Chapter 2.1.2

OPERATING A MULTI-SITE RURAL-BASED MEDICAL SCHOOL

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Introduction

Rural-based medical education may occur through various models: in rural settings as outposts of metropolitan-based schools; in rural settings where the school's territory is essentially rural beyond the school's city base; or where the school has been established specifically as rural-based, with a mandate to produce rural practitioners. While in most cases rural experiences are likely to be multi-site - at least in the sense of students undertaking clinical learning in a range of different community and health service settings – the core of a multi-site school is distributed learning whereby the school operates in more than one site throughout the year, not just for rural placements.

This chapter explores the issues associated with a multi-site rural-based medical school whose mandate is to produce doctors with the skills and desire to practice in remote and rural areas.

What to do

The essential key to success in developing and operating a multi-site rural-based medical school is to maintain focus on the mandate and on the maintenance of quality in both processes and outcomes. Generally, a mandate to produce rural practitioners is one element of a wider obligation to be responsive to the priority health needs of the region or nation which the school serves.

A multi-site school is likely to be most successful where there is a strong commitment to being a single school which is a multi-node network without inherent hierarchy as reflected in terms like 'mothership and satellite' or 'hub and spoke'. It is important to embrace geographic, social and cultural diversity as the strengths and opportunities, rather than realities that have to be managed.

Electronic communications are essential to success in a multi-site school. These range from audio and video conferencing in real time to web-based communications which may be asynchronous. In addition, a digital library service is an essential requirement so that students and teachers have the same access to information and educational resources as if they were in the metropolitan teaching hospital, even in the most remote locations.

Planning and implementation of a multi-site school is most likely to succeed if the key participants know each other and work closely together. When they are located in multiple sites, this requires regular retreats so that group members get to know each other. In other words, it is useful to 'advance by retreating'.

In addition to maintaining focus on the mandate, it is helpful to develop a series of key academic principles which provides the framework for development, delivery and evaluation of academic programmes. For a multi-site rural-based medical school, it is important that these academic principles are rural-specific. Potential principles include generalism; diversity; community engagement; distributed learning; and interprofessionalism.

What not to do

Do not accept conventional wisdom, whether this is about models of medical education or assumptions about rural being second-class. It is important to listen respectfully to the naysayers and to acknowledge their concerns while maintaining steadfast commitment to achieving the mandate and delivering high-quality education.

Distance should never be accepted as a barrier to collaborative development across the multi-node network. Also, it is important to avoid hierarchical models which assume the superiority of some over others.

When it comes to community engagement, never assume that you know. It is important always to ask and to listen so that you develop a true interdependent partnership between each community and the school. It is very important to engage with, and empower, communities. This is challenging because of the usual view of universities as 'ivory towers'.

Electronic distance education

Developments in communication information technology have made multi-site rural-based medical education or distributed learning possible. Electronic distance education provides greater flexibility in the teaching materials and assessment procedures in ways which encourage greater learner centred education.

In addition, electronic communications have enhanced distance education by facilitating more interactive teacher-student/student-teacher relationships towards a 'learning network' rather than a 'teaching hierarchy'. This is sometimes described as the 'democratisation' of the teaching-learning process.

Northern Ontario School of Medicine

Although part of Ontario, the most populous province in Canada, Northern Ontario is geographically vast, comprising different economic and social characteristics from the southern part of the province. Forty percent of the population of 800 000 lives in rural and remote areas with a diversity of communities and cultures, most notably Aboriginal and Francophone peoples.

Recognising that medical graduates who have grown up in a rural area are more likely to practice in rural settings, the Government of Ontario decided in 2001 to establish a new medical school in the region with a social accountability mandate to contribute to improving the health of the people and communities of Northern Ontario. The Northern Ontario School of Medicine (NOSM) is a joint initiative of the universities of Laurentian in Sudbury and Lakehead in Thunder Bay - which are over a thousand kilometres apart. In addition to the two university campuses, NOSM has over 70 teaching and research sites distributed across Northern Ontario. As such, NOSM is a rural distributed community-engaged medical school which actively seeks to recruit students into its MD[1] programme who come from Northern Ontario or from similar northern, rural, remote, Aboriginal, Francophone backgrounds.

[1] MD = medical doctor

The holistic, cohesive curriculum for the MD programme relies heavily on electronic communications to support distributed community-engaged learning. In the classroom and in clinical settings, students explore cases from the perspective of physicians in Northern Ontario. Clinical education takes place in a wide range of community and health service settings, so that the students experience the diversity of communities and cultures in Northern Ontario. NOSM graduates are skilled physicians ready and able to undertake postgraduate training anywhere, but with a special affinity for, and comfort with, pursuing postgraduate training and clinical practice in Northern Ontario.

Community engagement

Through community engagement, communities are actively involved in hosting students and contributing to their educative experience.

Community engagement for NOSM is consistent with the School's social accountability mandate and has a particular focus on collaborative relationships with Aboriginal communities and organisations, Francophone communities and organisations, and rural and remote communities, as well as the larger urban centres of Northern Ontario. For NOSM, community engagement involves the development of interdependent partnerships whereby the communities, through Local NOSM Groups (LNGs), are as much a part of the School as the university campuses in Thunder Bay and Sudbury. These relationships are fostered through the Aboriginal Reference Group, the Francophone Reference Group, Local NOSM Groups, and a vast network of formal collaboration agreements and memoranda of understanding.

Student profile

Consistent with its social accountability mandate, NOSM seeks to reflect the population distribution of Northern Ontario in each medical school class. The selection and admissions process accepts applicants with diverse academic backgrounds in both the sciences and humanities, and favours applicants who meet the academic standards and come from northern, rural, remote, Aboriginal or Francophone backgrounds.

