Development of the Rural Immersion Programme for 5th-year medical students at the University of Otago

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Abstract

Aims To report the development of the first Rural Medical Immersion Programme (RMIP) of the University of Otago in New Zealand.

Method We review medical education trends and challenges for educating New Zealand’s doctors and recruiting them to careers in rural practice. We describe key features of the RMIP developed in response to these challenges.

Results Medical education is evolving from discipline and hospital-based teaching to using more integrated, community-based teaching. The RMIP aims to immerse 5th-year medical students in an integrated, patient-centred, community-based, parallel learning environment where learners’ experiences in primary, secondary, and tertiary settings are always based on patient care. Government funding for the RMIP pilot was granted in November 2006 and the first 6 students started in the programme in 2007. Experiences of the programme from 2007–2009 are reported.

Conclusion The RMIP remains true to the principles underpinning its establishment and has to date delivered successful medical education outcomes for the first 18 students of the 2007 and 2008 cohorts. We cannot yet assess its role in future recruitment to rural medical careers.

By the turn of the 21st Century, specialist disciplinary-based styles of medical education that had developed in response to the Flexner Report of 1910 were intolerably stretched. This was largely due to much shorter patient stays in highly technical and expensive tertiary hospitals limiting students’ clinical exposure to patients.

Increasing sub-specialisation in an educational environment aiming to produce generalist graduates also skewed students’ understanding of the healthcare needs of their communities. Community expectations of a patient-centred health system made explicit in policy could be taught in the abstract but were not well modelled to students.

Community-based education is increasingly being used internationally to correct the mismatch between 20th Century educational models and the needs of 21st Century communities.

A further consideration is that there is a shortage of medical doctors in many countries. Currently, New Zealand is still reliant on overseas medical graduates for providing healthcare, especially in rural settings.

Like other countries, recent health workforce policy has changed to allow increased medical school intakes. Although this will address the shortage of New Zealand doctors, generally, further initiatives were required to address the shortage of New Zealand's doctors.
Zealand graduates choosing rural practice. These initiatives have included the Rural Origin Medical Preferential Entry (ROMPE) scheme and the development of extended exposure to rural medicine during training.

In 2001, the Dunedin School of Medicine established a 7-week rotation in Rural Health. All Dunedin 5th-year medical students were attached to a variety of rural medical practitioners, in both general practice and rural hospitals. This programme built a cadre of capable and enthusiastic rural medical teachers and became one of the preferred 5th-year attachments, being described by students as one of the best learning experiences during medical training.\(^{10}\)

The South Australian Flinders Medical School’s Parallel Rural Community Curriculum\(^{11}\) had demonstrated effective academic outcomes and sustainability over 10 years.\(^{12,13}\) The success of the Rural Rotation programme, combined with the reported success of the Flinders programme led to the initiation of an extended rural medical curriculum by the University of Otago Faculty of Medicine, now known as the Rural Medical Immersion Programme (RMIP).

The model of a single faculty-wide programme is new to the University of Otago’s Faculty of Medicine. Historically, although overall objectives have been aligned, delivery of the curriculum has been managed differently in each of the university’s four constituent medical schools—the Otago School of Medical Sciences (basic sciences), and three Advanced Learning in Medicine (ALM) schools for the advanced phase of clinical learning.

The RMIP now operates across the three ALM schools in Dunedin, Christchurch and Wellington, drawing similar numbers of students from each school. There have been both challenges and advantages in this departure from previous educational structures for the small RMIP subset of all Otago University 5th-year medical students. The Rural Rotation programme still operates for all other Dunedin School of Medicine 5th year students.

**The Rural Medical Immersion Programme (RMIP)**

The overall goal of the RMIP was to deliver a nationally innovative, patient-centred medical curriculum located in rural New Zealand communities, where opportunities for authentic learning would be maximised. The programme had to be educationally sound and deliver parallel learning opportunities over a one-year long immersion experience.

The RMIP aimed to:

- Use real-life experiential learning in primary, secondary and tertiary care settings, based on continuity of patient care over time, across all settings;
- Ensure high-quality inter-disciplinary learning of the 5th-year curriculum based in rural teaching centres; and
- Broaden clinical learning opportunities for students beyond those available to students in tertiary teaching hospitals by using a large range of community-based patient presentations and follow-up.
Achieving these aims was expected to have several long-term benefits to both medical education and New Zealand health care services. These benefits were expected to include: enhanced links between rural general practice, rural hospitals and urban tertiary teaching hospitals; enhanced development of distance education technologies in undergraduate medical education; realisation of rural medical career opportunities; and encourage both recruitment and retention of rural doctors.

