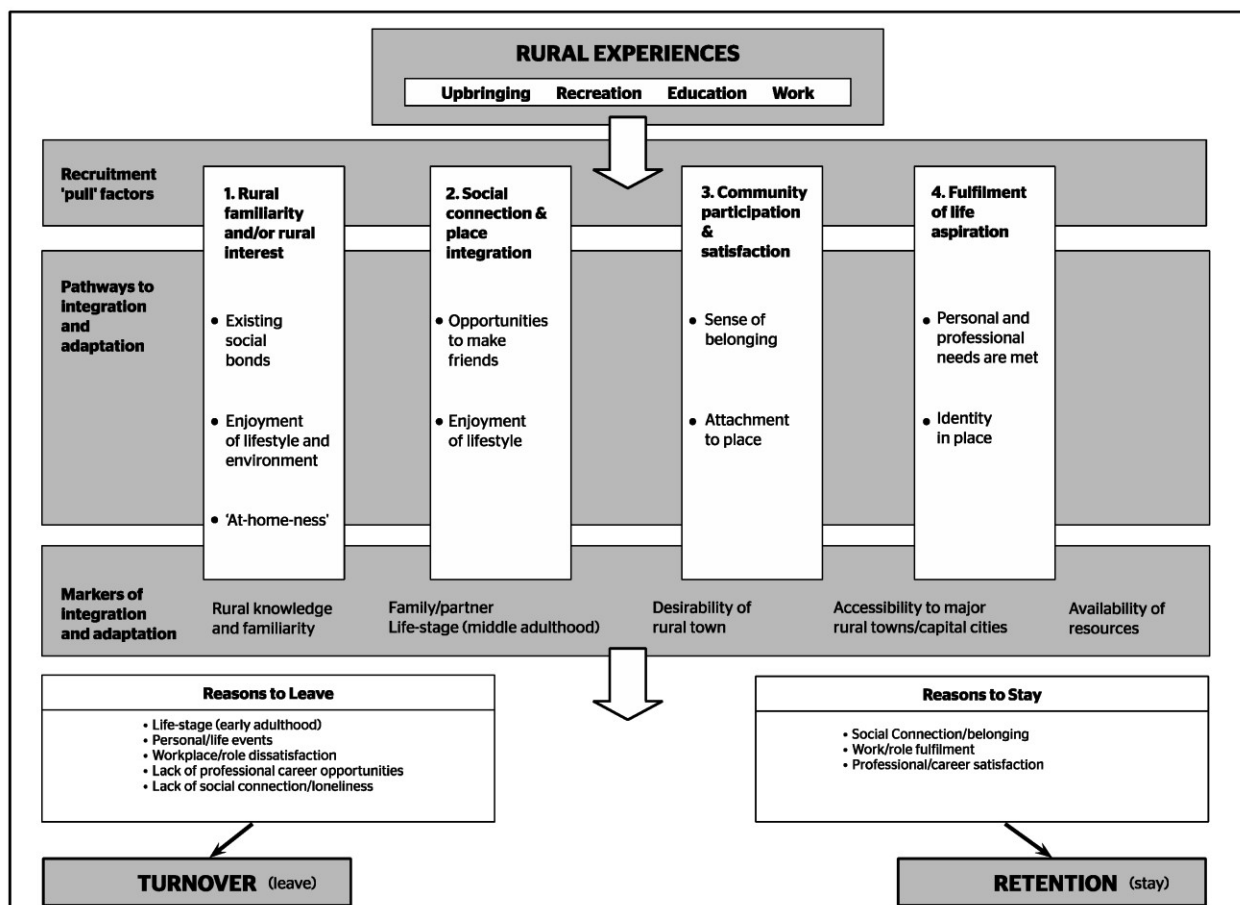
Evidence points to a collection of social, personal and professional factors that influence the decision to work in rural areas. These are an intersection of social, personal and professional factors, and are often driven by intrinsic elements such as an individual’s upbringing, philosophy and their life circumstances at a given point in time.

Four key social determinants

Cosgrave, Malatzky and Gillespie (2019) identified four key social determinants that influence the decision to practice rurally:

- rural familiarity and/or interest
- social connection and place integration
- community participation and satisfaction
- fulfilment of life aspirations.

Figure 7 Key factors of rural “pull” factors for healthcare workers



Rural upbringing is important

Several studies cite that a major motivating factor for an individual to practice rural health is a rural upbringing. Health professionals from rural backgrounds identify the existence of strong social bonds, familiarity with the physical environment, and enjoyment of a rural lifestyle as having strong “pull effects” on their decision to take up or stay in rural positions (Godwin, Hoang, Crocombe, & Bell, 2014; Gallego, et al., 2015; Hancock, Steinbach, Nesbitt, Adler, & Auerswald, 2009).

Indeed, studies in many countries have shown that the three factors most strongly associated with entering rural practice are:

- a rural upbringing,
- positive clinical and educational experiences in rural settings as part of undergraduate medical education
- targeted training for rural practice at the postgraduate level (Strasser, et al., 2016).

The factors that motivate physicians to enter rural practice differ from the ones that keep them in rural practice in the long term. Research found that rural lifestyle factors, the ability to practice autonomously and to full scope, diverse caseloads as well as a range of monetary and non-monetary incentives tend to positively influence decisions to practice rurally (Chauban, Jong, & Buske, 2010; Fleming & Sinnot, 2018; Wasko, Jenkins, & Meili, 2014).

Generational differences have also been found to be a factor. One study found that younger doctors placed greater emphasis on work-life balance and spouse’s employment than older generation physicians, and that this has important implications for small populations which might not be able to support “physician-spouse pairs” or certain subspecialties. Economic factors have been important in the past and the authors argued that the findings highlighted the importance of addressing the needs and expectations of younger physicians in order to attract them (Mathews, Seguin, Chowdhury, & Card, 2012).

Similar research for other rural health workforces

While much of this research has focused on doctors, there is also an emerging body of research investigating the influences of place-based social processes on rural allied health and nursing workforce retention (Campbell, Eley, & McAllister, 2016; Cosgrave, Maple, & Hussain, 2018):

- Cosgrave, Malatzky and Gillespie (2019) found that the decision of allied health workers to leave or stay in a rural area was a function of each worker’s personal and professional satisfaction framed against their personal and professional expectations.
- A stressful work environment, workload scheduling, lack of autonomy and misalignment of personal nursing values and organisational values all increased the likelihood of nurses leaving rural practice areas (Nowrouzi, et al., 2015; Bragg & Bonner, 2014).
- Allied health professionals similarly found that professional factors such as poor access to continuing education, professional isolation and insufficient supervision negatively influenced job satisfaction and encouraged the likelihood that a professional would leave (Campbell, McAllister, & Eley, 2012). It is likely that many of these factors would also have similar impacts for doctors.

