A COMMUNITY-ENGAGED GRADUATE ENTRY MEDICAL SCHOOL: THE CASE FOR A THIRD MEDICAL SCHOOL IN NEW ZEALAND

SUBMITTED BY
THE UNIVERSITY OF WAIKATO
AND WAIKATO DISTRICT HEALTH BOARD

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Executive Summary

The Concept
This document outlines the case for the establishment of a new Community-Engaged Graduate Entry Medical School (CEGEM) at the University of Waikato aimed at addressing the workforce needs of our most high needs communities. The Waikato Medical School would be based at Waikato Hospital in Hamilton as part of a strategic alliance with the Waikato DHB and at regional clinical education centres in 12-15 locations throughout the central North Island (depending on the other DHB and community partnerships that are built).

The Waikato Medical School will offer a medical degree programme that both reflects international best practice and is unique in New Zealand. Specifically the Waikato Medical Degree will be:

1. Graduate entry only (requiring an undergraduate degree from any university in any subject);
2. Four years of graduate study rather than the five years of undergraduate study currently required at Auckland and Otago Universities.
3. Community engaged, involving communities outside the tertiary hospital centres in the design of the programme, selection of students, and training of students;
4. Proactive in adding to rather than utilising existing clinical placement opportunities for medical students across the Midland region;\(^1\) and
5. Built in genuine partnership with Māori and with other high health needs communities.
6. Designed to address health workforce shortages in primary care in provincial and rural communities, and thus to assist in reducing the disparities in health outcomes experienced in these communities.
7. Provide clinical experience in an innovative inter health professional environment promoting a collaborative team based learning culture for a range of health professionals.

A key component of the Waikato Medical School’s engagement with the community will be the development of regional clinical education centres. These centres will offer opportunities for inter-professional education, incorporating medical, nursing and allied health, and will provide clinical placements not only for medical students but will also provide opportunities for community placements for newly qualified doctors (PGY1 and PGY2) in line with the Medical Council of New Zealand’s guidance. Each centre will be developed in partnership with DHBs and other providers of primary care, and located in rural hospitals, community medical centres or general practices in communities that elect to work with the Waikato Medical School.

The proposal addresses the health workforce shortages that are part of the cause of accessibility in New Zealand’s provincial and rural communities which are reducing health system effectiveness and efficiency.

The Problems Addressed by the Waikato Medical School Proposal
The Waikato Medical School is designed to address the key health workforce challenges that are currently confronting New Zealand:

1. We are training too few doctors to meet New Zealand’s health workforce needs. In 2014, 43.4% of the country’s medical workforce were trained overseas, a percentage that makes New Zealand currently confronting New Zealand:

\(^1\) The Midland Region encompasses Bay of Plenty, Lakes, Tairawhiti and Waikato District Health Boards.
Zealand the OECD nation most heavily dependent on an International Medical Graduate (IMG) workforce. We are currently importing over 1,100 doctors a year to fill the shortages that are not being met by the current domestic medical education and training system. The demand for new doctors is driven by the rapidly increasing population, the ageing of the population, the increasing prevalence of chronic conditions, the steady reduction in the hours worked by doctors and the need to replace the high proportion of doctors who will retire over the next 15 years. While there are different projections of the gap between the likely demand for new doctors to meet our health workforce needs and the doctors that New Zealand currently plans to train through Auckland and Otago, all estimates are that for the foreseeable future New Zealand will continue to be heavily reliant on doctors recruited from overseas. At a meeting between University of Waikato representatives and Health Workforce New Zealand on 24 May 2017 it was agreed that in the late 2020s New Zealand will need 720 new doctors per annum (specialists and general practitioners) compared with the 540 domestic medical student places currently funded at Auckland and Otago.

2. The New Zealand-trained health workforce is not distributing itself in ways that meet the health needs of the wider population. There is shortage of New Zealand trained doctors electing to practice in high needs communities or in specialities such as care of the elderly, psychiatry, rehabilitation medicine, palliative care, and obstetrics and gynaecology. Nationally IMGs make up more than 50% of the workforce in many of these specialities, and in provincial and rural areas the workforce in these specialities is reliant on IMGs for the majority of its medical workforce. Our major hospitals are also reliant on IMGs to fill junior doctor positions – something that is going to continue despite the increasing number of graduates from the two existing medical schools.

3. Over the last 25 years there has been a dramatic decline in the proportion of the New Zealand medical graduates choosing to specialise in general practice. Currently only 15% of the graduates from Auckland and Otago Medical Schools register as General Practitioners (GPs). As a result, where New Zealand had 84 GPs per 100,000 population in 1999 we now have 74 per 100,000.

4. Royal New Zealand College of General Practitioner surveys indicate that 44% of New Zealand’s current GP workforce plans to retire by 2026, meaning that even to maintain the existing workforce, 1,850 GPs will need to be replaced in the next decade. This pattern of retirement results from the high proportion of our current GPs who were first registered in the late 1970s and 1980s, and the declining proportion of New Zealand medical graduates electing the GP specialty since that time. Even with a lower rate of retirement and substantial changes in the workforce outcomes of the two existing medical schools, New Zealand is likely to be overwhelmingly reliant on IMGs to meet our workforce needs in general practice over the next 20 years especially in our rural and provincial centres.

5. New Zealand’s high level of reliance on IMGs is neither sustainable nor desirable in primary care and in our high needs communities. Most of these doctors stay in New Zealand for a short time, and only 30% are still here three years after they arrive. IMGs practicing for short periods in high needs populations have little understanding of the social and cultural environment within which their patients live. This lack of understanding of social and cultural context is a particular problem in specialities such as general practice and psychiatry. IMGs are also expensive to recruit, the more so because there is such a low level of retention beyond three years. This results in lower levels of healthcare quality, continuity, and accessibility in New Zealand’s high needs provincial and rural communities, contributing to disparities in health outcomes and lower health system effectiveness and efficiency.
6. New Zealand has invested too little in medical programmes that focus on community-based healthcare, in clinical placement opportunities for students as part of these community-based programmes, and postgraduate training opportunities outside the tertiary hospitals. Because we do not train enough doctors to meet our workforce needs it cannot be true that there is a shortage of clinical training opportunities for students, but it is true that a problem has been created by lack of investment.

7. New Zealand’s current model of medical education imposes high costs on students and their families by comparison with medical education overseas models. The primary pathway to the medical degree in New Zealand is to study undergraduate health sciences at Auckland and Otago universities with selection for entry to the medicine programme on the basis of grades in the first year. Students from the top academic high schools in the main urban areas have a big advantage in attaining entry to medicine given this approach to selection. The limitation on places in the two existing New Zealand medical schools appears incongruous to parents of students who do not meet the requirements for entry to the exiting degrees when New Zealand then recruits large numbers of foreign-trained doctors to fill workforce shortages.

8. A large international literature shows that (a) selection of medical students based on aptitude for sciences biases health workforce outcomes against careers in primary care and (b) in graduate entry medicine programmes students from general undergraduate degrees achieve grades equivalent to or better than students from undergraduate science programmes. The limited opportunities for outstanding graduates from generalist degrees into medicine in New Zealand is causing us to lose substantial numbers of very able students to graduate entry programmes in Australia (though policy changes in Australia may soon make this prohibitively expensive).

9. The long lead times required to produce fully trained doctors means that if New Zealand is to meet its health workforce needs without increasing its reliance on doctors recruited from overseas, it must act now to increase the number of medical student places and establish a graduate entry medical school which will produce different health workforce outcomes to those provided by the two existing medical schools.

10. Transforms the traditional medical/surgical hospital based focus on medical education to an enhanced community based model that will better equip students to meet the population health needs outside ward and inpatient settings.

11. In line with the Medical Council of New Zealand direction of accredited community rotations, this proposal creates new opportunities for medical students and postgraduates to train in the community in new rotations, in such areas as community paediatrics, community mental health, rural emergency departments and public health. This will significantly relieve the present bottle neck of trainee intern and postgraduate year 1 (PGY1) assignments creating congested early postgraduate training.

These health workforce challenges are not unique to New Zealand, but New Zealand is unique in its failure to address these problems through investment in new medical schools offering a diversity of medical education models. The key lesson learned from international experience is that dedicated community-engaged graduate entry medicine programmes can produce different health workforce outcomes to traditional medical schools. The proposed Waikato Medical School complements the work of the two existing medical schools in New Zealand, providing the diversity of training and
workforce outcomes that is necessary to meet New Zealand’s challenges with the geographical location and specialist choices of its health care workforce.

With one medical school for every 2.35 million people, New Zealand has among the lowest ratios of medical schools to population in the OECD. The relevant ratios are 1:1.7 million in the UK, 1:1.6 million in the US and Canada, and 1:1.2 million in Australia. In Western Europe the average intake of 282 medical schools is 150 students, while in North America the average intake of graduate entry programs is 110 students per year. New Zealand’s two very large programs are unusual with an intake approaching 300 students per school. In countries with a similar population as New Zealand there are typically a larger number of smaller schools which serve their local communities e.g. Ireland with 6 medical schools, Scotland with 5, Finland with 5 and Norway with 4. Based on any of these comparators New Zealand should be well advanced in developing a third medical school, and against some standards we would already have at least three medical schools and be considering more. New Zealand’s need for a third medical school is increased by the similarity in the medical education provided by the two existing New Zealand medical schools.

The Waikato Medical School Proposal
The proposed Waikato Medical School is designed to complement the work of the two existing medical schools in New Zealand, providing the diversity of training and workforce outcomes that is necessary to meet New Zealand’s challenges with the geographical location and specialist choices of its health care workforce. In particular the creation of the Waikato Medical School will:

1. Increase the number of students completing medical degrees in New Zealand, with an initial intake of 60 domestic students proposed.
2. Have a higher proportion of its graduates choose careers in primary care and to live in provincial and rural locations.
3. Generate a sustainable provincial and rural health care workforce that is committed and trained to work in high needs communities and populations, reducing New Zealand’s reliance on IMGs to fill roles in provincial and rural locations.

The key elements of the proposed Waikato Medical School have been benchmarked against best practice internationally, and validated with a review of more than 40 academic articles and reports by international agencies. This literature demonstrates that a community-engaged graduate-entry medical programme should have:

- A student selection and admissions process that reflects engagement with 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 the community clinical settings in which the doctors would be expected to practice after graduation;
- An ethos focussed on provincial and community-based care and on a duty to serve these populations; and
- Community-based postgraduate training facilities that ensure a continued connection between the medical graduates and the communities in which they will practice following their registration.
- A high proportion of graduates who are likely to choose a specialty most relevant for health care outside the main centres, with a focus on generalist practice. Our aim is to have 50% of graduates of the Waikato Medical School choosing general practice as a specialty with a commitment to practise outside the main centres, and with many of the others choosing a
specialty and sub-specialty relevant to the shortage specialties in our provincial centres including psychiatry, geriatrics and obstetrics.