The 1st year

A pilot year RMIP was carried out in 2007 with funding from the Minister of Health’s discretionary budget. Six students from the Dunedin and Christchurch Schools of Medicine studied their 5th-year curriculum at two rural teaching centres in the South Island, Westland (Greymouth and South Westland) and Southland (Queenstown). There were three students at each site. They completed their first 7-week attachment in Dunedin to study public health and have an introduction to the RMIP before moving to their rural teaching centres.

At the end of the first pilot year the RMIP was evaluated by the two authors who had initiated a similar programme in Australia (PW and LW). They reported that “the RMIP has been an outstanding success … the commitment of academic staff and clinicians and the enthusiasm and flexibility of the volunteer students have ensured a very positive outcome for all involved”.

The 2nd year

In 2008 funding for the programme was provided by the University of Otago Faculty of Medicine. There were 12 students—4 from each of the 3 Otago University clinical schools. Two additional teaching centres were established at Tararua (Dannevirke/Pahiatua) in the North Island, and Clutha (Balclutha/Lawrence/Milton) in the South. Three students studied at each teaching centre for the entire academic year, apart from a 1-week residential three times during the year—once at each of the clinical schools in Dunedin, Christchurch, and Wellington. Residential teaching sessions involved all 12 students.

The 3rd year

In 2009 the programme became fully operational with 20 students. As in previous years, they were drawn equally from all three clinical schools, but with flexibility to draw one or two additional students from any school to meet demand. Two further teaching centres were established in Marlborough (Blenheim/Havelock/Nelson) and the Wairarapa (Masterton/Carterton/Martinborough/Featherston). Residential teaching was as in the second year.

Teaching centres

Each teaching centre has a 0.3 full-time equivalent (FTE) Regional Coordinator and a team of teachers including rural general practitioners, rural hospital doctors, paramedics, local and visiting medical specialists, nurses, midwives, physiotherapists, pharmacists, the Mental Health team, Māori health workers and the Medical Officer of Health.
Regional Coordinators are employed by the Faculty of Medicine, teaching by District Health Board (DHB) employees is supported by a “clinical access” payment to DHBs, and other teachers who are not DHB employees are paid on a sessional basis. In 2010 a professional development coordinator was employed to support RMIP teachers.

By far the majority of teaching and learning happens one-with-one while providing individual patient care. Paediatrics, gynaecology and complicated obstetrics, orthopaedics, emergency medicine, public health, clinical pharmacology, Māori Health, bioethics, pathology and microbiology are taught by either video- or audio-conference or face-to-face at residential workshops.

Subjects covered at residential workshops often reflect the teaching strengths at the different clinical schools and we try to achieve continuity from one residential to the next, with a focus on the students’ self-perceived learning needs. These workshops also allow for important contact between RMIP students and their urban peers. Pastoral care unrelated to the teaching and learning programme has been undertaken by video link by a separate GP based in Dunedin.

The students are provided with subsidised accommodation, travel costs, and a laptop computer with cellular wireless internet access to library and medical databases. Their computers have an electronic logbook in which they record patient conditions that must be seen and skills that must be acquired during the 5th year. Case reports are recorded on a web-based patient-centred case reporter which allows marking at a distance by both a specialist in the topic and an external rural GP academic. There are libraries of textbooks and DVDs in the rural bases, including recorded tutorials from the base medical schools.

During the first 3 years we have developed high bandwidth video-conferencing at all teaching centres with assistance from the New Zealand Mobile Surgical Project. The three or four students at each teaching centre are encouraged to form a study group. Collaborative learning is facilitated by workshops on individual personality types and preferred learning styles, which help students to understand each others’ strengths and differences.

The learning objectives for RMIP students are the same as for students studying the urban-based curriculum of topic-based specialty learning over seven week attachments. The RMIP curriculum uses real-life, experiential “parallel” learning. Parallel learning means that students study core topics in parallel throughout the course of each day: they do not concentrate on a single discipline for an extended time, as in traditional teaching hospital runs.

In parallel learning, a student may attend a patient with chest pain in the morning, a motor vehicle accident in the afternoon, and the birth of a baby in the evening. Students are expected to follow their patients through different phases of management. A patient seen in a rural general practice surgery may be tracked through to the rural or provincial hospital where the student will perform the admission. They also accompany patients who are transferred to tertiary base hospitals.