Similar to doctors, factors attracting healthcare professionals to rural areas are not the same factors which drive retention in these areas. A program aimed at attracting medical professionals to rural Alberta was trialled and yielded moderate success. Based on interviews with the participants in the program, the key factors that contributed to the program's success in attracting and retaining staff were identified. Healthcare infrastructure, professional integration, connections with the community and partner/spouse integration were ranked as the most important factors for attraction. Meanwhile, the most important factors of retention were community infrastructure, work-life balance, work satisfaction and partner/spouse integration (RhPAP, 2019).

Appendix B: Initiatives aimed at improving rural healthcare in other jurisdictions

Many countries across the world have been faced with the same challenges relating to rural healthcare, and a number of jurisdictions have developed specific initiatives aimed at improving rural health education and outcomes. Most notably, there have been initiatives in Australia and Canada that have valuable learnings for potential application in a rural health model in New Zealand. We consider these below.

Initiatives targeted at improving rural healthcare in Australia

Australians living in rural and remote areas tend to have shorter lives, higher levels of disease and injury and poorer access to and use of health services compared to people living in metropolitan areas. Poorer health outcomes in rural and remote areas may be due to a range of factors, including a level of disadvantage related to education and employment opportunities, income and access to health services (AIHW, 2019). Given the challenge of distance and geography, healthcare in rural areas needs to be provided by doctors who can integrate skills that are traditionally delegated to separate specialties in urban practice.

As well as providing comprehensive General Practice and emergency care, rural communities often depend on their doctors having additional skills for an extended scope of practice to meet their needs. These additional skills include the fields of Anaesthesia, Obstetrics, Surgery and more advanced Emergency Medicine as well as knowledge in fields such as Aboriginal and Torres Strait Islander Health, Mental Health, Aged Care, Palliative Care, Addiction Medicine, Adult Internal Medicine, Paediatrics, Remote Medicine, Medical Education, Public Health and Health Administration (Australian Government, 2018).

There is an increasing number of medical graduates from Australian medical schools, but this alone has not resulted in sufficient access to the medical services required for rural and remote communities. There is a well-established correlation between poorer access to health services and poorer health outcomes. Poorer health outcomes in turn lead to poorer social and cultural opportunities, and poorer economic participation, economic development and productivity (Australian Government, 2018).

In this section, we discuss initiatives undertaken by the Australian government, universities, communities and academics to try and address these issues.

The Rural Health Multidisciplinary Training (RHMT) program

The RHMT program represents the current Australian government's framework aimed at addressing issues of rural healthcare training and healthcare worker maldistribution across rural areas. The program combines two former rural health initiatives, the University Departments of Rural Health (UDRH) and the Rural Clinical Schools (RCS) programs into a single initiative designed to encourage

the recruitment and retention of rural and remote health professionals (The Department of Health, 2017a). The program has stated objectives of:

- providing effective rural training experiences for health students
- developing an evidence base for the efficacy of rural training strategies in delivering rural health workforce outcomes
- supporting rural health professionals to improve Aboriginal and Torres Strait Islander health;
- increasing the number of rural origin health and medical students
- maximising the investment of program funds in rural, regional and remote areas for the maintenance of well supported academic networks to enhance the delivery of training to students to support the provision of medical services to communities.

The RHMT program supports a network of rural clinical training sites across Australia, with university staff living and working in regional, rural and remote areas, delivering rural clinical training experiences to health students and encouraging them to remain in these communities when they complete their training.

Notably, one of the core requirements of universities under the RHMT framework is provision 3(a) that details the requirement of multidisciplinary medical training:

The university must set and meet an annual multidisciplinary rural clinical placement target for its rural training sites (expressed in terms of total placement weeks), for the dental, nursing and allied health disciplines. Targets will be agreed with the Department and reflected in the university's RHMT funding agreement. As part of establishing its multidisciplinary training target the university must increase the duration of its rural training placements wherever possible. Placements may be completed by students enrolled with the university or may be undertaken by students enrolled in health courses of other universities, as part of collaborative training arrangements. The coordination and support of placements must be undertaken through the university's rural training sites, supported where necessary by central campus resources. (The Department of Health, 2017b, p. 1)

Integrated Rural Training Pipeline for Medicine

The Integrated Rural Training Pipeline (IRTP) initiative was announced in 2015-16 as part by the Commonwealth Government as part of the initiatives under the RHMT program. The IRTP has three components:

- the establishment of regional training hubs to better coordinate training opportunities for medical students and trainees and build local training capacity
- the establishment of a rural junior doctor training innovation fund to deliver general practice rotations for junior doctors undertaking their internship in a rural area

- support for an additional 100 places on the Specialist Training Program, targeted specifically to rural areas (The Department of Health, 2017c).

Twenty-six regional training hubs have been established under the IRTP to work with local health services, to help stream students through the medical training pipeline. A regional training hub under the IRTP is defined as a team of people at an established Rural Health Multidisciplinary Training Program location, dedicated to integrating medical training opportunities for medical students, junior doctors and specialist trainees within their catchment area (ANZCA, 2019).

The stated objectives of the regional training hubs are to:

- improve the coordination of the stages of medical training to enable students intending to practise rurally to complete as much of their medical training as possible within regional and rural areas
- identify students with an interest in practising rurally and facilitate access to networked rural training opportunities at an early stage in their careers
- develop regional training capacity by supporting current supervisors of clinical training, assisting health services in obtaining accreditation for new training positions, and supporting local medical practitioners to become clinical supervisors
- strengthen existing, and develop new, connections with key stakeholders to improve the continuity of training for medical students/trainees within their region
- identify regional medical workforce needs and use this information to prioritise activity.

