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REVIEW ARTICLE

# Learning in context: education for remote rural health care

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## ABSTRACT

Ensuring access to high quality health care in remote and rural settings is particularly challenging. Remote and rural communities require health service models that are designed in and for these settings, and care provided by health practitioners with the requisite knowledge and skills responsive to people's health needs. Studies in many countries have shown that the three factors most strongly associated with entering rural practice are (1) a rural upbringing, (2) positive clinical and educational experiences in rural settings as part of undergraduate medical education and (3) targeted training for rural practice at the postgraduate level. After exploring the remote and rural context, this article presents examples from Canada and from Australia of education programs that provide the majority of clinical education in remote and rural settings, supported by electronic communications including remote clinical supervision. The success of these programs demonstrates clearly that education in remote rural communities for remote rural communities contributes to substantially improved access to and quality of remote rural health care.

**Key words:** Australia, Canada, medical education, vocational training.

## The remote and rural context

Despite the substantial differences between developing and developed countries, the key themes in rural health are the same around the world. Access is the major rural health issue. Even in countries where the majority of the population lives in rural areas, the resources are concentrated in the cities. All countries have transport and communication difficulties between rural and urban settings, and they all face the

challenge of shortages of healthcare providers in rural and remote areas[1].

There is no universally accepted definition of 'rural' or 'remote'. Generally, people living in big cities see everywhere else as rural, whereas those who live in rural regional centres do not see their community as rural. In short, the concept of 'rural' is a matter of perception[2]. Similarly, individuals living in very small, sparsely populated settings see 'remote' as distinctive when compared to 'rural'. Carson and colleagues have identified the '8 Ds of Remote' as diverse, discontinuous, distant, dependent, disconnected, dynamic, detailed and delicate[3].

In rural and remote areas, some key parameters provide the framework that determines the structure and function of remote and rural health services, how rural practitioners work and the nature of rural practice. These parameters or 'rural realities' are the physical environment, with small populations, large distances and sometimes severe weather conditions; the rural culture, which values stoicism and often places health as a low priority; the patterns of health status, which are generally worse than in the cities, including lifestyle-related illnesses and serious injuries; and limited availability of resources and personnel. Although the detail of these realities differs greatly from country to country and between regions within countries, these parameters in all countries provide the framework that determines the function and structure of health services and the nature of rural practice[1].

Remote and rural communities require health service models that are designed in these settings and are responsive to the health needs of the people in these communities[4,5]. In this context, surgical services are of particular importance, not only in emergency situations but also for managing common problems that require surgery including routine elective procedures and chronic diseases and maintaining maternity care[6-8]. Attempts to take urban-designed service delivery models and implement them in remote rural settings generally have proven unsatisfactory[1,4,5].

It is important to recognise that the health practitioners in these communities are the frontline providers of care. The role of specialists is as true consultants providing clinical support and education for the on-site rural practitioners. Rural practitioners, when compared to their metropolitan counterparts, may therefore be described as 'extended generalists'. Rural practitioners provide a wider range of services, sustain a heavier workload, and carry a higher level of clinical responsibility in relative professional isolation[9]. These characteristics hold true for all rural practitioners whether they are doctors, nurses, pharmacists or other health professionals[10].

## Education for rural practice

In response to the chronic shortage of rural practitioners, medical schools introduced rural clinical placements with the expectation that experience in rural settings would encourage a future interest in rural practice. Subsequent research evidence demonstrated that this expectation was justified[11-14]. Studies in many countries have shown that the three factors most strongly associated with entering rural practice are (1) a rural upbringing, (2) positive clinical and educational experiences in rural settings as part of undergraduate medical education and (3) targeted training for rural practice at the postgraduate level[10].

Since the mid-1980s, research evidence has been accumulating describing the specific range of knowledge and skills required by rural practitioners. This has led to the inclusion of specific curriculum content on rural health and rural practice in undergraduate medical programs and in rural based postgraduate training programs, initially for family practice and more recently other specialties. In Australia, the Australian College of Rural and Remote Medicine (ACRRM) has achieved recognition of rural and remote medicine as a specialty with specific required training[15].

## Northern Ontario School of Medicine

In Canada, Northern Ontario province is geographically vast (>800 000 $km^2$) with a volatile resource based economy, including forestry and mining, and socioeconomic

characteristics that differ from the southern part of the province of Ontario. Forty percent of the population of Northern Ontario live in rural and remote areas where there are diverse communities and cultural groups, most notably indigenous and francophone peoples. The health status of people in the region is worse than in the province as a whole, and there is a chronic shortage of doctors and other health professionals. In this context, the Northern Ontario School of Medicine (NOSM) opened in 2005 with a social accountability mandate focused on improving the health of the people and communities of Northern Ontario[16].

Consistent with its social accountability mandate, NOSM seeks to reflect the population distribution of Northern Ontario. Uniquely developed through a community consultative process, the holistic cohesive curriculum for the NOSM undergraduate program is grounded in the Northern Ontario health context, organised around five themes and relies heavily on electronic communications and interdependent community partnerships to support distributed community engaged learning. The NOSM digital library service and electronic curriculum delivery ensures that learners and academic staff wherever they are have access to educational resources and information as if they were in a major city teaching hospital. In the classroom and in clinical settings, students are learning in context as if they are preparing to practise in Northern Ontario[17].