In other words, this extensive international literature demonstrates that we get the medical workforce outcomes that our selection processes and our approach to medical training determine. Medical Schools that select students whose ambition is to science-focussed clinician-researchers have a role, but that role is not primarily to produce graduates who will in high proportions elect to focus on primary care or to practise in geographical areas distant from a tertiary hospital. Selection processes for medical school students ought to concentrate on characteristics associated with primary care, such as older students, students in partnerships, students who are parents, rural students, and students from minority communities with an ambition to alleviate inequalities. Many of these students may come from a background where they have taken generalist undergraduate degrees rather than just science degrees. At the Waikato Medical School students will have their interest in careers in primary care reinforced by the fact that this will be the dominant ethos of the medical school, not just an option for a small minority of the students.

This link between purposeful medical school student recruitment strategies, programme design and workforce outcomes explains why the proposed Waikato Medical School will produce medical graduates unlike those currently produced by the University of Auckland and University of Otago medical schools. The selection and training of Waikato Medical School students will reflect an ethos of commitment to service and to medical practice in community environments. International experience indicates that this approach will result in a high proportion of Waikato Medical School graduates serving communities outside the main centres, where the opportunities to improve health outcomes are greatest.

Active community participation is an essential enabler of success in delivering the Waikato Medical School model, together with a high level of formal collaboration between the University of Waikato the Waikato District Health Board (DHB), other DHBs and health providers, and the communities in which the medical education centres will be built. The governance structure and operations of the School will reflect a partnership between the institutions and communities needed for the School to achieve its potential. The programme of the Waikato Medical School will be implemented under the auspices of the Institute of Health and Medicine, an entity currently being established pursuant to a strategic alliance between the University of Waikato and Waikato District Health Board (DHB) and designed to incorporate other DHBs, community health and primary care entities, iwi, and social agencies who wish to engage with the work of the Institute. The Institute creates a framework for joint leadership, co-investment in community clinical education sites and community engagement and social accountability, in accordance with international best practice in the provision of a CEGEM programme. To this end, the proposal set out in this document has been discussed with all of the DHBs in the Midland Region, with the PHOs operating in this region, with the Royal New Zealand College of General Practitioners and the Rural GP Network, with the Medical Council, with Health Workforce New Zealand and with other organisations in the health sector.

The model of medical education proposed for the Waikato Medical School is low risk because it follows models that are well established in other developed countries. It will be accredited by the Australian Medical Council on behalf of the MCNZ, with a programme that closely follows the existing CEGEM programmes in Australia. It will utilise progress testing in a form that allows the learning outcomes for the students to be benchmarked against similar medical schools outside New Zealand. It will be implemented as a partnership between the University of Waikato and the Waikato DHB, who between them have the core teaching staff required for a medical school, and the ability to align the medical school’s programme with health workforce needs in provincial and rural communities.
Based in a region of New Zealand with many communities where Māori make up a high proportion of the population, the Waikato Medical School represents an opportunity to engage higher proportions of Māori students in medical training and to focus them on returning to provide primary care in their communities. This will be achieved not just by focusing on the recruitment of Māori students, but also by involving iwi and Māori communities throughout the region in the governance, design and operation of the new School. This engagement will make them partners in the challenge of selecting and supporting students who identify with their communities and would respond to the ethos of the Waikato Medical School. Engagement with Māori communities represents one of the most important strengths of this proposal, and is consistent with the strategic positioning of the University of Waikato in the tertiary sector.

By comparison with our current high level of reliance on foreign-trained doctors to provide primary care in provincial and rural areas, the Waikato Medical School will directly address the attributes identified by the Ministry of Health as important for primary care:

1. Socially sensitive and culturally appropriate.
2. Geographically and physically accessible.
3. Care can be accessed when needed.²

Cost and Social Investment Return
The Waikato Medical School is a cost-effective response to the problems outlined above because:

1. It will recruit medical students from the existing national pool of graduates. There will be no requirement for students to take a particular degree, or to take the degree at the University of Waikato so the number of undergraduate students in the New Zealand tertiary system will not increase.

2. The proposal is designed to leverage the existing staff and facilities of the University of Waikato and the Waikato DHB, and to extend existing provincial hospitals and primary care facilities in rural areas to establish the regional community education centres.

3. The costs of establishing a third medical school per se are modest given points 1 and 2 above. The costs associated with the Waikato Medical School are overwhelmingly the costs associated with 60 extra medical students and the facilities required to provide them with clinical placements and postgraduate training.

4. It will produce health workforce outcomes aligned with the primary care needs of communities outside the main centres in New Zealand, where the need is greatest and the potential for improved health outcomes is highest. At current rates of specialisation in general practice, Auckland and Otago medical schools would need an additional 200 students to produce 30 GPs, whereas by following international norms for a community-engaged graduate entry programme the Waikato Medical School should achieve this with 60 students.

Over the first ten years from a government decision to establish the Waikato Medical School the cost of providing for an additional 60 medical graduates and their clinical is estimated as:

1. Total central government establishment funding of $101.569 million up to 2020, including funding for operating costs before the first intake of students of $4.094 million. This amount is net of the anticipated $20 million of private donations to support establishment.

2. Total central government funding over 10 years of $265.206 million.

3. SAC funding for medical students (including PhD) of $53 million is included in this amount.
4. Funding for an additional 60 postgraduate (PGY1 and PGY2) places per annum is included in this amount.

In addition, it is expected that there will be an increase in student numbers at the University of Waikato if a medical school is established there, but this increase will be a redistribution of EFTS in the tertiary system rather than a net addition of EFTS.

The returns available to the New Zealand government from strategic social investment in a dedicated CEGEM programme are high, reflecting the fact that the Waikato Medical School will focus its operations in a region of New Zealand with high needs communities and shortages of primary care doctors, and its regional community education centres will have a large social and economic development impact in the communities where they are developed. The Waikato Medical School is conservatively estimated to provide the government with the Benefit:Cost ratio of 1.68. Key drivers for the high benefit-cost ratio for the Waikato Medical School are the material improvement in health outcomes estimated using conservative assumptions of the value of reductions in excess mortality, emergency admission and hospitalisations in rural, provincial and high needs communities; the benefits arising from the introduction of diversity of medical training models and choice of the entry pathway to and location of medical training; the avoided costs of importing the IMGs that Waikato Medical School graduates will displace; and the lower costs to students and government of a 4 year graduate entry medical programme.

Structure of the Business Case
Chapter 1 sets out the population health needs and health workforce information that establishes the requirement for a third New Zealand medical school designed to produce doctors who are being trained specifically to enter specialties in areas of health workforce shortage and elect to practice in rural, provincial and high needs communities. Evidence on the performance of CEGEM programmes in other countries is evaluated as a basis for providing a detailed analysis of the reasons why these medical programmes have been much more successful than traditional undergraduate entry programmes in meeting contemporary workforce and community health needs. We demonstrate how these lessons from overseas would translate to New Zealand, including the way in which they would be embedded in “mana to mana” engagement with Māori and high needs communities in the development of the Waikato Medical School. The last sections of this Chapter provide an outline of the programme proposed for the Waikato Medical School.

An analysis of the case for investment by the New Zealand government in the Waikato Medical School is provided in Chapter 2. This Chapter sets out the problems to be solved, the results of an investment logic mapping exercise, and the outcomes expected, the risks identified and considered in the preparation of the case, the benefits that will arise from investment, and the policies, institutions and agencies that are most directly relevant to the Waikato Medical School proposal and business case.

The Economic Case for investment in the Waikato Medical School in set out in Chapter 3. Beginning with an analysis of critical success factors, we narrow the examination of options to four case options. These are:
1. Do nothing;
2. Create a provincially-focussed GEM programme in Auckland or Dunedin;
3. Have one of the two existing medical schools create a new GEM programme in a provincial centre; or

4. Establish a provincially focussed GEM programme operated by the Waikato Medical School.

The affordability of the Waikato Medical School is assessed in the Financial Case set out in Chapter 4. Operating costs, SAC costs for government-funded student places, and capital costs are considered, including provision for 12-15 regional clinical education sites associated with existing general practices, community health centres or rural hospitals throughout the central North Island. The financial analysis makes explicit the extent of the capital injection required from government to implement the Waikato Medical School, as well as the philanthropic support that is expected to be available from the communities in the central North Island that the Waikato Medical School will primarily serve.

Chapter 5 provides a review of the governance and management arrangements proposed for the Waikato Medical School, including the partnership between the University of Waikato and Waikato DHB. This partnership serves as a mechanism to ensure that the focus of the Waikato Medical School is on areas of workforce shortage and communities with high health needs, that there is co-ordination in the development of the community clinical education sites required for the Waikato Medical School programme, and that the outcomes are achieved with minimum cost by making the most efficient use of resources available to the Waikato DHB and the University of Waikato.

Chapter 6 provides our conclusions.
Chapter 1 – Strategic Case

The Concept
This document outlines the case for the establishment of a new Community-Engaged Graduate Entry Medical School (CEGEM) at the University of Waikato, creating a third medical school in New Zealand. The Waikato Medical School would be based at Waikato Hospital in Hamilton as part of a strategic alliance with the Waikato DHB and at regional clinical education centres in 12-15 locations throughout the central North Island (depending on the other DHB and community partnerships that are built). The Waikato Medical School will primarily focus on producing graduates with a passion for community-based primary care, willing to serve the high needs communities and meet the health needs of the population that lives outside the main centres, fully conversant with the use of modern communication technologies in providing health care, and with practical experience of community based health and social service partnerships.

The Waikato Medical School will offer a medical degree programme which reflects international best practice and is unique in New Zealand. Specifically the Waikato Medical Degree will be:

1. Graduate entry only (requiring an undergraduate degree from any university in any subject, compared to the current requirement to take health sciences at Auckland or Otago Universities to have the option to enter medicine);
2. Four years of graduate study rather than the five years of undergraduate study currently required at Auckland and Otago Universities;
3. Community engaged, involving communities outside the tertiary hospital centres in the design of the programme, selection of students, and training of students;
4. Proactive in adding to rather than utilising existing clinical placement opportunities for medical students across the Midland region; and
5. An opportunity to build a new medical school in genuine partnership with Māori and with other high health needs communities.

A key component of the Waikato Medical School’s engagement with the community will be the development of regional clinical education centres in which students undertake clinical placements and postgraduate medical training is provided in an inter-professional environment (which will include nursing and allied health practitioners). These centres will be developed in partnership with DHBs and located in provincial hospitals, community medical centres or general practices in communities that elect to work with the Waikato Medical School.

These health workforce challenges are not unique to New Zealand, but New Zealand is unique in its failure to address these problems through investment in new medical schools offering a diversity of medical education models. The key lesson learned from international experience is that dedicated community-engaged graduate entry medicine programmes can produce different health workforce outcomes to traditional medical schools. The proposed Waikato Medical School complements the work of the two existing medical schools in New Zealand, providing the diversity of training and workforce outcomes that is necessary to meet New Zealand’s challenges with the geographical location and specialist choices of its health care workforce.