Under the requirements of the IRTP, universities involved in each of the rural training hubs must meet the following requirements:

- for each training hub identified in the university's funding agreement, the university must appoint a suitably qualified team including a senior clinical academic, project and administrative staff
- implement and maintain arrangements with relevant education professionals and health service stakeholders, including local hospitals and health services, state and territory governments, other universities, specialist colleges (including general practice colleges), postgraduate medical councils, local health practitioners and regional training organisations to support the integration of medical training at the local level
- facilitate the development of new medical training capacity through activities including, but not limited to, assisting health services in accreditation processes for new posts; and supporting local health professionals to become supervisors
- identify university-level medical students with an interest in rural practice, and provide them with support including assistance with career planning placement opportunities and access to mentoring
- identify areas of regional medical workforce need within their catchment area, and work to build medical training capacity in these areas
- report on the training placements available at each level of the medical training continuum within each hub's region of activity.

University Department of Rural Health Program

In 1996, the Australian Government established the first regionally based, multi-professional University Department of Rural Health (UDRH). The UDRH program aimed to provide education and training facilities in non-metropolitan centres across Australia, thereby helping to attract health professionals to practise in rural and remote communities. The program continues as one of several government initiatives in tertiary education designed to strengthen and sustain rural and remote health care. The rationale of these initiatives was an expectation that local access to clinical training for students of rural and remote origin and extended clinical exposure of other students interested in rural health care would increase the likelihood of employment uptake in these areas post-graduation.

Currently, there are twelve UDRHs located across Australia, all having the shared purpose of leading the rural and remote health agenda in education and research. UDRHs operate as clinical academic units located within the health service sector and have proximity to student placements. They serve a defined region and have sufficient critical mass to develop and deliver academically enriched clinical education and training, and the capacity to manage and coordinate placements and undertake targeted research relevant to the region. UDRHs can be major participants in health workforce education and development for students, early-career health professionals and established practitioners, and a key partner in the planning and development of the health workforce to assist in the development and delivery of health services relevant to their region. UDRHs are administered predominantly by metropolitan-based medical schools or faculties of health science and collaborate with other rurally based education providers (i.e. schools of rural health, other university departments of rural health) and multiple Australian universities (Humphreys, Lyle, & Barlow, 2018).

In 2016, it was announced that the UDRH and the Rural Clinical Schools (RCH) initiatives were to be consolidated into one program, which is the aforementioned RHMT program.

Outcomes from the initiative

The UDRH Network has offered enhanced rural clinical placements to nearly one in five domestic health students during their training. The relatively prominent student exposure to 'remote' UDRH regions (on a population basis) and the recent introduction of service-learning programs have proven to be particularly important, given that communities in remote regions often have the greatest health needs, the greatest shortage of health professionals, and most difficulty in recruiting and retaining a health workforce.

The effects of UDRH support varied among disciplines, with several major allied health disciplines benefiting through increased placements, while other disciplines, such as social work and psychology, continued to have limited rural and remote exposure. The UDRH Network, with its multidisciplinary orientation, complements and interacts with rural clinical schools, which concentrate on training medical students.

In 2013, an estimated 18% of annual university enrolments in 10 leading health disciplines accessed UDRH clinical placements. Common features across all UDRH student programs included availability of cross-cultural, interprofessional and simulation training, orientation of students to placements, and UDRH-managed accommodation. Other features varied by context across the network.

The UDRHs generated 220 peer-reviewed papers in 2013 of which 86% were applied research and 40% addressed some aspect of rural and/or remote health. This is an impressive outcome, given that

publications relating to key rural and remote health issues prior to the establishment of the UDRH Network were relatively scarce. Moreover, the fact that this research is being undertaken by academics and researchers based in rural or remote sites demonstrates the important role and contribution of local capacity building associated with the distributed locations of the UDRHs.

A review of the analysis by Humphreys, Lyle and Barlow (2018) links the success of the UDRH Network with the principles of the national strategic framework for rural and remote health: partnerships and engagement, local solutions, and a strong evidence base.

The Queensland Rural Generalist Pathway

The Queensland Rural Generalist Pathway (QRGP) is a state government funded program for developing a medical training pathway specifically aimed at producing doctors with the skills and capabilities to address rural health needs in Queensland. It provides a supported career pathway for junior doctors to train in rural and remote medicine, combining evidence and policy to achieve professional recognition, credentialing and industrial recognition.

The model operates systematically upon three transformative pillars, namely, recognition of rural generalist medicine as a unique medical discipline in its own right; practice value for its true worth; and a supply line/pathway to vocational practice.

The state wide training pathway comprises three stages including: prevocational training in a quarantined position at one of eleven Queensland Health regional or outer metropolitan hospitals (the first two postgraduate years); advanced skills training (predominantly undertaken in the third postgraduate year); followed by completion of general practice (vocational) training in a trainees fourth and fifth postgraduate year (undertaken in supervised rural practice).

Under the pathway, a Rural Generalist is defined as a rural medical practitioner who provides:

- hospital and community-based primary medical practice
- hospital-based secondary medical practice, including advanced skills in emergency medicine, Indigenous health, internal medicine, mental health, paediatrics, obstetrics, surgery or anaesthetics
- hospital and community-based public health practice.

Outcomes from this initiative

An evaluation of the program was highly positive – the program met the needs of local communities through the reduction of critical medical vacancies, enabled health services to expand service delivery and the pathway made services more accessible and affordable to local residents.

Critical success factors to the program were identified as:

- early immersion in rural medicine during the prevocational years (first two postgraduate years)
- due recognition being given to the profession by Queensland Health (associated industrial and remuneration packages)
- the fast track nature of the program - attractive to trainees but also addresses the workforce needs of rural communities in a timely fashion

- the quality of the training and supervision offered
- the effective quarantining of training placements in rural locations and the preference given to Rural Generalist Medicine trainees
- career opportunities presented throughout the training period, albeit currently perceived as limited to the State of Queensland.

Anecdotal data reported to the evaluation team indicated that “the QRGP has, in some areas, reversed the decline of rural procedural medicine, supported existing rural health services and invigorated rural Queensland’s procedural medicine services. Members observe that these gains have helped to reduce morbidity and mortality in rural areas and have reduced the need for costly patient transfers to metropolitan centres.”

Other examples cited:

..since the appointment of Dr X (a supervisor within the QRGP), the inclusion of more doctors and the expansion of services at this hospital I have been able to come and get my dialysis and renal management on site and not have to travel several hundreds of kilometres every few days. Its been a god send (patient feedback to evaluation team during site visit)

..since the introduction of the QRGP and having local access to advanced skills trained rural generalists in obstetrics and anaesthetics we have been able to undertake an additional 57 births locally that would otherwise have had to be undertaken in Brisbane or other locations (HHS feedback)
(Ernst and Young, 2013, p.8)

The success of the QRGP (alongside other rural generalist programs in New South Wales, Victoria and Tasmania) has driven interest in the development of a National Rural Generalist Pathway (Australian Government, 2018).

