

# **A Proposal for a Feasibility Study Concerning the Training of Students with a Rural Background and/or Interest in Primary Care and Research in Rural Communities**

## **Introduction**

At the annual general meeting of the Association of Manitoba Municipalities on November 24, 2009, 1,000 delegates overwhelmingly supported a resolution “that Brandon University offer undergraduate medical education as part of the solution to the problem of recruitment and retention of primary care physicians in rural and remote Manitoba”.

The Manitoba Chamber of Commerce passed a resolution “that the Government of Manitoba establish in Brandon rural and northern medical training for physicians” according to a press release dated May 4, 2010.

Finally, according to the *Manitoba Women’s Institute News*, February 2010, the Institute passed a resolution saying “that the Manitoba Women’s Institute lobby the Manitoba Government to support the establishment of a rural school of medicine in Brandon at Brandon University”.

Taken together, these resolutions create a clear demand for Brandon University to explore the issues leading up to their passage and to provide some leadership in assessing the feasibility of building institutions aimed at addressing the issues. As a public institution with a mandate and a tradition extending over 100 years to serve the interests of rural and remote communities, we are deeply appreciative of the confidence expressed in us by these resolutions and we are pleased to undertake an appropriate response. We are requesting funding for a feasibility study to determine the best way of addressing the problems concerning the population health status and health service delivery system in rural and remote Manitoba in general, and in particular, the development of a School of Rural Medicine at Brandon University with a mandate to train students with a rural background and/or interest in primary care and research in rural communities. *On the face of it, the idea of shifting the centre of development for medical training and research focused on rural and remote communities from urban Winnipeg to rural Brandon appears to have some merit as a regional development strategy as well as a strategy for improving the health status and health service delivery in such communities.* (In a recent impact study of the Northern Ontario School of Medicine (2010) it was noted that, “[t]otal direct spending by the School and its undergraduate medical students is estimated at \$37 million annually, and, according to the report, the recirculation of these funds generates between \$67 million and \$82 million of economic activity.”) A rigorous feasibility study would confirm or disconfirm the face validity of the resolutions made by the three Manitoban organizations.

Quite generally, problems concerning population health status may be regarded as problems of demand, while problems concerning health service delivery may be regarded as problems of supply. Accordingly, our proposal is structured to reveal some of the most salient problems of supply and demand for rural and remote communities everywhere. We understand

that the government of Manitoba must serve the interests of all Manitobans and that what we propose must also be sensitive to the broader picture. As well, we understand that while proposals to supply solutions to the problems in Manitoba must fit the resources of the province, these proposals should not be restricted to home-grown ideas, models and/or solutions. Since rural and remote communities exist and have existed across the globe for many years, and the problems of providing health care services in such communities are notoriously common across diverse cultures with diverse resources and constraints, any reasonable feasibility study to address our problems must give serious consideration to the full range of supply solutions, whatever their origin.

## **Demand Problems**

At the beginning of their fine review of ways to solve the health status issues in rural and remote communities, Wilson, et al. (2009, p.1) wrote

“Rural communities [around the world] are on average sicker, poorer and less well educated; they also have worse access to health care than people in urban areas. This discrepancy between health needs and service provision is captured by Hart’s [1971] ‘inverse care law’, which states that those with the greatest health needs usually have the worst access to healthcare services.”

A mean rural population density of one person per square kilometer creates unique and special requirements for the delivery of health care (Society of Rural Physicians of Canada, 2009). Many studies have shown that Canadians living in rural and remote areas are at risk because of a number of interrelated variables. These include:

- limited access to health care and information;
- lack of transportation;
- limited finances;
- distance to medical professionals;
- the nature of rural physician practices, and,
- local attitudes and beliefs.

(Liu, 2007; Romanow, 2002; Leipert, Matsu, Wagner & Reider, 2006; Eley & Baker, 2007; Humphreys, 2009; Smith, Humphreys & Wilson, 2008; Public Health Agency of Canada, 2006).