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1 We define our area of focus “outside the main centres” to mean centres of population without a tertiary hospital, including small cities, provincial towns and rural areas.
2 The Midland Region encompasses Bay of Plenty, Lakes, Tairawhiti and Waikato District Health Boards.
With one medical school for every 2.35 million people, New Zealand has among the lowest ratios of medical schools to population in the OECD. The relevant ratios are 1:1.7 million in the UK, 1:1.6 million in the US and Canada, and 1:1.2 million in Australia. In Western Europe the average intake of 282 medical schools is 150 students, while in North America the average intake of graduate entry programs is 110 students per year. New Zealand’s two very large programs are unusual with an intake approaching 300 students per school. In countries with a similar population as New Zealand there are typically a larger number of smaller schools which serve their local communities e.g. Ireland with 6 medical schools, Scotland with 5, Finland with 5 and Norway with 4. Based on any of these comparators New Zealand should be well advanced in developing a third medical school, and against some standards we would already have at least three medical schools and be considering more.

New Zealand’s need for a third medical school is increased by the similarity in the medical education provided by the two existing New Zealand medical schools compared to the diversity of approach in medical training available internationally. The proposed Waikato Medical School complements the work of the two existing medical schools in New Zealand, providing the diversity of training and workforce outcomes that is necessary to meet New Zealand’s challenges with the geographical location and specialist choices of its health care workforce.

The key elements of the proposed Waikato CEGEM education model benchmarked against best practice internationally are:

- A student selection and admissions process that reflects engagement with 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;
- An ethos focussed on provincial and community-based care and on a duty to serve these populations; and
- Community-based postgraduate training facilities that ensure a continued connection between the medical graduates and the communities in which they will practice following their registration.
- A high proportion of graduates who choose a specialty most relevant for health care outside the main centres. Our aim is to have 50-60% of graduates of the Waikato Medical School choosing general practice as a specialty with a commitment to practise outside the main centres, 10-15% choosing Psychiatry as a specialty, and a high proportion of the remaining 25-35% choosing a specialty and sub-specialty relevant to provincial and rural workforce needs.

The Investment Objectives are to:

- Deliver fit for purpose medical training and meet the health care needs of provincial and rural communities at lower costs;
- Improve the quality and the accessibility of health care in provincial and rural communities by training doctors who will live and work in these communities; and
- Generate a sustainable provincial and rural health care workforce that is committed and trained to work in high needs communities, reducing New Zealand’s reliance on IMGs to provide primary and specialist care in these communities.
Active community participation is an essential enabler of success in delivering the Waikato Medical School model, together with a high level of formal collaboration between the University of Waikato the Waikato District Health Board (DHB), other DHBs and health providers, and the communities in which the medical education centres will be built. The governance structure and operations of the School will reflect a partnership between the institutions and communities needed for the School to achieve its potential. The programme of the Waikato Medical School will be implemented under the auspices of the Institute of Health and Medicine, an entity currently being established pursuant to a strategic alliance between the University of Waikato and Waikato District Health Board (DHB) and designed to incorporate other DHBs, community health and primary care entities, iwi, and social agencies who wish to engage with the work of the Institute. The Institute creates a framework for joint leadership, co-investment in community clinical education sites and community engagement and social accountability, in accordance with international best practice in the provision of a CEGEM programme. To this end, the proposal set out in this document has been discussed with all of the DHBs in the Midland Region, with the PHOs operating in this region, with the Royal New Zealand College of General Practitioners and the Rural GP Network, with the Medical Council, with Health Workforce New Zealand and with other organisations in the health sector.

New Zealand Medical Workforce Needs

New Zealand’s shortage of doctors has increasingly been recognised over the last decade, beginning with the first report of the Medical Training Board, and culminating most recently in wide public discussion of doctor shortages led by the Royal New Zealand College of General Practitioners. There is no evidence that increases in intakes for the two existing medical schools since 2008 will resolve this problem.

Total doctor numbers increase year by year in response to population growth, changes in the characteristics of the population, the move to shorter working hours, the growth in the number of medical interventions that are feasible as technology changes, and changes in the pattern of work for doctors. In New Zealand all of these factors are leading to a substantial increase in the number of new doctors required.

In 2016 the population of New Zealand grew by 2.1%, the fastest rate of growth since the 1960s. Immigration added twice as many people as the natural increase. The population is expected to be in excess of 5 million by 2025. Within this aggregate population growth there are a number of trends that mean that the demand for healthcare will be increasing faster than the population as a whole. Māori people have higher health needs than the population as a whole, and the number of Māori people is expected to grow from 0.69 million in 2013 to 1.0 – 1.18 million by 2038. The population will also have a higher proportion of elderly people: in 2006 12.1% of the population was over age 65, but by 2036 22.1% of the population will be over age 65. By 2036, 11% of the population will be over age 75, compared with 5% in 2006.

For the New Zealand population as a whole, both life and health expectancy are increasing, but life expectancy has increased faster than health expectancy: the gap between health and life expectancy has widened by 1.4 years for males and 1.0 years for females over the past 25 years. This means that New Zealand has been successful in reducing health loss on an age-standardised basis, but because the population is aging faster than health loss is reducing, and because long-term

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5 Ibid 6.
conditions which increase the requirement for primary care make up a growing proportion of health loss, the aging population will increase the burden on the health system in the future.\textsuperscript{10}

The number of new doctors required is also a function of the expected retirement age of our existing doctors, the retirement age also taking into account the potential for doctors to undertake part-time work once they reach the point where they do not wish to work full-time. Discussions with Health Workforce New Zealand have revealed that their health workforce estimates assume that many doctors will work into the seventies,\textsuperscript{11} but the research undertaken for this proposal and the surveys of retirement intentions undertaken by the RNZCGPs suggest much higher attrition from the workforce than is being assumed by Health Workforce New Zealand.

Taking into account all of the above factors, our research suggests that it would be conservative to assume that the New Zealand health workforce will need to increase by 2.5\% percent per annum. When this requirement for additional doctors is integrated with likely patterns of retirement, our research suggests that in the period from 2025 onwards, when it is proposed that there would be Waikato Medical School graduates entering postgraduate training, the number of new doctors required will average nearly 800, as against a 540 graduates from the two existing medical schools (see Figure X below). Even on more conservative assumptions about retirements the graduates of the Waikato Medical School will still be required to meet our aggregate health workforce needs if we are not to go on increasing our reliance on IMGs.

**Figure 1.1: Number of New Zealand Medical Graduates and Health Workforce Need**

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\caption{Number of New Zealand Medical Graduates and Health Workforce Need}
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**International Medical Graduates (IMGs)**

To mitigate the shortage of New Zealand-trained doctors, New Zealand relies heavily on International Medical Graduates (IMGs). In 2014 43.4\% of the country’s medical workforce was trained overseas, a percentage that makes New Zealand the OECD nation that is most heavily dependent on an IMG workforce. We are currently importing over 1,100 doctors a year to fill the shortages that are not being met by the current domestic medical education and training system.

\textsuperscript{10} Ibid 8.

\textsuperscript{11} Meeting, R Lawrenson and A Jones with HWNZ officials, 24 May 2017, Wellington.
Of each IMG cohort, around 250 - 300 are retained in the medium term, a number much greater than the current or planned ability of the two existing medical schools to produce medical graduates.\(^{12}\) This situation cannot be reconciled with the claim that there is no medical workforce shortage in New Zealand, or that IMGS are used only to manage short-term fluctuations in supply.

Figure 1.2: Retention of New Zealand IMGS

IMGs make up more than 50 percent of New Zealand’s health workforce in a number of specialties, including care of the elderly, psychiatry, rehabilitation medicine, palliative care, and obstetrics and gynaecology, emergency medicine, rural hospital medicine, and family planning and reproductive health. The proportion of GPs who are IMGS is 45 percent, but as with many specialties, the distribution of IMGS is heavily skewed to locations outside the main cities where the current New Zealand medical graduates undertake the majority of their training.

### Table 1.1: Proportion of IMGs by vocational scope (specialists and GPs)

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Source: Medical Council of New Zealand 2016
The dual effects of ageing and population growth mean that even a conservative estimate of 2.5% annual increase in medical practitioners results in New Zealand needing 20,500 doctors by 2033, or an additional 7,000 doctors in the next 15 years. Auckland’s population alone is expected to reach 2 million people by 2030 – therefore at its current density of 290 doctors per 100,000 people, Auckland will need to find an additional 1,800 doctors. These estimates do not take account of the need to replace the high proportion of doctors who will retire over that same 15-year period, a problem that is particularly acute among GPs.  

Workforce and Training Needs
The increase in funded medical places at the two existing medical schools that has been implemented from 2011 cannot meet New Zealand’s medical workforce requirements in the medium term. Demand is expected to increase because of population ageing and population increase from immigration, and increased incidence and complexity of chronic long-term conditions. We anticipate that:

a. As GP numbers per 100,000 have declined over the last 20 years, there will be increased demand for consultations with fewer doctors.

b. Maldistribution of doctors makes the decline in GP numbers a major problem in provincial and rural NZ.

c. Shortages will continue in specialist fields such as psychiatry, obstetrics, geriatrics, rehabilitation medicine and palliative care.

d. Our reliance on the importation of IMGs to meet our health workforce needs will continue – despite concerns that it is risky, inefficient and unsustainable for New Zealand to have such a high reliance on an imported workforce.

To meet these workforce challenges New Zealand will require an increase in medical student places, noting that currently our two existing schools have finished taking on the extra places provided in 2011 and their output will plateau after 2020. It needs a new medical school that is focused on selecting and training students who will in high proportions specialise and practice in the areas of high current and anticipated workforce need. The principal requirement is for this new medical school to deliver primary care medical practitioner retention in the geographical areas and the specialties in which the greatest shortages currently exist. Given that it will probably take 7 years to produce graduates from the time a decision is made to establish a new medical school, New Zealand needs to move now to address the medical workforce shortages in general practice, psychiatry, care of the elderly, obstetrics and palliative care that are predicted.

In the following sections we show that this requires a new type of medical school focused on community engagement in the development of curriculum, student selection, and student education.

General Practice
General Practitioners (GPs) play a critical role in primary care, both in treating medical conditions and in referring patients to specialist health professional where this is appropriate. According to the Ministry of Health, it is estimated that nearly 40 percent of health loss can be prevented....Two

15 A specific example of the way in which population growth and potential retirements will impact on the requirement to train additional numbers of general practitioners is provided in Appendix 1.4.

16 We are aware of the suggestion that Physician Assistants may assist in meeting some of our primary care challenges, and we accept that they may – but there is no reason to expect that Physician Assistants will be any more willing to locate in areas of high need than any other graduate from the current medical training model.
important parts of the focus on prevention and early intervention are primary care screening and early intervention services that aim to delay the development of long-term conditions and reduce health loss and premature mortality. To offer the best early diagnosis and treatment, it is vital that we improve access to primary care services, improve health literacy and increase the uptake of screening services. But over a long period of time New Zealand has suffered from a shortage of general practitioners, particularly outside the main centres. This is reflected in the fall in the ratio of GPs to population over the last 25 years. Fewer GPs have entered the workforce than would have been required to maintain the ratio of GPs to population, and more of those in the workforce are working part time (reducing the average full-time-equivalence of each GP).