Rural Interprofessional Program Education Retreat (RIPPER) Project

The RIPPER Project was designed and held by the University of Tasmania’s Faculty of Health Science in 2006, 2007 and 2008 (Whelan, Spencer, & Rooney, 2008; Whelan, Spencer, & Dalton, 2009). The initial objective of the program was to develop a rural interprofessional learning module for final year undergraduate health science students at the university, with the intention of:

- fostering and facilitating positive and productive interprofessional learning experiences for final year undergraduate health science students
- allowing students to gain an understanding of the importance of an interprofessional team approach to delivering health care to people living in both urban and rural areas
- encouraging students to consider rural practice as a future career.

The format and design of the RIPPER initiative was focussed on a multi-station circuit that consisted of three learning stations, each of which was based on an interprofessional rural case-based scenario that employed experiential and interactive educational strategies. Each learning station required

students to work collaboratively in small clinically relevant interprofessional teams that engaged the skills and knowledge of each profession.

A key part of building students' skills and knowledge was the running of each scenario in two iterations. At the commencement of each scenario, each interprofessional student group was divided into two smaller teams. The first team were provided with minimal briefing and required to interact with the scenario while the second team observed. Students and facilitators then reflected on and evaluated the performance of this first iteration of the scenario. The scenario was then re-run with the second student group, who were expected to draw on their discussion, reflection and evaluation from the first iteration.

In total, 90 students from the disciplines of medicine, nursing and pharmacy participated in the RIPPER project over the three years.

Outcomes from this initiative

Survey results of the attending students demonstrated a positive shift in students' understanding of interprofessional practice and the roles and skills of other health professionals. There was also an increase in the value ascribed by students to collaboration and teamwork as a way of problem solving and improving patient outcomes.

Other initiatives

There are a number of other initiatives in Australia specifically focused on rural and regional health, though there do not appear to any analyses into their effectiveness. We summarise these below.

The Centre for Rural and Remote Health (James Cook University)

Established in 1997, the Centre for Rural and Remote Health (CRRH) has a regional remit that covers the outback, remote and rural areas of North West, Lower Gulf, Central West and the Western Cape of Queensland and spans more than 600,000 square kilometres.

The CRRH has four hubs:

- Mount Isa (main site) on Kalkadoon land, also known as the MICRRH
- Cloncurry on Mitakoodi land
- Longreach on Iningai land
- Weipa on Waypundun land.

The CRRH has introduced many new initiatives towards improving health in North West Queensland. The Centre takes a lead role in education, training and research with a focus on rural and remote health issues, Indigenous health, and population health. The Centre supports the teaching of the JCU Bachelor of Nursing Sciences.

The CRRH increasingly provides education by distance delivery using a diverse range of IT resources. The centre has multiple lecture and tutorial rooms, video-conferencing technology, and clinical simulation facilities for teaching and learning in outback Queensland. It is staffed with university academics from a wide range of health disciplines including nursing, medicine, mental health, pharmacy and allied health (Sherrington, 2018).

The Centre also facilitates student placements across all health disciplines, in some of Australia's most remote communities. The MICRRH also provides activities under the Commonwealth funded PHCRED Program, and undertakes research addressing the Centre's key areas of focus, which are:

1. **Rural Health Workforce Development:** supporting the development of remote, rural and Indigenous health workforce.
2. **Health Improvement:** exploring the factors associated with poor health outcomes.
3. **Health Services Improvement:** developing service learning models, evaluation of health services.
4. **Innovation:** developing new models of care to achieve better health outcomes (James Cook University, 2019).

Existing interdisciplinary training hubs

There are several interdisciplinary training hubs which bring together a number of organisations (such as local healthcare training, hospitals, educational institutes and the community) as a means of improving patient outcomes and student education, without being part of a specific program, initiative or strategy. These are detailed in Royal Australian College of General Practitioners (2014), which we summarise below.

- Prosperine (QLD) is a highly developed regional training hub which has been developed over time through collaborative arrangement through local practices, Prosperine Hospital, Mackay Based Hospital, James Cook University (JCU) and community and training partners.
- Emerald (QLD) currently provides teaching for medical students, prevocational GP placements, junior medical officers, Queensland rural generalist registrars and registrars with Regional Training Providers. Though currently constrained by limited infrastructure, a collaboration of community groups has initiated the project of the Emerald Health Education Hub to provide capacity to develop training to meet local needs of industries.
- Walgett (NSW) has an Aboriginal Medical Service, which currently takes medical students from the University of Western Sydney. The town has a hospital attached to a general practice, and has a collaborative team of doctors, Aboriginal health workers and nurses. The town has been identified as an ideal location to establish training in small town rural general practice with a focus on chronic disease management and Aboriginal health.
- Shepparton (VIC) is a regional city of approximately 50,000 people with a regional hospital, university clinical school (University of Melbourne) and a number of general practices. Given its proximity to alpine regions, the city is seen as a potential location to provide advanced rural training in alpine medicine, small town practice, paediatrics, endoscopy, emergency medicine and indigenous health.

Initiatives targeted at improving rural healthcare in Canada

As in Australia, rural communities in Canada tend to have fewer health care groups and professionals of all types, less choice, and broad variation in the availability at the local level of health care services when compared to urban services. Disparity in the health status of rural Canadian communities is directly related to their distance from urban centres. Levels of access and types of access to specific services vary more among rural than among urban communities. For indigenous populations, who

often live in rural and remote communities, greater difficulties are experienced comparatively in receiving regular access to and use of primary care services.

Family physician shortages pose even greater problems for populations that have historically faced disproportionately greater challenges in accessing health care services. One of Canada's most serious population health challenges is that which confronts Indigenous communities. The Indigenous population continues to experience the absence of coordinated health care services to meet their complex needs, despite federal government funding for services such as public health and promotion, long-term care, and community care. Family physicians in these communities should possess cultural competencies and provide cultural safety in their practices in order to effectively communicate and provide health care services to meet this population's health and social needs (The College of Family Physicians of Canada, 2016).

In the following section, we discuss two initiatives that have focused on improving rural health outcomes in their respective regions.