As well, rural Canadians have increased levels of poverty, higher unemployment, and lower levels of formal education than their urban counterparts (Liu, 2007; Thomlinson, McDonagh, Baird Crooks & Lees, 2004; Public Health Agency of Canada (PHAC), 2006). Health disadvantages include higher mortality rates (Public Health Agency of Canada (PHAC), 2006), respiratory disease (Pampalon, Martinez & Hamel, 2006), shorter life expectancy, certain types of cancer (notably cervical, breast, melanoma, and prostate), and cardiovascular disease (Smith et. al., 2008; Thomlinson et. al., 2004).

There are also particular health risks associated with rural industries (Hays, 1999; Public Health Agency of Canada, 2006). Mining, forestry, fishing and farming pose a higher risk of accidental injury and death (College of Family Physicians of Canada (CFPC), 1999). In addition, Smith et. al., (2008) found that rural populations generally display a greater incidence

of less healthy behaviours. Behaviours such as the consumption of less nutritious foods, elevated rates of smoking, lower levels of physical activity, high alcohol consumption, as well as problems of obesity, and psychosocial stress, are often reflective of the socioeconomic characteristics of many rural areas (PHAC, 2006; Pampalon et. al., 2005).

More than 1,172,000 million Canadians are of Aboriginal ancestry (Statistics Canada, 2006). Statistics Canada (2006) reports that the Aboriginal population has been growing faster than the non-Aboriginal population. Studies have shown that Aboriginal people have poorer than average health (Johnson, Vermeulen, Toth, Hemmelgarn, Ralph-Campbell, Hugel, King & Crowshoe, 2009; Voaklander, Thommasen and Michalos, 2006; Michalos, Thommasen, Read, Anderson and Zumbo, 2005). Canadian Aboriginal people are at a higher risk than the Canadian population as a whole for obesity, unintentional injuries, diabetes (Johnson et. al., 2009; Grigg, Thommasen, Tildesley and Michalos, 2006; H. Thommasen, Berkowitz, A Thommasen and Michalos, 2005) and other chronic illnesses (Barton, Thommasen, Tallio, Zhang and Michalos, 2005; Thomlinson, McDonagh, Baird Crooks, Lees, 2004). Many Aboriginal people live in small rural, remote and northern communities.

## Supply Solutions

Curran, et al. (2007) provided an excellent overview of Canadian initiatives to supply doctors for rural practice. In 2003-04 survey questionnaires were sent to “the deans and/or associate deans of the 17 medical schools in Canada. . .[with] questions pertaining to the type, nature, and characteristics of programs and initiatives at the UGME [undergraduate medical education], PGME [postgraduate medical education] and CME/CPD [continuing medical education/continuing professional development] levels of medical education” (pp.450-451). The following summary remarks capture their main findings.

“Fifteen of the 17 medical schools (88.2%) reported having some sort of rural medicine placement/learning experience available to undergraduate students during the pre-clerkship [pre-clinical] phase of their training. . .

All 17 medical schools reported some type of rural medicine placement/learning experience for undergraduate students during the clerkship [clinical] phase of their training. . .[with participation] mandatory and ranging in duration from four to 32 weeks. . .

Eleven medical schools (64.7%) also reported mechanisms for supporting students with rural interests. These mechanisms included rural faculty, mentorship, or advisor programs, and the provision of awards or other financial incentives. . .

(70.6%) reported that their admissions committees included rural physicians, other rural allied health professionals, or rural community stakeholders. . .

[29.4%] indicated they had encouraged the admission of students from rural areas. . .[with special policies such as] regional assignment of seats, not requiring MCAT because of possible bias, differential GPA cut-off based on community of origin, and rural/remote suitability score based on responses to specific questions assessing experience with rural communities. . .

(94.1%) indicated having some strategies to recruit candidates with an interest in rural practice into residency programs. . .[such as] the establishment and provision of specific Rural Family Medicine streams and programs, the inclusion of such streams/programs as part of the Canadian Resident Matching Service (CaRMS), and various promotion and information sessions. . .

[70.6%] identified the establishment and provision of specific Rural Family Medicine streams or programs. . .

All. . . reported having some sort of rural medicine placement/learning experience available to residents during their family medicine residency training. At 16 of these schools, participation of varying duration is mandatory for residents. . .

All. . . reported having specialty residency programs that include training opportunities in rural communities. . .