**Figure 1.3: The Ratio of General Practitioners to Population in New Zealand**

![Graph showing trends in GP numbers, GP FTEs and GP FTE to 100,000 population ratio 1999-2012 (MCNZ)](image)

The fall in the number of GPs per 100,000 population is reflected in recent survey data. Outside Auckland timely patient access to a GP has been compromised, with 20% of patients saying they cannot obtain appointments with their usual doctor within 24 hours and general practices having to close off enrolment of new patients because of a shortage of doctors.

The shortage of GPs reflects the interaction of New Zealand’s failure to train enough doctors, and the falling proportion of graduates from Auckland and Otago medical schools who elect to specialise in general practice. To meet out health workforce needs in primary care we would need around 50 percent of the graduates from the two existing medical schools to elect to specialise in General Practice, but general workforce shortages give medical graduates options in high paid specialties and have resulted in only 15 percent of graduates registering in general practice in recent years (Figure 1.4).

---

The fall in the proportion of Auckland and Otago graduates registering in general practice, from 45% in the late 1980s to 20 percent in the 1990s has resulted in a highly skewed age profile for our existing GP workforce. The most recent survey by the RNZCGPs suggests that 44% percent of New Zealand’s GPs plan to retire in the next decade.17

Figure 1.5: Age profile of New Zealand GPs18

As Figure 1.5 shows, the combined effect of New Zealand’s failure to convert medical graduates into GPs over the last 20 years, and the high proportion of our GPs aged 50 years or more will create a crisis in primary care supply in the future if New Zealand does not begin to address it immediately.19

---

As a reflection of population health and health workforce needs, Hamilton and the central North Island combine a rapidly growing urban population with a large population in smaller and dispersed communities with high health needs. Medical education solutions developed at a medical school based in the Waikato will therefore have a wide applicability to New Zealand as a whole.

The Ministry of Health has set out the following characteristics of primary health care services:

1. Socially sensitive and culturally appropriate.
2. Geographically and physically accessible.
3. Care can be accessed when needed.\(^{20}\)

The declining ratio of GPs to population, and our current failure to train enough doctors to meet likely workforce needs (resulting from healthcare demand and retirements of existing doctors), means that more doctors must be trained if those characteristics of primary care are to characterise the services offered in New Zealand. Relying on IMGs to fill short-term positions in provincial and rural areas does not meet the requirement for socially and culturally appropriate care, meaning that the demand for more doctors must be met through the creation of an additional medical programme that can produce high proportions of GPs is urgently needed.

A Crisis in our Rural and Provincial Communities

Figure 1.6: Comparison of the proportion of IMGs among rural and urban practices

Source: RNZCGP 2014.

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\(^{20}\) This is in part because of the long lag time between the creation of new medical training places and the availability of fully qualified doctors. Australian medical journals and health planners have been discussing the consequences of the retirement of baby-boom generation GPs since at least 2006.

The high proportion of IMGs in general practice and in rural areas reflects the medical specialty choices of New Zealand medical graduates and the risk is of continuing graduate preference to practise in urban rather than provincial centres or rural areas. Currently only 2% of medical school graduates indicate a preference to settle in a community of less than 10,000 people, suggesting that current workforce policy initiatives have not had a significant impact on medical graduates career choices.

The greatest shortages of doctors are in our rural, most highly deprived communities and these are also the communities with the highest ratio of IMG doctors (Table 1.2 below). The most doctor-deprived New Zealand health region – the Midland region – has the highest proportion of Māori in its population, with 13% fewer doctors than the rest of the country (253 per 100,000 compared with 292 doctors per 100,000). Yet this is the region of New Zealand that is (in conjunction with Auckland) undergoing the greatest population growth (Tables 1.3 and 1.4).

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21 Medical Schools Outcomes Database, July 2013.
### Table 1.2: Summary of workforce statistics by population density of area

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### Table 1.3. Projected growth in Midland Region DHBs and New Zealand, 2013-2033

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### Table 1.4. Projected growth in Māori population in Midland Region DHBs and New Zealand, 2013-2033

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Moreover, rural communities are rapidly losing access to local primary care services. Graduates from Auckland and Otago medical schools are unlikely to live or work in these communities, regardless of whether they are ideal locations or more challenging. These graduates have been systematically moving away from careers in general practice and consequently the communities with the greatest health needs suffer the most, because they cannot reap many of the benefits of New Zealand’s primary care strategy. These problems will only worsen as the country grapples with the nationwide shortfall of doctors described earlier.

In recent years, more than 50% of GP posts in the Midland Region have been filled with international medical graduates. While importing IMGs may be appropriate to fill short-term workforce needs, a more positive impact on community health will be achieved at lower cost by GPs who are embedded in the communities, understand their cultures and social issues, and are prepared to make a broad long-term contribution to community life. Doctors who are drawn from, trained in and return to these communities when qualified, are most likely to possess these attributes.

Primary Mental Health
Establishing a model of undergraduate medical teaching based in a primary care setting offers the opportunity to focus on developing a set of competencies for the assessment and treatment of common, yet disabling, mental disorders, seen in general practice, and for encouraging medical graduates to specialise in Psychiatry.

The development of such competencies will:

1. Enable general practitioners to more effectively assess, and treat, common mental disorders within their own communities;
2. Allow general practitioners confidently adopt new models for the provision of psychological and psychiatric treatments to rural settings;
3. Allow general practitioners to be more confident in the interactions with, and use of, specialist mental health services.
4. Encourage more students who obtain clinical experience in a general practice environment to consider psychiatry as a specialty.

Mental disorders are common within the general New Zealand population with 46.6% of the population predicted to meet the criteria for a disorder at some time in their lives, with higher rates seen in Māori, youth, and those that are disadvantaged22. Comorbidity of disorder is common (both with a physical disorder or another mental disorder), yet despite this, the proportion of people accessing services for their mental disorder is low (58% of those with serious disorder, 36.5% with moderate disorder and 18.5% of mild disorder) suggesting a significant level of under treatment23.

Equally, we know that secondary services have seen an increase in service demand, with recent reports from the ministry of health suggesting an increase of 3% for acute mental health services. This increase in service demand, coupled with the concerns around unmet mental health need have driven policy makers to investigate new models for meeting this demand, highlighting the importance of the primary care sector, and general practitioners in particular, as the focus for new models of service deliver to those with mild to moderate mental disorder.

23 Ibid, 22
The Ministry of Health has recently noted that “Compared to the general population, people with serious mental illness have higher medical needs and hospitalisation rates, and are at greater risk of developing cardiovascular disease and other long-term conditions. They are also two to three times more likely to die prematurely than the general population.” Given the strong relationship between mental illness, physical health and premature mortality, it is clear that preventing mental health problems and illness, and improving timely access to mental health services, is important to improving the overall health of New Zealanders.

Such models are not new and have been well described in the international literature. Key success factors in the development of such programmes involve a competent and well-educated primary care team who are able to establish mutually respectful relationships with supportive secondary care colleagues in a model of ‘shared mental health acre’.

Mental Health workforce concerns have long been cited as one of the difficulties in responding to this significant need. These concerns have focused on the lack of availability of well-trained competent (including culturally competent) clinicians with particular shortages noted in the area of psychiatrists. This has led to an increasing reliance on internationally trained specialist who, whilst clinically well trained, may struggle with cultural differences (particularly in dealing with Māori patients and their whānau). This is also a dynamic seen within rural general practice faced with many of the same workforce challenges.

Whilst it is reasonable to assume that New Zealand trained medical graduates will have a greater familiarity with the New Zealand health (and mental health) cares system, and whilst they are exposed to a reasonably good undergraduate teaching in the area of mental health and addictions which is based in the hospital system, their ‘on the ground’ training in the assessment and treatment of mental disorders in a primary care (particularly rural primary care) setting, is limited, leaving many of them feeling under-skilled in this area and overly reliant on secondary services for the provision of care that might otherwise be provided for patients at an earlier stage, in their own environment and by someone that they know and trust as their general practitioner.

Disparities in Health
While it is difficult to quantify disparities in health outcomes in isolation from deprivation and ethnicity factors in the New Zealand setting, strong evidence exists in the Midland region that its provincial and rural populations have poorer health than in urban areas, and that this disparity corresponds to their lower level of access to primary care.

Health inequalities are particularly apparent throughout the Midland region in relation to the health of Māori and Pasifika people. To a significant extent this is because a high proportion of Māori and Pasifika people live in the most deprived areas, where access to health care is most constrained. For example, mental health is a major issue for Pacific and Māori adults (they are 1.5 times as likely to report experiencing psychological distress as non-Pacific and non-Māori adults).

Amenable mortality is a key System Level Measure (SLM), and is more focused than overall mortality in assessing deaths that may be decreased through health interventions. Amenable mortality is declining, but disparities remain: Māori have rates 2.7 times higher, and Pacific peoples 2.4 times more likely to die premature than the general population.

26 Tapsell (2016) Personal Correspondence with Royal New Zealand College of General Practice.
higher than the non-Māori and non-Pacific population.\textsuperscript{30} This is apparent in the Midland Region DHBs which have relatively high Māori populations and all have excess amenable mortality compared to the New Zealand average, implying that medical and health care interventions can reduce these excess deaths. Māori have particularly high amenable mortality rates and reductions should be expected through increased numbers of GPs, better trained GPs, more NZ-trained GPs (with appropriate cultural and contextual understanding), better retention (continuity) and stronger practices – through increased training/CPD requirements.

**Table 1.5. Amenable deaths in the Midland Region**

<table>
<thead>
<tr>
<th>Additional 0-74 year old amenable deaths per year 2007-2011 compared to NZ average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waikato</td>
</tr>
<tr>
<td>Deaths</td>
</tr>
</tbody>
</table>

Ambulatory sensitive hospitalisations (ASH) for 0-4 year olds is a key System Level Measure (SLM) for the New Zealand health system, and ASH age 0-74 is also used routinely as a performance measure. The ASH measure is intended to reflect the primary care impact on the wider health system. Many (but not all) Midland DHBs have excessive emergency department (ED) attendances and ASH admissions compared to the New Zealand average.

**Table 1.6. ED attendances in the Midlands Region**

<table>
<thead>
<tr>
<th>ED attendances per 100 population in 2015/16 compared to NZ average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waikato</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Rate/100 pop</td>
</tr>
<tr>
<td>NZ rate/100</td>
</tr>
<tr>
<td>Excess / year</td>
</tr>
</tbody>
</table>

**Figure 1.8: Health Inequalities in Communities of the Midland Region**

Hospitalisation rates for Māori and Pacific peoples associated with infectious diseases (such as influenza, rheumatic fever and tuberculosis) are consistently higher than those for the population as a whole. Māori children under 15 years are 21-times more likely than non-Māori children to be hospitalised for acute rheumatic fever. Of the avoidable hospitalisations for Māori children in 2015/16, 1,190 were potentially avoidable through preventive or treatment intervention in primary care (ambulatory sensitive hospitalisations, or ASH), with a rate 25% higher than for non-Māori

children. In the adult population heart failure admission rates were five-times higher for Māori than for non-Māori, while rates for hypertensive disease and stroke were twice as high. The all-cause rate of hospital admissions was 16% higher for Māori than for non-Māori during 2011-2013.