The Northern Ontario School of Medicine

In Canada, the Northern Ontario province is geographically vast (>800,000 km²) with a volatile resource-based economy, including forestry and mining, and socioeconomic characteristics that differ from the southern part of the province of Ontario. Forty per cent of the population of Northern Ontario live in rural and remote areas where there are diverse communities and cultural groups, most notably indigenous and francophone peoples. The health status of people in the region is worse than in the province as a whole, and there is a chronic shortage of doctors and other health professionals (Strasser & Lanphear, *The Northern Ontario School of Medicine: responding to the needs of the people and communities of Northern Ontario*, 2008).

In this context, the Northern Ontario School of Medicine (NOSM) opened in 2005 with a social accountability mandate focused on improving the health of the people and communities of Northern Ontario.

Consistent with its social accountability mandate, NOSM seeks to reflect the population distribution of Northern Ontario. Uniquely developed through a community consultative process, the holistic cohesive curriculum for the NOSM undergraduate program is grounded in the Northern Ontario health context, organised around five themes and relies heavily on electronic communications and interdependent community partnerships to support distributed community engaged learning. The NOSM digital library service and electronic curriculum delivery ensures that learners and academic staff, wherever they are, have access to educational resources and information as if they were in a major city teaching hospital. In the classroom and in clinical settings, students are learning in context as if they are preparing to practise in Northern Ontario.

Through community engagement, community members are active participants in various aspects of NOSM including the admissions process, as standardised patients, ensuring that learners feel 'at home' in their community, and in encouraging an understanding and knowledge of the social determinants of health at the local level. There is a strong emphasis on interprofessional education and integrated clinical learning, which takes place in more than 90 communities and many different health service settings, so that the students have personal experience of the diversity of the region's

communities and cultures. For example, all students undertake a 4-week immersive experience in Indigenous communities at the end of first year (Strasser & Lanphear, The Northern Ontario School of Medicine: responding to the needs of the people and communities of Northern Ontario, 2008).

Outcomes from the initiative

Ninety-two per cent of NOSM medical students come from Northern Ontario with the remaining 8 per cent from remote rural parts of the rest of Canada. Sixty-two per cent of NOSM graduates have chosen family practice (predominantly rural) training with almost all the others (33 per cent) training in other general specialties. Sixty per cent of NOSM Doctor of Medicine graduates are practising in Northern Ontario and 94 per cent of the doctors who completed undergraduate and postgraduate education with NOSM are practising in Northern Ontario, including 33 per cent in remote rural communities.

Interviews of the NOSM medical students reveal generally positive experiences, with a sense that they value the learning opportunities and feel they are being prepared well for practice in remote rural settings. Sample comments include 'clinical experiences during [third year] are more substantial than anything in traditional med school experience', 'NOSM creates 'generalists' and encourages students to maintain a broad focus', 'rural medicine ... that's where you find the true generalists', 'I like how much variety there can be in the doctor's role', 'we're better off ... we will [learn] more skills in a rural centre', and 'you don't know it until you live it' (Strasser R. , 2016).

The socioeconomic impact of NOSM has included new economic activity, more than double the School's budget; enhanced retention and recruitment for the universities and hospital/health services; and a sense of empowerment among community participants, attributable in large part to NOSM. Already, communities are spending less on recruitment, having changed focus from perpetual crisis to planning ahead. There are signs that NOSM is successful in graduating doctors who have the skills and the commitment to practice in remote rural communities and that NOSM is having a largely positive socioeconomic impact on Northern Ontario.

Memorial University of Newfoundland

Memorial University of Newfoundland's Faculty of Medicine was established in 1967 in Canada's most rural province (currently 525,000 people spread over 400,000 km²) (Mathews, Rourke, & Park, 2008). The Faculty of Medicine has been successful in producing doctors needed for the province with Memorial graduates being 78 per cent of the 818 fully licensed physicians in Newfoundland and Labrador in 2014. Most of the other 22 per cent had completed postgraduate training at Memorial after medical school elsewhere. Given its geographic context, part of Memorial's social accountability mandate includes producing family physicians who can practise as rural generalist practitioners in communities where specialist care is often distant and difficult to access (Rourke, et al., 2018).

Outcomes of the initiative

Of the 305 Memorial graduates practising family practice in Newfoundland and Labrador, 36 per cent practise in rural communities or towns. Memorial's family medicine residency training programme has been recognised numerous times by the Society for Rural Physicians of Canada, most recently with the 2013 Keith Award for the highest percentage of graduates (44 per cent) in rural practice 10 years after graduation. Memorial's success in producing rural family doctors is built on its 'pathways to rural practice approach'. This begins with a successful outreach 'MedQuest' programme for rural and

Aboriginal youth; a rural friendly admissions process (35 per cent of Memorial 2011–2014 graduates had predominantly rural backgrounds); an undergraduate curriculum that integrates rural health: 74 per cent of year one; 55 per cent of year two community placements; and 93 per cent of year three family practice placements were in rural locations (Strasser, et al., 2013).

Appendix C: Long list options

A long list of potential options were canvassed. Stakeholders provided us with a range of previous proposals for addressing rural health issues in addition to those presented in the short list. A brief explanation of each option is presented below.

Status quo

This option proposes continuing the existing rural interprofessional programmes run by the University of Otago and the University of Auckland in Tairāwhiti and Whakatane respectively. These programmes involve students from different disciplines conducting interdisciplinary study during a five week residential programme. It is also understood that an additional location is close to being announced in the South Island.

The objectives of the Tairāwhiti Interprofessional Programme (Tairāwhiti Interprofessional Programme, 2019) are listed as:

- Achieving greater understanding between health disciplines about 'patient centred collaborative practice, effective teamwork, interprofessional respect and how to effectively resolve disagreement
- To better meet Māori Health needs by working with Māori in culturally safe and respectful ways, enhancing understanding within Māori models of health care
- Increasing rural training opportunities, enhancing workforce opportunities with students able to return to rural areas, better equipping senior health students for comprehensive generalist practice
- Demonstrating principles of team based care, self management and expert patients - as more people than ever before live longer and live with more long-term conditions, collaborative practice is increasingly needed.