All. . . reported opportunities for advanced procedural skills training for family medicine residents and/or primary care physicians. . .

(94.1%) indicated that they provided organized and supervised clinical traineeships for practicing physicians to upgrade their clinical competencies in areas related to rural medicine. These opportunities vary in duration and availability. . .

(94.1%) reported that their CME offices provided some sort of outreach programming to rural communities, such as regional CME workshops. . .

[82.3%] provided CME programming to rural areas using telehealth or distance learning technologies. . .

(94.1%) provide information support services (e.g., access to the library catalogue and databases such as Pubmed or document delivery” (Curran et al., 2007, pp.452-457).

While the authors presented an impressive array of initiatives, they concluded with the comment that “How effective these approaches are in enhancing the rural medical workforce is an area for future examination” (p.458). Fortunately, a group of researchers in South Africa recently published an excellent study addressing precisely this relative effectiveness question.

Wilson, et al. (2009) searched the PubMed database using the key word phrase “(rural OR remote) AND (recruitment OR retention)” in July 2008, found 1261 references and reduced them to 110 articles acceptable for further analysis. The vast majority of the articles were based on “retrospective observational studies and questionnaire-driven surveys”, with “very few scientifically rigorous intervention studies” including a few “primary intervention studies”, i.e., a few studies had before and after research designs (none with randomized control trials) and research questions set up before interventions with precise definitions across research locations, student selection criteria, education types, locations and so on.

Five “intervention categories” were specified:

“Selection: Focus on criteria to select students. . .[to] increase the likelihood of retaining their services in rural and remote areas [i.e., geographic origin, ethnicity, gender, career intent, service orientation]. . .

.Education: focus on strategies that optimize medical training programs [i.e.,content of training curriculum, exposure – clinical rotation]. . .Coercion: Focus on the use of authoritarian methods. . .to

force health professionals into rural practice [i.e., registration requirement, pre-requisite for specialization, international recruitment]. . .Incentives: focus on. . .financial incentives or bursary

schemes. . .Support: focus on . . .ways to support the health professional while practicing in rural locations [e.g., continued professional development, specialist outreach, time-off, life-style issues – flexible work schedules, child minding, accommodation]” (p.3).

Many different definitions of “rural’ and/or ‘remote’” were found in the literature and used. Although the authors warned readers that “none of the evidence discussed in [their] review was rated as convincing”, they did try to evaluate the strength of evidence in each study using a simple 5-category system. Briefly,

“A strong rating was defined as ‘consistent findings from multiple studies (retrospective and/or prospective) performed in various settings, where the independent effect of the particular variable was confirmed through multivariate analysis’. [With multivariate analyses one is able to assess the total explanatory power of one’s predictor variables as well as the marginal impact of each predictor variable

when all others are held constant as control variables.] Moderate. . . 'consistent qualitative and/or quantitative findings from multiple studies and in various settings, but without multivariate analysis'. Weak. . . 'qualitative and/or quantitative findings that were inconsistent across studies or only reported in a single study'. Absent. . . 'no evidence meeting any of the set criteria'" (p.3).

In broad strokes, they concluded that

"The available evidence indicates that well-defined selection and education strategies hold value, which echoes the views of Strasser [2001] who stated:

*" . . .evidence shows that the three factors most strongly associated with entering rural practice after completing education and training are a rural upbringing, positive clinical experiences at the pre-vocational level, and specific post-vocational training for rural practice"* (p.12).

The following table captures the main findings of the South African group.

**Strategies for implementation and further evaluation**  
– **topics ranked according to the evidence available**

Need for implementation <i>Strong evidence</i>	Need for implementation and further research <i>Moderate evidence</i>	Need for more research <i>Weak or absent evidence</i>
Selection policies (consider selection profile) <ul style="list-style-type: none"> <li>- Rural origin (rural primary/secondary school)</li> <li>- Career intent (rural practice)</li> <li>- Gender (male)</li> </ul> Developing more medical schools in rural areas or developing more satellite campuses	Rural exposure during training Scholarships with rural service agreements Rural outreach/support	Selection on basis of ethnicity Developing optimal working models Coercive policies: community service Foreign recruitment

Source: Wilson, et al., 2009, p.13

These authors are very clear that

*"Government commitment to improve healthcare delivery to rural and underserved communities is essential, but policy should be guided by the best available evidence and every attempt should be made to generate rigorous evidence if novel or untested policies are adopted. The available evidence suggests that student selection, favouring rural applicants with a stated interest or 'career intention' in general practice and a service orientation, is the strategy with the greatest likelihood of reducing the rural-urban gap"* (p.12, emphasis added).