The 2014 RNZCGP Workforce Survey showed low numbers of Māori GPs in the workforce, with only 3.5% identifying as Māori compared to the 16% that might be expected through population counts. Attempts to address the burden of ill health in rural Māori communities will be hindered if the GP workforce cannot be brought more in line with the profile of the population being served. For Māori communities and Māori students, the issue is not just about recruiting more students, but about identifying outstanding students who bring tangible connections with their communities as well as Māori language and culture with them into the programme. They would be encouraged to retain and enhance their cultural knowledge as part of their medical training, and return to their communities as medical practitioners.

The shortage of medical practitioners in provincial and rural communities results in access barriers for patients, which in turn contributes to disparity in health outcomes, and additional health system costs. This problem is well recognised, but is difficult to quantify in isolation from deprivation and ethnicity factors in the New Zealand setting (National Health Committee 2010).31 Work in larger populations internationally suggests that there are clear deficits flowing from GP shortages, including increases in premature mortality, increased ill-health through lack of effective management of long term conditions (such as diabetes and cardiac and respiratory conditions) and increased ambulatory sensitive hospitalisations (Duckett et al 2013; Hiscock et al 2008).32 In addition, “Primary care physician supply [is] associated with improved health outcomes, including all-cause, cancer, heart disease, stroke, and infant mortality; low birth weight; life expectancy; and self-rated health. Pooled results for all-cause mortality suggest that an increase of one primary care physician per 10,000 population was associated with an average mortality reduction of 5.3 percent, or 49 per 100,000 per year”. 33

The findings of the studies in the literature on the health impact of physician supply are that low levels of primary care supply can lead people to:

- Suffer/self-medicate with conditions that could have been ameliorated or otherwise treated;
- Be dissatisfied with care;
- Have fewer investigative and diagnostic tests;
- Present to a hospital with conditions that could have been treated in community settings;
- Seek help later in the course of a disease, when it is usually harder to treat; and
- Migrate to a place where care is more readily available, further weakening rural community viability.

**Changes in Primary Health Care**

The ageing population and the increase in the prevalence of long term conditions mean that there is increasing recognition that the focus of health care needs to change. In 2000, New Zealand adopted a Primary Care Strategy to ensure that the emphasis on community-based care was enhanced. In

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2007 the “Better Sooner More Convenient” discussion document was released seeking to shift health care provision to “a high-quality patient-centred health system that cares about the wellbeing of New Zealanders”. In the foreword to the “New Zealand Health Strategy: Future Direction (2016)” the Minister noted “The health sector will need to be adaptable in coming years as developing technology changes how services can be delivered in ways we do not yet understand. The support of being one team with a common purpose provides the base for adaptation and innovation needed for value and high performance that will in turn lead to a sustainable and enduring public health service”. The strategy recognises “the need to continually invest in training so that our health workforce has the skills needed to meet the health needs and expectations of caring for New Zealanders”.

New Zealand requires a new generation of doctor who understands the model of technology-driven patient-centred health care, and who has the ability to integrate medical and communication technologies into all aspects of their training. We need doctors who are familiar with effective multidisciplinary teamwork, and who are able to adapt to the challenges presented by the ageing of the population and the changing health care needs that result. We also need doctors who will respond to the increasing numbers of people living with long term conditions, cancer, co-morbidities and the developing epidemic of dementia.

**Approaches to Addressing the Locational and Specialty-Specific Shortage of Doctors**

The health workforce issues described above are not unique to New Zealand; indeed, they are challenging the health systems in most developed countries. As a guide to how New Zealand should address these issues, we can look to overseas experience. The University of Waikato and Waikato DHB are not proposing to “reinvent the wheel” or attempt a project without a proven model in overseas experience. The model we propose is already in operation and it is working. At its heart is the idea that students should be drawn from the communities which the workforce needs to serve, that both the students and the communities should be stakeholders in the mission of the medical school, and that the proportion of the time that the students spend in medical education and postgraduate training in the communities that they have been recruited to serve should be maximised. This model of Community-engaged graduate entry medical education (CEGEM) is now considered to be best practice in Australia, Canada and the US for addressing contemporary health workforce issues, and for providing health care to rural, remote and small communities.

In 2010, the World Health Organisation released a series of recommendations intended to address issues of imbalance in health care services across rural and city centres (“Increasing access to health workers in remote and rural areas through improved retention”). The recommendations focused on the areas of education, regulation (e.g., service requirements, scholarships), financial incentives, and personal and professional support. This range of recommendations highlighted the complexity underpinning medical students’ and qualified doctors’ career choices, including electing to provide primary care in rural, provincial, and/or underserved areas. The education recommendations by the WHO include:

- Using targeted admission policies to enrol students with a rural background in education programmes for various health disciplines increased the likelihood of graduates choosing to practise in rural areas.

- Locating health professional schools, campuses and family medicine residency programmes outside of capitals and other major cities as graduates of these programmes were more likely to work in rural areas.

34 [http://apps.who.int/iris/bitstream/10665/44369/1/9789241564014_eng.pdf](http://apps.who.int/iris/bitstream/10665/44369/1/9789241564014_eng.pdf)
- Exposing students of various health disciplines to rural community experiences and clinical rotations had a positive influence on attracting and recruiting health workers to rural areas.

- Revising undergraduate and postgraduate curricula to include rural health topics so as to enhance the competencies of health professionals working in rural areas, and increasing their job satisfaction and retention.

- Designing continuing education and professional development programmes that meet the needs of community health workers and that are accessible from where they live and work, so as to support their retention.

While career decisions are based on a complex balance of a career aspirations, perceived opportunities, and personal circumstances, there is an extensive and growing research base demonstrating that student interest in generalist careers in rural, provincial, and/or underserved areas is supported by:

- selecting students based on an explicit interest in primary care.\(^{35}\)\(^{36}\)\(^{37}\)\(^{38}\)\(^{39}\)

- demographic factors such as female gender, older age, rural and minority background, all of which have been associated with choice of a generalist career.\(^{40}\)\(^{41}\)\(^{42}\)\(^{43}\)\(^{44}\)

- the Generalist Physician Initiative in the US, operates on the assumption that more graduates will become generalists if selection is based on personal characteristics comparable with generalist careers, and the medical schools value generalist careers and strong career pathways are developed.\(^{45}\)\(^{46}\)

- outreach and targeted recruitment of applicants likely to become generalists is strongly linked to institutional commitment to producing generalists. This is enhanced with long-term relevant clinical placements in rural, provincial, and/or underserved areas is also important.\(^{47}\)

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\(^{41}\) Institute of Medicine. (2004). In the nation's compelling interest: Ensuring diversity in the health care workforce. Committee on institutional and policy-level strategies for increasing the diversity of the US health care workforce, Board on Health Science Policy. Washington, DC: NAS.


• rural residency prior to entry into medical school, the strongest predictor of rural practice after graduation, and this is increased with prolonged rural clinical practice. 

• students and residents having access to GP and community clinical role models who enjoy their work - this also requires policy support to ensure that primary care providers are indeed experiencing work satisfaction.

• supporting clinics in rural communities with clinical teaching staff increases medical student interest. 

• longitudinal placements in underserved areas with an embedded learning approach have an effective and beneficial effect on medical student learning and attitudes to community medicine and has a additional positive benefit on graduate competencies and on community health systems.

• reducing student debt, for example, through offering a shorter qualification, opportunities to study in cheaper locations, and loan forgiveness; students who state that income potential has little or no impact on their choice were more likely to select a primary care residency.

References:


financial considerations plays an important role in medical students’ career decision-making.69

These factors need to be integrated into a medical education approach. When instituted in isolation e.g. rural background recruitment in a traditional undergraduate programme with limited rural placement this does not significantly increase the number of graduates opting for primary care. These studies emphasise that:

- Courses that emphasised primary care at a general medical school had no observable impact on students’ decisions whether or not to become a GP;
- Students who expressed interest in primary care at their selection and entrance were more likely than other students to enter general practice;
- The more academic the student was in orientation and the more the student identified with the academic mission of the Medical School rather than its social and community mission, the less likely they were to become GPs;
- The more students identified with values and associations external to the medical school, and the more these identifications were reinforced through clinical placements in community settings, the greater the likelihood that they would become GPs;
- Selection processes for medical school students ought to concentrate on characteristics associated with primary care, such as older students, students in partnerships, students who were parents, rural students, and students from minority communities with an ambition to alleviate inequalities. Many of these students may come from a background where they have taken generalist undergraduate degrees rather than science degrees; and

In other words, a nation gets the medical workforce outcomes that our selection processes and our approach to medical training determine. Medical Schools that select students whose ambition is to science-focussed clinician-researchers have a role, but that role is not primarily to produce graduates who will in high proportions elect to focus on primary care or to practise in geographical areas distant from a tertiary hospital. Below we provide more detailed reviews of those medical schools that have made the strongest contributions to our understanding of CEGEM.

Table 1.7: GP specialisation and rural placement data in the published literature

<table>
<thead>
<tr>
<th></th>
<th>GP specialisation (% graduates)</th>
<th>GP specialisation choosing rural (% graduates)</th>
<th>Proportion of domestic GEM programme doctors preferring to practice rurally/provincially, based on origin</th>
<th>Rural retention of graduates</th>
<th>Rural origin % of graduates (&gt; 5 y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland Medical School (all)</td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otago Medical School (Rural Origins Admissions Pathway – ROAP, and Rural Medical Immersion Programme – RMIP)</td>
<td>10%</td>
<td>14%</td>
<td>12%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Northern Ontario School of Medicine</td>
<td>62%</td>
<td></td>
<td></td>
<td>94% of graduates; 69% postgrad education.</td>
<td>92%</td>
</tr>
<tr>
<td>Flinders University School of Medicine (all)</td>
<td></td>
<td>79%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flinders Medical Centre (3-year programme, based at Flinders Medical Centre and the urban teaching hospital affiliated with the university)</td>
<td>38%</td>
<td></td>
<td></td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>Flinders Parallel Rural Community Curriculum (small rural communities)</td>
<td>62%</td>
<td></td>
<td></td>
<td>70%</td>
<td>62%</td>
</tr>
<tr>
<td>Flinders Northern Territory Clinical School (remote tertiary referral centre)</td>
<td>53%</td>
<td></td>
<td></td>
<td>50%</td>
<td>75%</td>
</tr>
<tr>
<td>Australian Rural Clinical School Programme</td>
<td>29%</td>
<td>52%</td>
<td>74%</td>
<td>8%</td>
<td>39%</td>
</tr>
</tbody>
</table>

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73 Strasser, R. (2016). Delivering on social accountability: Canada’s Northern Ontario School of Medicine. The Asia Pacific Scholar, 1(1).
Canada and the Northern Ontario School of Medicine
The Council of Ontario Faculties of Medicine reviewed the entire system of medical education. It identifies the following Critical Success Factors for CEGEM initiatives:

- Government investment and partnership and support;
- Collaboration with regional communities and community physicians;
- Local oversight including academic lead and administrative coordination and support; and
- Development of a core of family physicians in family medicine specialties who are willing and able to teach and act as exemplars of the required characteristics and commitment.