Partnerships	<p>The Whakatane programme is a collaboration between University of Auckland, AUT, Waiariki Polytechnic, Wintec and the Bay of Plenty District Health Board</p> <p>The Tairāwhiti programme is a collaboration between University of Otago, Eastern Institute of Technology, Otago Polytechnic, the Tairāwhiti and Hawkes Bay District Health Boards</p> <p>The new South Island programme is understood to be a collaboration between University of Otago, the local DHB and local polytechnic providers.</p>
Governance	<p>Each programme is led by the lead academic organisation, University of Otago for Tairāwhiti at the new South Island location and University of Auckland for Whakatane</p>
Finances	<p>The Ministry of Health estimate that the annual operating cost of the rural interprofessional hubs are around section 9(2)(b)(i) per hub per year. The two existing, and one proposed hub give an annual cost of section 9(2)(b)(ii)</p>

Integrated rural health professional development centres

This option proposes the creation and development of a network of rural health professional development centres (RHPDCs), where residential immersion programs for integrated groups of medical, nursing, pharmacy and other students would take place.

The initial proposal identifies three sites for RHPDCs:

- Integrated Health Centre in Wellford
- Whakatane hospital/Integrated Health Centre/Bay of Plenty Clinical School
- Integrated Health Care Centre in Tokoroa

Education at the RHPDCs would be supported by the use of technology and encourage an interprofessional approach to learning. The students at each site would in interprofessional groups engage in a range of clinically relevant projects, which would be managed as part of an integrated health service, which would involve primary, secondary and community care.

Under the program, students would be placed for four weeks at a time in one of the three facilities listed above. This would occur for five batches of students, resulting in each facility hosting students for twenty weeks of the academic year. Accommodation would be provided for the students over the four weeks.

The programs would be supported by the development of a number of independent learning activities (ILAs). These computer-based learning activities would be developed to enhance the rural attachment and ensure that all students were able to fully engage with all the learning outcomes of the attachment, whatever the particular cases seen during the attachment.

Partnerships	<p>The program would be run by the University of Auckland and drawing from their student pool, but would include partnerships with:</p> <ul style="list-style-type: none"> • Additional nursing students from Wintec (Hamilton) and Waiariki Institute of Technology • DHBs • Primary Health Organisations • Māori providers • General providers • New Zealand Institute for Rural Health.
Governance	<p>A management group formed within the Faculty of Medical and Health Sciences with the Chair reporting to the Deputy Dean of University of Auckland (UoA). Further to this, the steering group for the program would include representatives from the Medical Programme Directorate, the School of Nursing, and the School of Pharmacy from UoA. It also includes representatives from the partner organisations, the Department of General Practice and the relevant Clinical Schools.</p> <p>In addition, there would be an appointment of an academic in rural health training who would be responsible for managing the budget, delivery of the</p>

	program, provision of training support and overall pastoral care of the students. There would also be a lead at each of the three sites.
Finances	The proposal detailed requested section 9(2)(b)(i) for setup of three rural hub sites and running of the program for a 5-year period. A significant proportion of the budget would be devoted to academic salaries, with an estimated 60-70% of all costs devoted to salary and salary-related costs.

National Centre for Rural Health Research

This option proposes the development of a National Centre for Rural Health Research (NCRHR), which would allow for focused research into rural health issues, the development of new models of healthcare and build the overall NZ research capacity in the rural health space. Currently, the lack of a dedicated research center in NZ means that the rural health sector is largely unsupported by academia.

The NCRHR would establish the research agenda for rural health research in NZ, with a focus on:

1. Establishing a framework for regular monitoring of the health of rural communities and the structures and processes that are supporting them.
2. Research on the effectiveness of different models of care and the different ownership models of general practice provision
3. Development of an accepted set of health indicators that would aid researchers in producing longitudinal data to provide an evidence base of the effectiveness of any interventions
4. Research into the financial models and cost effectiveness in the delivery of services to rural and remote populations, where the cost of provision of care is often a barrier
5. Leadership in the provision of analytical expertise to assess the changing health needs of rural populations.

Partnerships	<p>The NCRHR would be a partnership between the Department of General Practice and Primary Care and the Waikato Clinical School, University of Auckland and the Department of General Practice and Rural health, Otago University. Potential research and funding partners could include:</p> <ul style="list-style-type: none"> • Dairy NZ, Beef and Sheep NZ, Fonterra, Zespri, Gallagher's • District Health Boards with rural populations • Ministry of Health • Ministry of Primary Industries • Ministry of Business, Innovation and Employment • Charitable health organisations
Governance	<p>Governance of the NCRHR would take the form of a consortium of organisations, with a core membership who would be able to meet in a physical location. This would enable input from a wide group of stakeholders. The Director of the centre would be a senior academic with a background in rural health research. Groups to be engaged as part of the process would include:</p>

	<ul style="list-style-type: none"> • The Rural GP Network • Rural Health Alliance Aotearoa/New Zealand (RHAANZ) • The NZ Institute of Rural Health • The Gore Centre for Rural Innovation and • The New Zealand Rural Hospital Network. <p>Auckland UniServices, a wholly owned subsidiary of the University of Auckland, would provide contract, financial and business development support for a secretariat based in Waikato, within the Clinical School.</p>
Finances	<p>The first stage of this proposal would cost section 9(2)(b)(ii) per annum for three years. This would allow for the hiring and establishment of a part time Director, some research, administration and business development management. Support for the Governance Group and a small marketing budget to help develop a website and promotional materials would also be covered under this cost.</p>

Community Engaged Graduate Entry Medical School

This option proposes the establishment of a third NZ medical school at the University of Waikato and the development of a rural health network at regional clinical education sites in 12-15 locations throughout the Central North Island, depending on the community partnerships that are built. This school would be referred to as the Community Engaged Graduate Entry Medical School (CEGEM), and notably, would be a four-year graduate entry only program (in contrast to the existing five-year undergraduate medical courses at the University of Otago and the University of Auckland).

The key elements of the proposed Waikato CEGEM education model are:

- A graduate entry course, that allows for a wider pool of prospective students from a broader range of backgrounds, locations and status who have had the opportunity to demonstrate the required academic standard
- A specific focus on provincial and community-based care and on a duty to serve the populations of New Zealanders living outside the main population centers
- Based in Hamilton, but with clinical education and training centers throughout the central North Island to enable the medical students to undertake a higher proportion of their clinical placements in community settings outside the main centers
- 12-15 interprofessional learning centers built around rural hospitals and community bases across locations throughout the Central North Island. These centers would be developed through engagement with public health providers, local general practices, other primary care providers (e.g., pharmacists, physiotherapists, podiatrists) and the wider community including Iwi, local council and the voluntary sector
- A student selection, admissions process and curriculum that reflects engagement with rural communities in the identification of students with appropriate academic ability, personal characteristics, and commitment to providing care in the communities from which they are drawn

- A substantial proportion of clinical learning occurring in community clinical settings in which the doctors would be expected to practice after graduation. Typically, most of the third year of the four-year degree is spent in community placements, with additional community placements occurring in years 2 and 4.