One-with-one teaching and learning methods are considered by the students to be a major educational strength of the programme. In rural general practice settings, students initially observe consultations between patient and teacher and then teachers.
observe students consulting with patients. When both teacher and student feel confident, students see patients alone and present patients’ problems to teachers. In rural hospitals, students work alongside hospital doctors and nurses, admitting and clerking patients, writing referral letters to tertiary centres, and providing patient care.

With midwives, students perform antenatal and postnatal checks, attend births and participate in delivering babies. They may also travel with parents to the base hospital if tertiary obstetric care is required. In all teaching and learning situations the students report feeling very much part of the therapeutic team and they feel that their opinion on patient management is valued by their preceptors (personal communication from student groups).

Assessments

There are four internal RMIP assessments throughout the year. Each assessment includes teachers’ reports (under the headings: knowledge and skills, clinical competence, and professional relationships), 50 multiple choice questions, 6 Objective Structured Clinical Examination (OSCE) stations using locally-trained simulated patients, and a portfolio of core case reports.

Each assessment also includes patient referral and discharge letters written by the students, after-hours on-call logs, video-recorded consultations with patients and video-recorded physical examinations on each other. These results, along with progress noted on the electronic logbook, are discussed with the programme director as soon as possible after each assessment.

On one occasion each year, patient presentations are made by the students at each teaching centre. The presentations are beamed by video link to all Otago University 3rd year medical students in the form of a medical forum, by students, for students.

The 3rd year students complete evaluations of the presentations and these also contribute to the RMIP students’ overall assessment. There are also assignments in public health (including critical appraisal of research), paediatric longitudinal and chronic care case reports, and Māori health.

RMIP students sit the same final examination as urban-based students at the three ALM schools. This examination includes all the clinical subjects of the 4th and 5th years—general medicine, general surgery, anaesthetics and emergency care, women’s and children’s health, musculo-skeletal medicine, primary care and rural health, psychiatry, public health, bioethics, Māori health, pathology and clinical pharmacology.

Discussion

The RMIP is an important innovation in medical education in New Zealand. The 3 years of RMIP experience that we present in this paper have shown that parallel community-based training is not only possible in New Zealand, but also that it delivers an educational experience that ongoing monitoring shows at least equates to traditional teaching models.

Continuing programme evaluation is planned to closely monitor RMIP outputs, including (ultimately) whether it has contributed to solutions to medical workforce problems currently encountered in rural communities.
The main strength of the RMIP is that it is a model of medical education for the future, not the past. It explicitly applies the values expressed in current government policy\textsuperscript{17}—patient-centredness, continuity of care, and community responsiveness. It is also educationally efficient in that it models medical education on the medical experiences of people, with most healthcare needs being experienced and met outside hospitals.\textsuperscript{18}

The main weaknesses of the RMIP model of medical education are its cost (it is more expensive than the traditional hospital-based model) and capacity constraints in rural communities.

RMIP teaching is authentic because it is based in the real world and undertaken by the whole multi-professional team providing healthcare across all settings. We expect that this programme may be a precursor of future developments that will inevitably unfold over the coming decades.

The next developments are almost certain to be extension into other clinical years and into urban community-based teaching. A potential future challenge is to deliver such a programme to a larger number of students over their entire medical degree course. Australia and Canada have established rural medical schools to do this.\textsuperscript{19}

Integration with the education of other health professionals is also along this timeline. Many attempts at inter-professional teaching and learning have in the past had only very limited success.\textsuperscript{20} The team approach to clinical patient management is made explicit in the RMIP and this suggests very strongly that inter-professional teaching and learning can be successful in this environment.

The purpose of New Zealand’s medical schools is first to train doctors to meet our own country’s needs. We have fallen well short of achieving this goal in the past, especially for our rural communities.\textsuperscript{7} Extended rural clerkships, combined with preferential entry to medical school of students from a rural background have been recognised as effective ways of improving the numbers of doctors going into rural practice and are now adopted.\textsuperscript{21} We do not yet know if the RMIP (and other similar programmes) is able to additionally improve the doctor shortage in rural areas.

Alternatives to the evolution of medical education in the ways we predict are that it stays as it is now for most New Zealand medical students, who gain the bulk of their clinical experiences in the settings where least patients receive health care,\textsuperscript{18} or it moves backwards even further into the lecture theatre dominated teaching models.

Both these alternatives are associated with less financial burden to universities and the community, but are also less able to deliver the medical graduates our communities need.

\textbf{Competing interests:} None.

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