In Canada the leading example of a CEGEM programme is the Northern Ontario School of Medicine (NOSM). The track record of this School is summarised as follows:

> Since 2009 there have been seven graduating classes of which 62% of graduates have chosen family medicine (predominantly rural) training. Almost all other MD graduates are training in general specialties. 94% of the doctors who completed undergraduate and postgraduate training with NOSM are practising in Northern Ontario.

The NOSM project possesses a strong "civic image" because, as communities and their political leaders claim, they had fought for it – they lobbied for a CEGEM school in Northern Ontario, a region of 800,000 people living in a geographical area twice the size of New Zealand. The success of NOSM since 2005 has been about winning over the hearts and minds of both students and communities. What distinguishes NOSM as a CEGEM provider is its social accountability to stakeholder communities. In effect, the NOSM model rigorously identifies socially accountable community-engaged distributed medical education, with the entire region as the campus. It is a medical school “without walls”. NOSM delivers CEGEM through distance learning technologies and with reference to the similar kinds of communities, if not the actual community, from which the student comes. The course involves less life disruption and life change to settled relationships. The student selection model emphasises a calling to medical education (in the sense of e pluribus unum – “one called from among many”) and the expectation that the students will go back to serve their communities.

The other structural filter, so effective at inculcating a commitment to rural practice, is NOSM’s distributed learning model. Distributed learning lies at the heart of CEGEM. NOSM originally formed 13 (and now has 17) Local NOSM Groups, or LNGs, as community reference points throughout the vast region where the medical education programme takes place. From the second year onwards there is assignment to, and experience of general practice, and by the third year, these groups and practices become the learning base for the clinical placements in the programme. This is a graduate entry medical school that offers graduate entry medical training, and post-graduate and continuing education for physicians in practice in Northern Ontario, by means of distance learning and digital technologies. NOSM works primarily because of its commitment to CEGEM.

Why have 64% of NOSM graduates, as of their tenth anniversary, opted to work in the vast geographical spaces of Northern Ontario? And why don’t the graduate medical practitioners seek social mobility and enter general practice in urbanised Eastern or Southern Ontario? The answer is that the graduates already belong to the Northern Ontario communities and have developed a

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personal stake in them. They have also been educated in the specialty of providing medical services to them. Throughout the OECD it is apparent that doctors who grew up in urban areas and were trained in tertiary hospitals are highly unlikely to have the inclination or the aptitude to practise in provincial and rural environments. Such practise requires a developed sense of emotional intelligence, specific to such communities and cultures. NOSM, however, develops a virtuous circle of community support, medical provision and medical education that ensures that an ecosystem of health services can be sustained over a vast region with a dispersed population.

NOSM’s high retention rate in Northern Ontario can be explained by the fact that most of the students’ clinical learning occurs in rural and remote settings with rural generalist practitioners as students’ primary role models. This is reinforced by rigorous selection from among communities, and successful inculcation of the values of rural medical practice among people who already have attachments to the region and its communities.

The application of the NOSM model in New Zealand would involve strong engagement with communities in provincial New Zealand. Included in this would be engagement with Māori communities regarding population health needs and the local context for the curriculum, the selection of students with appropriate commitment to the community and the ethos of the medical school, and support for students undertaking clinical placements in their communities. Regional clinical education sites in the New Zealand context will involve partnerships with individual iwi where appropriate. In this context, the NOSM model is readily applicable to the provision of clinicians who would provide health care in provincial and rural New Zealand, and it offers multiple advantages by comparison with the current practice of importing IMGs to spend (usually) short periods of time as locums.

**Flinders University Rural Programmes**

In 1996, Flinders University School of Medicine became the first Australian medical school to introduce a 4-year graduate entry medical (GEM) programme. Flinders piloted two clinical teaching programmes:

- The Parallel Rural Community Curriculum (PRCC), which allowed students to complete their entire year 3 study based in primary care in small rural communities; and

- The Northern Territory Clinical School (NTCS), which allowed students to complete their entire year 3 study in a remote tertiary referral centre.

All other students completed the year 3 programme based at Flinders Medical Centre (FMC), the urban tertiary teaching hospital affiliated with the University.

Research on the career trajectories of graduates of all programmes showed that 70% of students on the PRCC programme and 50% of NTCS graduates chose rural career paths compared with 18% of FMC graduates. Further, 62% of PRCC and 53% of NTCS graduates chose general practice specialisation compared with 38% of FMC graduates. As is the case with the results achieved by NOSM, the high rates of election for the general practice specialty and the high retention rates in rural areas achieved by the Flinders GEM programme stand in stark contrast to the results achieved by the Otago and Auckland Medical Schools.

**Monash University Gippsland Programme**

The Gippsland Medical School of Monash University is one of the rare examples of a community engaged rural medical programme run out of a university with an undergraduate programme. The Gippsland Medical School operates entirely independently of the undergraduate entry programme.
at Clayton, this being achieved by full separation of physical facilities, curriculum and management (even first the pre-clinical year of the graduate programme is not taught in the Clayton facilities). This demonstrates that it would not be cheaper for a university with an existing medical school to run a CEGEM programme because the health workforce outcomes of a CEGEM programme cannot be achieved through an add-on to an existing medical programme.

Monash University had a rural health programme for many years, but to demonstrate the distinctiveness of a CEGEM programme, when the Gippsland Medical School was created in 2006 it was separate from Monash’s rural health programme and was only later merged with it. The intake of the Gippsland Medical School was initially 57 domestic students plus internationals, and is now 65 domestics + internationals. A key feature of the Gippsland Medical School is the integration of postgraduate training in the rural education centres that it runs. As a result, all of the postgraduate slots in southeast Victoria have been filled with Gippsland graduates in recent years.

**General Undergraduate Degrees as an Entry Pathway for Graduate Entry Degree in Medicine**

In New Zealand it is often assumed that the entry pathway to the medicine degree provided by Auckland and Otago, with its emphasis on selection of undergraduates based on grades in first year health sciences, is the only credible pathway to produce quality doctors. This is simply not true. In the US, UK and Australia large numbers of students enter graduate entry medicine programmes based on their performance in a general undergraduate degree and their performance in medical school is at least as good as those students who are selected based on their scientific knowledge. For graduate entry to medical school, empirical evidence shows that no single undergraduate degree best prepares students for success. This is the approach taken by those medical schools reviewed above, and also in the following additional examples.

The population of the Republic of Ireland is 4.7 million, more or less identical to the population of New Zealand. But Ireland has six medical schools which between them offer both undergraduate and graduate entry medicine degrees, and their domestic student intake is 650 students per year across these programmes (that is, 110 domestic places more than New Zealand has at present). The most recently established medical school at the University of Limerick is exclusively graduate entry. As part of the reform of medical education that resulted in the expansion of medical student places the Irish government sought to broaden access to medical education and encourage applications from students with diverse backgrounds. As a consequence, all graduate entry medicine programmes in Ireland are obliged to accept students irrespective of their age and prior academic qualification, with the only criteria for admission being achieving upper division honours in their undergraduate degree, and achieving a competitive grade in the GAMSAT or MCAT tests.

The graduate entry medical programme at the University of Limerick has used the McMaster University progress test since its inception. Given the requirement for the University of Limerick to accept students from any undergraduate degree programme, scores in these progress tests provide a basis for comparing the performance of student with an undergraduate degree in biological sciences against the performance of students with general undergraduate degrees. Students with a non-biological sciences background (41% of whom had degrees in arts and social science, 16% law and business) did not have significantly different test scores from those with biological science backgrounds, although those from a general degree tended to perform slightly less well in the early stages of the medicine degree, but to surpass the performance of the students with a biological sciences degree later in the medicine degree. The University of Limerick data suggest that in a problem-based graduate entry programme, students who have not taken biology, chemistry and

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physics other than as is necessary to get a competitive score in GAMSAT or MCAT perform as well as students from a science background.

In the US, the focus on premedical qualification in sciences, and the selection of students based on examination of the knowledge acquired in this programme, began to be questioned in the 1980s. An outgrowth of this questioning of the focus on science, and realisation that there would be benefits for health workforce outcomes from selecting a broader range of students resulted in initiatives such as the Humanities and Medicine programme at Mt Sinai being established in 1987. Students in this programme complete arts and humanities degrees followed by an intensive summer course in biology and chemistry. The HUMED cohorts from Mt Sinai have been the subject of a number of studies, all of which have found that their performance in the medicine degree, and after graduation, is at least equivalent to those students with undergraduate degrees in science.80

One study of the residency choices of HuMed students at Mt Sinai showed that they were more likely to choose primary care than the students from a traditional science-based pre-medical programme (49.4% vs. 39%), more likely to choose Psychiatry (14.6% vs. 5.6%) and, correspondingly, less likely to choose surgical subspecialties (7% vs. 13%) and anaesthesiology (5.8% vs. 9%).81 This study concludes that HuMed students have not missed some essential preparatory ingredient by acquiring an extensive liberal arts college education … rather, they may experience some gains from the diverse, enriching, collegiate liberal arts education, which may include:

• Enhanced communication skills and a more humanistic approach to the patient, as evidence by HuMed students’ better performance in psychiatry
• A greater interest in pursuing broader medical experiences, as evidenced by HuMed students’ greater participation in scholarship and research
• A heightened interest in fields that provide greater interpersonal connections between patient and physician, as evidence by HuMed students’ trend toward residencies in primary care and psychiatry.

At Newcastle University in the UK, applicants to their four-year graduate entry medicine programme are required to have a 2.1 or better degree in any subject or be a practising healthcare professional with a similar level of academic attainment, while applicants to their conventional 5-year programme are required to have a 2.1 or better degree in science. There is no difference in the academic performance of students from different undergraduate degree backgrounds in the Newcastle graduate entry medicine programme.82

Comparison with the Rural and Regional Programme at the University of Auckland and University of Otago

The separately funded Rural Origin Medical Preferential Entry (ROMPE) scheme introduced in 2002 and further expanded in 2007 was designed to increase the number of graduates from the University of Auckland and the University of Otago entering general practice outside the main centres. Both schools have had considerable difficulty attracting enough students to fill these places and Auckland has responded by widening the criteria to allow students who have spent as little as three years of schooling in a regional or rural centre to apply under the preferential scheme.