It is envisaged that each of the regional clinical education site will provide a learning environment for four medical students for up to 30 weeks of the year, a PGY1 doctor in training for 4 X 13-week attachments, and also general practice or rural hospital medical registrars. The placements could also include nurses on primary care attachments, midwives, social workers, and pharmacy, physiotherapy and occupational therapy students. Each site would have a medically trained academic co-ordinator who is suitably qualified, together with tutors for other professional groups.

Student selection is major consideration for the establishment of the CEGEM, given how much the research has demonstrated the importance of selecting student whose values align with ongoing rural practice. Students selected for the CEGEM would be expected to:

- Have demonstrated high levels of academic achievement in an undergraduate degree;
- Be from the communities in which medical practitioners are required – all other things being equal, medical graduates who grew up in rural, small town and provincial city environments are more likely to return there to work
- Have personal characteristics that are a good fit for front-line clinical care, especially where excellent empathy, communication skills and capacity for teamwork are key attributes
- Have a strong commitment to the ethos of a community-engaged medical school, and clinical care in a community setting.

In addition, the Waikato Medical School will select Māori students at least in proportion to their share of the population in the Midland Region and ensure that every cohort includes students with a strong understanding of reo, tikanga and mātauranga Māori. These students will act as leaders in assisting the engagement of their cohort with Māori language and culture.

The CEGEM is proposed to have an initial intake of 60 students.

Partnerships	<p>The University is expected to be designed in collaboration between the University of Waikato and the Waikato DHB. This includes partnerships with local health organisations and Māori communities in the DHB.</p> <p>Partnerships between the medical school and the community are necessary for successful selection of students, their clinical placement, and workforce outcomes that meet the needs of the communities in which it is intended that graduates will work. The CEGEM would also seek ongoing feedback from the community about the success of the program and its alignment with community needs.</p> <p>The University of Waikato will explore the potential for partnering with an Australian University's Faculty of Medicine to provide an outcome-focused curriculum tailored for New Zealand's requirements. This would be developed in conjunction with international experts in CEGEM curricula and regional Māori representatives.</p>
Governance	The CEGEM would be operated by the University of Waikato.

Finances	<p>The CEGEM is expected to require total government establishment funding of section 9(2)(b)(ii) up to 2020, including funding for operating costs before the first intake of students of section 9(2)(b)(ii). This amount is net of the anticipated \$20 million of private donations to support establishment.</p> <p>Further to this, the CEGEM would also seek operating funding of section 9(2)(b)(ii) over 10 years, which would include section 9(2)(b)(ii) for SAC funding for medical students (including PhD).</p>
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National Interprofessional School of Rural Health

This proposal proposes the development of an interprofessional community of rural health academics, dispersed across rural New Zealand and brought together in a 'virtual campus' to deliver accredited generalist training which explicitly prepares a wide range of healthcare practitioners to utilise the complementary skills of the rural health care team to improve health outcomes and reduce disparities. This campus would collectively be referred to as the National Interprofessional School of Rural Health (NISRH) and would include nurses, doctors, dentists, oral health therapists, midwives, pharmacists, physiotherapists, mental health professionals and medical laboratory scientists, with the capacity for other professions to also engage.

The NISRH would include:

- A virtual campus built on a virtual 'hub-and-spoke' network, with hubs built around an existing rural hospital which would link and work closely with local GPs, primary care providers, pharmacies and local communities in surrounding rural areas
- Development of a specific accredited generalist rural health discipline – this would be both a coordinated across both undergraduate and postgraduate years - and a pipeline for this generalist discipline to enter the rural workforce
- An interprofessional training curriculum for students across multiple disciplines, which would be taught by a number of different education providers to ensure local communities engage with students year-round:
 - The medical curriculum would include a year-long placement in a rural hub
 - Undergraduate nurses would rotate through placements of between 2-8 weeks across different hubs. In the case of postgraduate nurses, all teaching and clinical practicum would be undertaken in the hub in which the nurse is practising
 - Other disciplines such as physiotherapy and dentistry would include significant rural placements across the regional hubs
 - Selected pharmacy students would either enter a rural health stream and rural placements/attachments in 4th year would be extended or their 4th year would be fully delivered in the rural hub.
- Accommodation costs would be provided for the students during their placements.

Under the NISRH program, students and vocational trainees from a range of professions would spend time in the rural hospital settings, general practices and with other community-based primary care providers such as kaupapa Māori organisations, community pharmacies, local midwives and physiotherapy/rehabilitation settings.

The educational providers would collaborate to provide IPE-based clinical placements within each hub so that local communities engage with students all year round, agnostic to the education provider. The IPE model would incorporate assessments/assignments that require IPE students to answer important community-driven questions about identifying/addressing local health needs. Placement of trainee doctors into rural hubs would provide support and relief services for rural GPs.

The development of rural research would also be a component of the NISRH. Academic, university and health professional staff located in rural community hubs and spokes would have a range of roles including developing rural health research, providing interprofessional teaching and supervising and assessing students and trainees.

In the initial proposal, the NISRH would be piloted using two rural hubs for a three-year period. It is proposed that the NISRH pipeline would commence by training approximately 80 health professionals every year at each hub: around 54 undergraduate students and 26 postgraduate students.