Each year since the first medical student intake in 2005, there have been around 2000 applicants for 64 (previously 56) places. The vast majority of each class - over 90% - is from Northern Ontario, with 40-50% coming from rural and remote areas. There is substantial inclusion of Aboriginal (8%) and Francophone (20%) students. The class mean grade point average (GPA) each year has been approximately 3,7 on a 4-point scale, which indicates that the academic standard of the students is comparable with that of other Canadian medical schools.

The inaugural class

The inaugural class of 56 medical students began their studies in 2005 and graduated in 2009. This inaugural class was the only Canadian medical school class for over ten years in which all students matched to residency programmes in the first round of the national residency match – a recognition of their academic merit. In addition the class was placed in the top 30% in the national Medical Council of Canada examinations. These results demonstrate that NOSM students compare favourably to students from other schools in Canada.

Sixty-two percent of NOSM graduates are training in predominantly rural family medicine and the others are training in various other specialties and sub-specialties. Follow-up studies of family medicine residency graduates who trained in Northern Ontario show that 70% of the graduates are practising in Northern Ontario or similar rural areas.

Socio-economic impact

A study of the socio-economic impact undertaken in 2009 found that NOSM makes a substantial contribution to the economy of Northern Ontario. With a budget in fiscal year 2007-2008 (FY07/08) of $37 million (all values in Canadian dollars), NOSM's activities were estimated to contribute $67 to $82 million per year of new economic activity in Northern Ontario. The bulk of the economic contribution occurs in Sudbury and Thunder Bay, with other communities in Northern Ontario experiencing an estimated contribution of up to $1.4 million per year, depending on the extent of their involvement in NOSM activities.

In FY07/08, NOSM funded 233 full-time equivalent (FTE) positions, located mostly in Sudbury and Thunder Bay. It was estimated that NOSM supported a total of 420 to 510 FTE positions in Northern Ontario through various economic effects. NOSM also paid stipends or honoraria to committee members, Aboriginal Elders and to more than 670 clinical preceptors in over 70 communities. These are likely to be conservative estimates because the following components were not yet in place at the time of the socio-economic impact study: undergraduate year 4; postgraduate years 2-5; and capital or operating funds paid directly to hospitals in support of their teaching duties. Even so, these findings show that when considering the cost of medical education, it is important to look at the whole picture and not just the level of government expenditure per learner. For Northern Ontario, the high level of Ontario government contribution to NOSM is justified by the substantial return on investment for participating communities.

Social impact

In terms of social impact, interviewees reported that NOSM is a source of civic pride and an affirmation of the North's potential as the region enlarges its knowledge-based economy. According to interviewees, NOSM has enriched the reputation of both universities and affiliated healthcare institutions, thereby enhancing the ability to recruit new doctors, researchers and scientists to the North. Interviewees anticipated that NOSM graduates will ultimately relieve the chronic doctor shortage in Northern Ontario. Interviewees also remarked that Francophone and Aboriginal students enrolled at NOSM and the School's commitment to cultural competency training should help alleviate the shortage of doctors serving these population groups.

The most impressive social impact finding was a sense of community empowerment summed up in the phrase "if we can do a successful medical school in Northern Ontario, we can do anything". The establishment of NOSM and its distributed programmes offered opportunities for change and challenges to the status quo. Following the success of NOSM, Laurentian University has established an Architecture School and Lakehead University has opened a Law School.

Conclusion

Essentially, NOSM recruits students from the local underserved rural area, provides them with medical education in the Northern Ontario context and then supports local medical graduates through continuing education and faculty development for their teaching role.

The shortage of faculty[2] willing to take a position in medical schools in underserved regions remains a challenge. This has led to the development of new models of clinical education that turn the constraints of the existing health system into teaching opportunities. NOSM has extended the culture of teaching beyond the traditional teaching hospitals and campus into family practice and other community clinical settings. Community-based health practitioners are recruited as faculty members and NOSM provides training and support for them.

Embedding students in family practice settings ensures that they are exposed to the full spectrum of medical conditions which occur in the community.

Advantages of multi-site rural-based medical education

Initially, the development of rural-based medical education was driven by the workforce imperative. The expectation was that experience in rural settings would encourage a future interest in rural practice. Subsequently research evidence demonstrated that this expectation was justified.

Since the mid-1980s, however, research evidence has been accumulating that there is a specific range of knowledge and skills required by rural practitioners. When compared to their metropolitan counterparts, rural practitioners provide a wider range of services and carry a higher level of clinical responsibility in relative professional isolation. This has led to the inclusion of specific curriculum content on rural health and rural practice in undergraduate medical programmes and in rural-based family medicine residency programmes.

[2] 'Faculty' is another term for members of academic staff.

In addition, evaluation of rural clinical attachments has demonstrated that the rural setting provides a high-quality clinical learning environment that is of potential value to all medical students. Specifically, rural clinical education provides more hands-on experience for students, with the result that they are exposed to a wide range of common health problems and develop greater procedural competence. This is particularly true for students who undertake prolonged clinical attachments in rural community settings. These students generally outperform their urban counterparts in examinations and in securing the postgraduate training programme of their choice.

Conclusion

Rural-based medical schools produce more generalist practitioners than urban-based schools. These doctors tend to be more responsive to the social and cultural diversity in remote and rural community settings, and also tend to be active contributors to the health team. This has an overall impact of enhancing healthcare in rural communities.

In addition, rural-based medical schools contribute to an improved retention and recruitment of rural practitioners, as well as stimulating rural health research which in turn contributes to improved health care.

Rural-based medical schools also have social and economic impacts beyond the health of rural communities. These include broader rural-based academic developments, including research and graduate studies; economic developments through spin-off employment related to medical education and healthcare; and a collective community confidence that other previously 'impossible' initiatives may succeed in the rural setting.

Further reading

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