Through community engagement, community members are active participants in various aspects of NOSM including the admissions process, as standardised patients, ensuring that learners feel 'at home' in their community, and in encouraging an understanding and knowledge of the social determinants of health at the local level. There is a strong emphasis on interprofessional education and integrated clinical learning, which takes place in more than 90 communities and many different health service settings, so that the students have personal experience of the diversity of the region's communities and cultures[18,19]. For example, all students undertake a 4-week immersive experience in Indigenous communities at the end of first year. The students learn for the community about the history, tradition and culture, and the social and health issues[20].

NOSM was the first medical school in the world in which all students undertake a longitudinal integrated clerkship, the Comprehensive Community Clerkship. Based in family practice, the clerkship is the third year of the undergraduate program in which students make the transition from classroom learners to clinicians. Rather than a series of clerkship block rotations, students meet patients in family practice such that 'the curriculum walks through the door'. Students follow these patients and their families, including when cared for by other specialists, so as to experience continuity of care in family practice. During the year, students achieve learning objectives that cover the same six core clinical disciplines as in the traditional clerkship blocks. Students live in one of 15 large rural or small urban communities in Northern Ontario, excluding the cities of Sudbury and Thunder Bay. This allows them to learn their core clinical medicine from the family practice, community perspective, while also gaining exposure to community based specialist care. At the postgraduate level, NOSM provides training in family practice and eight other general specialties[21,22].

Ninety-two percent of NOSM medical students come from Northern Ontario with the remaining 8% from remote rural parts of the rest of Canada. Sixty-two percent of NOSM graduates have chosen family practice (predominantly rural) training with almost all the others (33%) training in other general specialties. Sixty percent of NOSM Doctor of Medicine graduates are practising in Northern Ontario and 94% of the doctors who completed undergraduate and postgraduate education with NOSM are practising in Northern Ontario, including 33% in remote rural communities[22,23].

Interviews of the NOSM medical students reveal generally positive experiences, with a sense that they value the learning opportunities and feel they are being prepared well for practice in remote rural settings. Sample comments include 'clinical experiences during [third year] are more substantial

than anything in traditional med school experience', 'NOSM creates 'generalists' and encourages students to maintain a broad focus', 'rural medicine … that's where you find the true generalists', 'I like how much variety there can be in the doctor's role', 'we're better off … we will [learn] more skills in a rural centre', and 'you don't know it until you live it'[24].

The socioeconomic impact of NOSM has included new economic activity, more than double the School's budget; enhanced retention and recruitment for the universities and hospital/health services; and a sense of empowerment among community participants, attributable in large part to NOSM[25]. Already, communities are spending less on recruitment, having changed focus from perpetual crisis to planning ahead[24]. There are signs that NOSM is successful in graduating doctors who have the skills and the commitment to practice in remote rural communities and that NOSM is having a largely positive socioeconomic impact on Northern Ontario.

## Remote Vocational Training Scheme

More than three-quarters of the area of Australia is classified as geographically remote. Remote areas are characterised by geographic isolation, cultural diversity, socioeconomic inequality, resource inequity, indigenous health inequality, and a full range of extreme climatic conditions. Remote medical practice has eight key features: employment rather than private practice, isolation, use of telehealth, increased clinical acumen, extended practice, cross-cultural setting, multidisciplinary practice, and an emphasis on public health and personal security[26].

In this context, Australia has developed a specific training program in remote medical practice for remote medical practice. This program supports doctors practising in remote communities to undertake postgraduate training while remaining in the remote practice setting. The Remote Vocational Training Scheme (RVTS) was established in Australia as a pilot in 2000 as a joint training initiative of the Royal Australian College of General Practitioners and ACRRM, with funding from the Australian Government[27].

Training is delivered by distance education and remote supervision over 3–4 years. Clinical teachers (supervisors) who are experienced in remote rural practice in the same geographic region support trainees (registrars) remotely. Contact is a minimum of 1 hour per week in the first 6 months, 1 hour every 2 weeks in the second 6 months, and 1 hour per month thereafter using telephone, text, fax, email or internet videoconferencing. Registrar–supervisor meetings are a mix of opportunistic case review, planned topic teaching, debriefing and mentoring[28].

Registrars participate in weekly webinars and develop the clinical and procedural skills needed for the extended scope of remote clinical practice at twice-yearly face-to-face 5-day workshops. In addition, registrars attend at least two accredited emergency medicine courses and, with help from a medical educator, devise an individual learning plan. Clinical teaching visitors observe registrars directly and give feedback to the registrars in their own practice for a minimum of three full working days in total[28,29].

Since its inception, the RVTS has expanded to provide training for doctors in Aboriginal community controlled health services (ACCHSs) as well as remote community practice. In total, 182 communities have benefited from RVTS registrars and there have been 30 registrars in ACCHSs. RVTS registrars have a 92% pass rate in college exams, which is comparable to that of registrars in the standard program. Eighty-four percent of RVTS graduates are practising in rural or remote communities including 39% who have remained in the town in which they trained. There is the potential for this model of remote training to be implemented in the defence forces, for other medical specialties and also for nursing or other healthcare disciplines, potentially as part of integrated remote primary healthcare training[29,30].

# Conclusions

Health care in remote rural communities requires doctors and other health practitioners who have the skills and commitment to provide care responsive to the health needs of people living and working in these settings. Communication and transportation technologies have reduced the degree of isolation, and enhanced the quality and effectiveness of education and care, even in the most remote environments.

In this context, successful education models have been implemented that recruit students from remote rural communities and provide much of their clinical education in the same settings. At the postgraduate/vocational training level, education in remote rural communities for remote rural communities is contributing to substantially improved access to and quality of health care.

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