Partnerships	<p>The NISRH proposal involves an interprofessional collaboration amongst five organisations:</p> <ul style="list-style-type: none"> • The University of Auckland • The University of Otago • AUT University • The Royal New Zealand College of General Practitioners • The New Zealand Rural General Practice Network. <p>The NISRH would also work to collaborate with local communities to understand and match local health needs and additional training partners at each of the training hubs.</p>
Governance	<p>The NISRH would be a collaborative, interprofessional virtual entity comprising education providers who have a contributing interest in the NISRH, encompassing all of rural New Zealand. This leadership team would be embedded across the collective of hubs, rather than sitting over them, and would form the basis of the governance group, to be led by an independent Chair.</p> <p>A Governance Group would be established, comprising representatives from the core group of education providers, Māori, rural community and other key stakeholders. It would be expected that upon initiation, one of the three universities would act as the host of the NISRH, and would receive funding and operate the NISRH consistent with the proposed model.</p> <p>The Governance Group would be responsible for coordinating the implementation of hub locations, confirming appropriate partners and overseeing implementation of the NISRH Annual Plan. Local communities</p>

	<p>and iwi would form advisory groups to the NISRH Governance Group and work closely with the NISRH to:</p> <ul style="list-style-type: none"> • Develop recruitment processes • Integrate students from all disciplines into the community during their stay • Facilitate community experiences and support the interdisciplinary learning environment • Provide rural community input into the educational models and curriculum.
Finances	<p>The NISRH pilot is estimated to have an initial once off-setup cost of section 9(2)(b)(ii) and ongoing costs over three years of section 9(2)(b)(ii), amounting to a total cost of section 9(2)(b)(ii).</p>

A rural health professional school

This option, developed during stakeholder consultation, sees a new concept where training of students is done in a rural setting. Training is provided through distance learning with local clinical supervision. Where required students would return to rural hospitals or existing academic institutions, but on a limited basis. Included in the proposal is options for rural based research and training opportunities for senior health professionals, creating a future career pathway.

Students would be training in an interprofessional manner with a range of professions planned to include: nurses, nurse practitioners, doctors (undergraduate and postgraduate), pharmacists, psychologists, dentists, physiotherapists, midwives, paramedics and medical laboratory scientists.

Choice to students will be prioritized on those most likely to return to rural communities post study, with specific objectives of ensuring representation for students with local links to areas, a general rural upbringing and reserved places for students from local iwi.

The concept is centred around regional hubs with spokes reaching out into surrounding areas. Minimum requirements for spokes would be in areas with a GP practice. Governance to be led by a director, with overall programme jointly governed by DHBs, universities and other training providers. Led by an independent chair (non-DHB, non-training provider). Each hub (and associated spokes) to be overseen by the local DHB, with the regional input, including local community and iwi representation.

Interdisciplinary training to feature significant student project, consisting of 8 to 10 week project for students to understand He Korowai Oranga (New Zealand's Māori Health Strategy), demonstrate literacy and understanding of cultural safety competency, identify and apply Māori Health models in a rural context. Aspects of training programme will see students placed in kaupapa Māori organisations for clinical training. Project scope to be developed by DHB and local iwi in partnership to ensure applicability of project to specific local health needs.

In the initial proposal, the rural health professional scheme would start with two rural hubs in year one, followed by a third in year three, and a fourth in year five. It is proposed would take in 42

students per year for the duration of their training, including undergraduate and postgraduate places. At full capacity, each hub would have 192 students training at one time.

Partnerships	Joint collaboration between DHBs and local health providers and health training institutions to deliver interprofessional learning in a rural setting. Local communities, iwi and local government to contribute to programme design to ensure alignment to local needs.
Governance	Two layers of governance: The overall programme is jointly governed by DHBs, universities and other training providers. Led by an independent chair (non-DHB, non-training provider) Each hub (and associated spokes) to be overseen by the local DHB, with the regional input, including local community and iwi representation. Overall programme is overseen by a director.
Finances	We estimate the total cost to be section 9(2)(b)(ii) over 10 years (exclusive of GST). This includes section 9(2)(b)(ii) in setup costs, the majority of the spending is in operational expenses, particularly staff costs.

We performed an initial scan of the options against our five assessment criteria to determine if the option would progress to a short list.

Option	Assessment against objectives	Progress to short list
Status Quo	Students only experience rural community on a short term basis. The existing programmes are operating, and providing benefits to local communities where they operate, and with links to iwi requirements are suitable given scale of programme. Will see improvements in students choice of future career location. Institutional arrangements are diverse and focussed on individual institutions needs. Currently cost effective given small scale.	Yes
Integrated rural health professional development centres	Students placed on four week training programmes, less than existing interprofessional programmes, and with fewer professions. Linked into existing hospital and primary health providers, but no explicit community involvement Run by individual academic institution	No

	Similar cost to existing programme, unlikely to provide step change required to rural workforce.	
National Centre for Rural Health Research	<p>The focus on research does not provide for a significant impact on rural workforce, local communities or an impact on equity.</p> <p>The relatively small size of the programme does not create a large foundation for future growth.</p> <p>Low cost with limited input.</p>	No
National Interprofessional School of Rural Health	<p>Places students in rural locations for up to a year giving students the chance to experience rural careers and will enhance chances of students choosing a future rural career.</p> <p>Co-design of courses, and assessment of local needs for hub professions in partnership with local communities is an important design consideration.</p> <p>Placement of hub and spoke will take into account areas of greatest need.</p> <p>Alignment between academic institutions creates building blocks for a sustainable long term integrated institution.</p> <p>Cost reflects greater scale of service delivery.</p>	Yes
Community Engaged Graduate Entry Medical School	<p>Initial focus is limited to Waikato and may not address diverse needs of New Zealand's rural communities.</p> <p>It performs strongly as an institutional arrangement</p> <p>However, the cost of this option is prohibitive (>\$100m in establishment costs, and >\$250m in ongoing operating costs over 10 years) for a relatively small number of students (initial intake 60 students), and the establishment of a third medical school may not be cost effective in the New Zealand context.</p>	No
Rural Health Professional School (new option)	<p>Full rural training provides the strongest chance for students to return to rural locations for post graduate placements.</p> <p>Large scale of regional hubs, with a strong focus on Māori issues ensures a broad coverage for rural and Māori inequities.</p> <p>Co-governance between local communities and tertiary training providers will ensure collaboration and solutions focussed on community needs.</p> <p>Although a high cost option, it delivers a commensurate level of students.</p>	Yes

About Sapere

Sapere Research Group is one of the largest expert consulting firms in Australasia, and a leader in the provision of independent economic, forensic accounting and public policy services. We provide independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

'Sapere' comes from Latin (to be wise) and the phrase 'sapere aude' (dare to be wise). The phrase is associated with German philosopher Immanuel Kant, who promoted the use of reason as a tool of thought; an approach that underpins all Sapere's practice groups.

We build and maintain effective relationships as demonstrated by the volume of repeat work. Many of our experts have held leadership and senior management positions and are experienced in navigating complex relationships in government, industry, and academic settings.

We adopt a collaborative approach to our work and routinely partner with specialist firms in other fields, such as social research, IT design and architecture, and survey design. This enables us to deliver a comprehensive product and to ensure value for money.

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