82 Price, R and Wright, S R (2010). Comparisons of examination performance between ‘conventional’ and graduate entry programme students; the Newcastle experience, Medical Teacher 32, 80-82.
Auckland complemented their rural admission scheme with a regional programme based in Northland. The published information on the University of Auckland (Pūkawakawa) programme suggests that such programmes cannot achieve outcomes similar to those of NOSM or Flinders:

- Students spent most of their penultimate (S\textsuperscript{3}) year of study at Whangarei Hospital, with one general practice and integrated care placement in smaller Northland towns;

- Only 15% of Pūkawakawa graduates have general practice as their first choice specialisation and the majority of the graduates work in hospitals rather than general practice; and

- The results are similar for general entry students who elected into the Pūkawakawa programme and students who entered through ROMPE, suggesting that the programme does not achieve the advantages of rural origin that a medical school modelled on the NOSM programme could achieve.

A review of the University of Otago’s rural entry pathway and rural immersion programme suggests similarly low levels of election for general practice in provincial and rural areas.\textsuperscript{33} Students with a rural background/training were more likely than other Otago medical graduates to specialise in general practice (13.8% as against 9.7% for the students as a whole) and more likely to work outside major urban areas (11.7% as against 6.6%) although the small sample of students meant that the differences were not statistically significant.

In general, therefore, there does not appear to be strong evidence that the rural immersion and rural origin programmes of the two existing medical schools in New Zealand have produced a major change in their ability to meet health workforce needs, especially with respect to general practice outside the main centres and largest provincial centres. This in turn suggests that expanding the existing medical training programmes at the University of Auckland and University of Otago will not provide a cost-effective means of increasing the number of medical graduates who will work in general practice and/or work in other specialisations outside the main centres.

**Past Consideration of the Benefits of a Graduate Entry Medical Programme in New Zealand**

Despite the potential for a graduate entry medical training programme having been first raised in serious way 15 years ago,\textsuperscript{84} there has been only one substantive investigation of the issue since that time. The report of Health Workforce New Zealand (2011) (HWNZ) has been carefully considered in the preparation of the case of the Waikato Medical School. The conclusion of HWNZ (2011) was equivocal in that it found evidence to support the introduction of a graduate entry medical school option in New Zealand, but concluded that there was no “compelling” evidence such a programme was needed by comparison with the alternative of increasing the number of medical training places in the two existing undergraduate entry programmes at Auckland and Otago.

HWNZ (2011) found evidence that graduate entry programmes might produce graduates more likely to practice outside the main centres and elect to specialise in general practice, produce doctors of equivalent quality to undergraduate entry programmes despite compressing the medical school training into four years, and benefit from students who were more mature and had different life experiences, but considered this evidence to be “limited”. HWNZ (2011) also noted that, even at that time, between 60 and 70 students per year were emigrating to study medicine in Australia because of the restricted places and lack of a separate graduate entry programme in New Zealand.


The analysis undertaken by the University of Waikato and the Waikato DHB differs in its conclusions from those in HWNZ (2011) because:

- By comparison with the finding of “limited” evidence that graduate entry programmes can increase retention in provincial and rural practice, there is now very strong data on the health workforce outcomes achieved by community-engaged graduate entry programmes such as those reviewed above, and these data were not available at the time of the HWNZ (2011) report. Further, HWNZ did not consider a particular model of graduate entry programme, and in particular, of the community-engaged medical programme of the type proposed by the University of Waikato and the Waikato DHB. Nor was there a focus on the benefits of selecting students at graduate level, and with a strong emphasis on characteristics that would reflect their willingness to practise in high needs communities.

- There was in 2011 insufficient evidence about the potential workforce impact of the ROMPE Scheme and the voluntary bonding schemes. By comparison, we now have evidence that these schemes alone cannot address New Zealand’s need for physicians outside the main centres; and evidence that compared to other OECD nations New Zealand’s efforts have produced a relatively weak impact on rural GP retention.85

- HWNZ (2011) failed to focus on the fact that if it is assumed that students for a graduate entry programme would be drawn from the existing pool of graduates (that is, that all potential students for a separate graduate entry programme would enter tertiary study whether or not there was a graduate entry medical programme), then there would be substantial savings to the government in training additional doctors through a four year graduate entry medicine programme.

- HWNZ (2011) contemplated the possibility that the lack of need for a separate graduate entry programme was demonstrated by the fact that over 20% of the students accepted by Auckland and Otago Universities were graduates, rather than focussing on the need for graduate entry to be a different programme and approach; that is for diversity in training and health workforce outcomes and difference from the two existing schools to be a key benefit of a graduate entry programme.

- HWNZ (2011) was concerned about the availability of clinical placements for an additional cohort of students but it did not consider the potential for a new medical school to invest in increasing the number of clinical training placements, as the business case for the Waikato Medical School proposes (see Appendix 1.5).

- HWNZ (2011) focussed on a contemporary issue – retention rates in New Zealand and the loss of our medical graduates overseas – whereas the significance of this issue has been surpassed by regional and specialty-specific health workforce shortages and our extreme reliance on international medical graduates to fill workforce shortages.

- HWNZ (2011) did not focus on outcomes, especially on the ability of a programme to train Māori and Pacific doctors who will actually return to serve Māori and Pacific communities.

Some of the themes of HWNZ (2011) might still be echoed today by those opposed to the creation of a new medical school. In particular, it might be suggested that consideration of a third medical school should wait until the additional tranches of students that have been allocated to Auckland

and Otago work their way through the system. A similar argument might be made about changes in the availability of places in different specialisations designed to require more students to elect to specialise in general practice. But the data presented in this study make it clear that the long lead times to produce medical graduates mean action is required now to address the looming health workforce challenges of a decade from now. Further, the experience of other countries suggests that to address health workforce needs New Zealand must recruit students who are committed to practicing in high needs locations and specialisations rather than hoping that restrictions on specialisation options will produce doctors with the required level of interest and commitment to serve rural, provincial and high needs communities.

The proposed Waikato Medical CEGEM addresses New Zealand’s current and anticipated health workforce needs for doctors in primary care outside the main centres with:

1. Student selection processes and an ethos that focuses 100% of each student cohort on primary care and on the opportunities for practice in provincial and rural areas.

2. The development of regional training centres (supporting sustained student learning in regional centres using a framework that prioritises inter-disciplinary learning that is culturally responsive; addressing issues related to the requirement for additional placements; enhancing the status of clinician educators in these centres and providing opportunities for on-going professional development of practitioners)

3. A tailored curriculum that meets the Australian Medical Council (AMC) standards for accreditation, with key elements of the programme customised to address New Zealand communities and New Zealand health issues, including Māori health; expertise from CEGEM programmes in Australia, UK, USA and Canada will inform the curriculum

4. A 4-year programme open to students from generalist degrees that will therefore be cost-effective in not increasing the number of students taking undergraduate degrees nationally but taking advantage of that graduate pool to identify those who can and have the motivation to be outstanding primary care doctors.

**Achieving a Close Link between Health Workforce Needs and Medical Training**

Addressing the identified health workforce needs requires strong alignment between medical schools and workforce outcomes. 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 literature makes it clear that both the selection process and the nature of the training have a profound effect on the careers that medical graduates choose, and on the location in which they ultimately work. These two variables will inform the Waikato Medical School’s innovative approach to addressing New Zealand’s shortage of doctors.

**Selection**

The very substantial excess demand for places in medical training programmes in New Zealand, and the very high academic standing of those applying for entry to medical training, creates an opportunity to focus on the selection of students with the characteristics and dispositions that are most likely to lead to desired health workforce outcomes. The proposed University of Waikato Medical School will select students who:

- Have demonstrated high levels of academic achievement in an undergraduate degree;
Are 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; and

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 Waikato Medical School will create a dedicated brand for a new kind of doctor, and in doing so expand the market for doctors in New Zealand. The existing medical schools are unable to do this because their selection and training model is inconsistent with what can be achieved when a university works in partnership with high needs communities to produce a more relevant workforce.

**Training**

In community-engaged medical training, students have greatly increased opportunities to learn medicine through supervised interaction with patients in a community setting. Community-engaged graduate entry medical programmes minimise the time spent learning medicine in classrooms or tertiary hospitals, and maximise the time spent in the community. 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. This approach to training has the effect of:

- Ensuring that the students build a deeper understanding of, and a stronger affinity with, clinical care in the community setting;
- Reinforcing the students’ pre-existing social networks in the communities from which they have been recruited, maximising the likelihood of their returning there; and
- Reinforcing the students’ commitment to the ethos of the CEGEM medical school.

**Graduate Entry**

Graduate entry programmes have a number of well-documented attributes that reinforce the selection and training effects described above, by:

1. Providing the opportunity for a wider range of students to meet the academic requirements for entry to medicine. The quality of a student’s high school performance becomes less relevant once a student holds an undergraduate degree. Graduate entry therefore gives students from low decile, provincial and rural schools wider opportunity to demonstrate the required academic standard.

2. Training students who have a variety of educational backgrounds.
3. Allowing students more time to demonstrate their commitment to the ethos of the medical school. Graduate entry can encourage students to volunteer or gain relevant work experience during their undergraduate degree, and cultivate community support for their application to the medical school. Worley et al. (2008) found that in their sample, each year’s increase in age at admission to the medical school produced a 15% increase in the likelihood of choosing general practice as a specialization.  

4. Recruiting students who are more mature, and who therefore can be placed in community settings at an earlier point in their training. A graduate student may already be in a stable relationship linking them to their community and have a much stronger and clearer sense of their personal values and ambitions. 

5. Drawing on the research on selection processes that is discussed in the medical education literature.

**Partnership**

Integral to the creation of a community-engaged medical school is the concept of establishing partnerships with the communities where the greatest health workforce needs exist. Creating a Waikato Medical School provides the potential for the University of Waikato and the Waikato DHB to build partnerships with communities from the outset, learn about each community’s needs, and develop the curriculum with this information in mind. These are essential components in the foundation of the medical school that is proposed.

The Waikato Medical School’s structure will reflect the partnership between the three parties needed to achieve the potential for the Waikato Medical School: the University of Waikato, the Waikato DHB, and iwi of the central North Island.  

Engagement with iwi is critical since a core objective of the Waikato Medical School is to improve Māori health. The Waikato Medical School will ensure that all of its graduates are equipped with the cultural knowledge to work with Māori people in Māori communities.

The spirit of partnership is already demonstrated in the extremely close co-operation between the Waikato DHB and the University of Waikato and in the high levels of support that the proposed Waikato Medical School has received from iwi leaders and representatives, and civic leaders from across the central North Island. This support demonstrates tangible commitment to partnering with the University of Waikato to create the proposed medical school. Key components of partnership that are essential for the operation of the medical school are:

- Community support for investment in clinical education sites in each community;
- Community support for the selection of students and the funding of scholarships for students to study in the medical training programme;
- Community support for training (by serving as standardised patients) and mentoring programmes when students undertake clinical placements in the communities; and
- Ongoing mechanisms to obtain community feedback about the success of the programme and their alignment with community needs.

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87 The approach to engagement is outlined in Appendix 1.3. The approach reflects the tongikura of Kingi Tawhiao “Kotahi te kohao o te ngira i kuhuna ai te miro ma te miro pango me te miro whero” – there is but one eye of the needle through which the black, white and red thread enters. The framework for engagement with Māori is set out in Appendix 1.3.
**How is this training model different from the current medical training models at Auckland and Otago Universities?**

An alternative to the creation of the Waikato Medical School is to simply provide additional funding to the existing medical schools. Compared to this option, several advantages accrue from creating a new, graduate entry Waikato Medical School:

1. The ability to produce medical graduates from the existing national pool of students with undergraduate degrees on a basis that will represent a lower cost and higher return on the additional government expenditure. The value of a community-engaged distributed learning model of medical education comes from looking at the whole picture and focusing on the returns arising from improved health outcomes, new economic activity associated with the medical education programme, and reduced expenditures on recruitment of doctors over time.

2. Based on international evidence from medical schools such as Flinders and NOSM (and also from others around the world), the model of medical education proposed by the University of Waikato should produce medical graduates who are different in kind but not in quality from those whom the University of Auckland and the University of Otago produce, and whose choices of medical specialty and geographical location would far better address current and prospective health workforce needs. At the Waikato Medical School 100% of the student cohort will be focussed on opportunities to have careers in primary care and in provincial and rural locations.

3. The partnership between the University of Waikato and the Waikato DHB creates a unique opportunity to align the interests of the Waikato Medical School with that of Waikato Hospital and the health care and health workforce needs of the region and nation. Co-operation between the University and the DHB as a foundational principle ensures an alignment of strategy and implementation.

4. The opportunity to build a new medical school from the ground up, in partnership with the communities in the central North Island and in partnership with Māori.

5. The potential to train technology-savvy doctors who can integrate new virtual health care technologies with the cultural knowledge appropriate to the communities they serve through the newly established Centre for Virtual Health between the University of Waikato and the Waikato DHB.

6. The opportunity to create a medical school in which engagement with communities with high health needs will be central to the ethos and a substantial part of the training of all of the students in the school. The Waikato Medical School would be developed with a focus on specialist and generalist provincial and rural health needs, underpinned by an ethos of social accountability. This is consistent with the World Health Organisation’s (WHO) definition of social accountability: “…the obligation to orient education, research, and service activities towards priority health concerns of the local communities, the region and/or nation one has a mandate to serve.”

**More Cost-Effective Training of Better Doctors**

A graduate entry medical school will provide the most cost-effective way of increasing the pool of medical graduates, because training is for four years rather than for the five years in the existing medical training programmes in New Zealand. Currently, 23% of the students accepted by Auckland
and Otago are graduates, but those graduates are still required to undertake the five-year medical programme. By contrast, the proposed University of Waikato Medical School will require a shorter period of education, which will reduce both the cost to government of training each graduate (the public cost) and the cost carried by students (tuition fees and living costs).

In addition, in drawing from the existing pool of graduates at all New Zealand universities, the proposed University of Waikato programme will not distort the university preferences of undergraduate students in the way that the existing Auckland and Otago programmes do. Both Auckland and Otago require students to study there to establish eligibility for selection. A CEGEM education does not require medical students to be domiciled at or around the traditional campus. Auckland is expensive to live in while Dunedin is distant from New Zealand’s main centres of population. Airfares and household removal costs are a major barrier to the study of medicine for graduate students (who often have domestic commitments and families) from outside the Auckland and Otago regions. The proposed Waikato programme will therefore enable more doctors (including more Māori doctors) to be trained at a lower social cost from within the growing population base and the large number of high needs communities in the central North Island.

Even by establishing separate graduate entry medical training programmes, which would require separate facilities, curriculum and placement models, the University of Auckland and the University of Otago cannot offer the New Zealand government the value that the University of Waikato graduate entry programme would provide. In addition, the University of Waikato community engaged graduate entry medical programme is likely to stimulate new economic activity in Central North Island communities reducing expenditures on recruiting doctors for these communities, while at the same time providing an extremely high social investment return as a result of the social and health benefits that will result in these high needs communities.

Selection
The student selection model proposed by the Waikato Medical School is not ‘experimental’ in nature, but tried and tested – in Canada, the United States, the UK, Japan, Norway, and Australia. Selection at the University of Auckland and the University of Otago is principally based on academic achievement and on the score achieved in the Undergraduate Medical Assessment Test (UMAT). The result is a medical workforce that is academically able but not necessarily well suited or willing to provide health care in the heartlands of provincial and rural New Zealand or to relate to the communities, including Māori communities, who live there.

Empirical data suggest the UMAT has little predictive power compared with Grade Point Average, yet neither do a particularly good job of predicting success at Year 6, the year most similar to the experience of junior doctors.\(^{89}\) Moreover, while GPA makes sense as a predictor for training scientist-clinicians, it is unable to select those students who possess the personal characteristics and dispositions that are necessary to deliver effective frontline clinical care in our rural and high needs communities. Although some aspects of the Auckland and Otago selection criteria could be changed, it is not clear how it would be possible for them to significantly adjust their existing programmes to include the community-engaged selection criteria being proposed by Waikato. It is also not clear that the selection criteria proposed by the University of Waikato would be as effective when applied to first year undergraduate students as they are when applied to graduates because the characteristics that need to be identified are less clearly defined in those of 18 or 19 years of age.

Medical Education
At the Waikato Medical School, each student will engage with clinical care in a community setting integrated into all aspects of their programme, and will spend a high proportion of their 3rd year in supervised engagement with doctors, health workers and patients in community clinical education sites. There will be a high level of community engagement with this clinical education and community support for the students on clinical placements. Such ‘longitudinal clinical clerkships’ (LICs) have been proven to lead to better engagement with communities, a high quality of clinical competence and more likelihood to return to practice in rural and remote areas (Worley et al 2008). By comparison, the rural training schemes currently run by Auckland and Otago involve placements outside the hospital setting that are as short as seven weeks90.

To facilitate this approach to clinical education, the University of Waikato and Waikato DHB would commit to invest in the physical infrastructure and supervisory capability in up to 15 clinical education sites in the Midland region outside Hamilton. Thus, rather than placing students only in facilities where the capacity to accept students already exists (as Auckland and Otago primarily do), the Waikato Medical School will invest in creating the capacity to train students in community settings and thus increase the national capacity for community-based clinical placements.

Community Engagement
Optimisation of the clinical placement opportunities in the wider Midland Region will require a very strong partnership between the University of Waikato, the relevant DHB, and the communities in those regions. The strength of the collaboration between the University of Waikato and the Waikato DHB, and the demonstrably high level of support for the University of Waikato Medical School initiative from civic and iwi leaders in this region, indicate that the University of Waikato can achieve a level of community engagement and support that is higher than could be achieved by the existing medical schools. The medical school proposal outlined in this document has already attracted strong expressions of interest in providing philanthropic financial support from individuals, community trusts, and iwi of the central North Island.

The Waikato Medical School project proposes to undertake continual community engagement in the central North Island at levels difficult for the existing New Zealand medical schools to achieve because it is a significant departure from their existing model of medical education and training.

The barriers that the existing medical schools face in introducing a CEGEM model of medical education to New Zealand can be overcome by the creation of the new medical school proposed in this document. The close working relationship between the Waikato DHB and the University of Waikato in developing this proposal, the opportunity that will be available to appoint new dedicated CEGEM staff in support of the community-engaged ethos of the medical school, and the ability to design from the ground up a curriculum and approach to medical education consistent with the best international CEGEM models from overseas might reasonably be expected to yield results that represent great improvement on the current performance of the existing medical schools in terms of meeting medical workforce needs for underserved regions.

Features of the Waikato Medical School GEM Programme
The University of Waikato would ensure that the Waikato Medical School reflects contemporary international best practice in community engaged graduate entry medical programmes. The programme is compared with the programmes currently offered by Auckland and Otago in the following table.

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90 Matthews et al 2015
Table 1.8 – Comparison of Medical Education Structures

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* Note at Otago graduate entry is only possible within 3 years of completing an undergraduate degree

Key features of the proposed Waikato GEM programme are:

- Entry on the basis on an undergraduate degree in any discipline from any recognised University with a minimum GAMSAT score of 50, together with a minimum of 50 in paper 3 (Reasoning in Biological and Physical Sciences).

- 4 years (rather than the traditional 5 years of medical education and training at Auckland or Otago) focused solely on students who already have a tertiary education degree (i.e., graduates);

- Based in Hamilton, but with clinical education and training centres 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 centres;

- A strong emphasis on medical specialties currently served by high proportions of IMGs, on provincial community and rural engagement, and on general medicine.

- A tailored curriculum that meets the Australian Medical Council (AMC) standards for accreditation, to be developed in conjunction with a prominent Australian medical school with an existing CEGEM programme, but with key elements of the programme customised to address New Zealand communities and New Zealand health issues, including Māori health;

- Minimising the need for capital investment through use of existing facilities and technologies; and

- Flexible learning approaches that support student participation in education and training.
Developing inter-professional learning centres

Waikato DHB is currently reviewing its rural health strategy and is considering developing its rural hospitals and community bases into primary care support centres. This would give the opportunity to turn these sites into inter-professional learning centres with the facilities and staff to support students for extended periods. These centres 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.

It is envisaged that each 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. During an attachment senior students would take on a clinical workload, such as immunisation clinics, diabetes and cardiovascular disease routine assessments, cognitive behavioural therapy sessions, and elderly care in the community or in an aged residential care facility. Opportunities for engaging with Māori providers and local iwi would also be an essential requirement of students’ longitudinal community engaged placements.

It has been shown that training New Zealand medical students in rural locations has a number of benefits, and academic outcomes are at least as good as traditional hospital based models. For example, the Whakatane Rural Health Inter-professional Immersion Programme has demonstrated the value of medical students learning with students from other professional groups (e.g., nursing, pharmacy, physiotherapy). The Gisborne-based Inter-professional Programme has also been shown to be effective. Other examples of rural learning centres include Wairoa and the West Coast, where facilities have been developed to aid learning.

Development of the Waikato Medical School Curriculum

The aims and learning outcomes of the Waikato GEM curriculum would be tailored to the intended mix of students and orientation of medical graduates. The specific clinical experiences and teaching activities would emphasise innovation, and build on the experience of other OECD countries that offer GEM programmes, such as Australia where 13 of their 19 medical schools offer GEM programmes, a number of these tailored to producing graduates who serve the needs of provincial and rural communities.

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. The following criteria would be used to select a potential partner:

- A highly credible organisation with the capacity to provide curriculum transfer and support;

- Innovative / state of the art teaching and learning delivery with an orientation to specialist and generalist provincial health needs, and an ethos of social accountability and multidisciplinary teamwork;

- A strong research programme preferably focusing on the health of high needs communities and existing comprehensive international linkages in research and teaching collaboration; and
A willingness to work with the Waikato Medical School to develop aspects of the curriculum specific to Māori, Pacific and rural populations that are most relevant to New Zealand.

A number of Australian medical schools have been approached and from these approaches it is clear that there are existing CEGEM schools who would be willing and have the capacity to transfer curriculum and support to the development of the Waikato Medical School however at this time the balance between purchasing curriculum and developing a new curriculum unique to New Zealand has yet to be determined.
REDACTED: SECTION 1, APPENDICES 1-7
AND SECTIONS 2-6