The Co-North American Regional Editor of Rural and Remote Health (The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy) was equally clear about the importance of government policies and initiatives when he wrote that

"The changes that have resulted in poor physician distribution are cumulative over a past century of decision-making. . . Current health policy awards the most lines of revenues and the highest

reimbursement in each line to locations and careers with concentrations [in urban areas]. Policy also shapes market forces, and both together shape career and location choices away from distribution outside [urban areas]. Only the most dedicated admission and training efforts can overcome policy effects that shape concentration. . . Physician distribution involves a common-sense approach to reverse concentration in origins, in training, and in policy. This is a challenge because it is those inside concentrations who lead medical education who determine the origins of the students admitted to medical school, the training locations and curricula, and the policy influences. *Physician distribution is complex because those inside must make the apparent sacrifices to achieve needed change, but they fail to realize that it is the populations outside who have been making sacrifices for generations.* Medicine is a challenging profession, and learning to defer self-interest in favor of patients or populations in need of care remains the ultimate top priority area” (Bowman, 2008, p.3, emphasis added).

With 10 million square kilometres and only 33,739,900 million people (Statistics Canada, 2009) Canada has vast rural areas where providing accessible high quality health care is a major challenge. The chronic and often critical shortage of physicians and nurses in rural, remote and Aboriginal communities is a major contributor to the challenge (Office of Rural and Northern Health, 2004; Romanow, 2002). While 28.5 percent of Canadians live in rural areas (Statistics Canada, 2006), only about 17 percent of family physicians and about four percent of specialists live there (Society of Rural Physicians of Canada (SRPC), 2001). Numerous studies have shown that the limited number of primary care physicians and specialists in rural areas creates an untenable workload for those who do choose rural practice. Thus, the combined problems of workforce shortages, longer working hours and on-call responsibilities, hospital closures and declining services have created an uncertain future for doctors considering a career in rural medicine (Eley, Young & Shrapnel, 2008; McConnel, Pashen, & McLean, 2007; Office of Rural and Northern Health, 2004; Lavanchy, Connelly, Grzybowski, Michalos, Berkowitz and Thommasen, 2004; Thommasen, Van de Wyede, Michalos, Zumbo and Hagen, 2002). As well, as Hensel, Shandling and Reelmeier (2007) note, “a perennial problem in health care for industrialized nations is a maldistribution of physicians that, in turn, contributes to long travel distances to health care services, limited access to care, and delayed follow-up.” Furthermore, research indicates that the training and recruiting of physicians is taking on an “urban centric educational paradigm” (SRPC, 2001).

Research has proven that health status decreases as one travels to more rural and remote regions (Romanow, 2002; Humphreys, 2009). Treatment of injuries is often impeded by the long distances emergency service must travel, by restricted diagnostic capacity and by delayed treatment or incomplete surgical capabilities in rural areas (Romanow, 2002; Smith et. al., 2008; Humphreys, 2009). Long commutes to regional service centres also mean that injuries due to traffic accidents are more prevalent among rural Canadians (Public Health Agency of Canada, 2006; Smith et. al., 2008; Pampalon et. al., 2005).

### **Where doctors are educated matters**

Strategies to fill the gap in rural health care provision have included the recruitment of internationally-trained doctors (Appendix One), increasing the numbers of medical graduates and delegating some medical work to other health professionals. While these may offer short-term relief, there is a growing body of literature supporting the view that medical education undertaken in a non-metropolitan setting, with a broad-based curriculum, is the best way for increasing and sustaining the rural medical workforce (Wilkinson, Laven, Pratt, & Beilby, 2003;

Veitch, Underhill & Hays, 2006; Strasser & Lanphear, 2008; Longombe, 2009; Heng, Pong, Chan, Degani, Critchon, Goertzen, McCready, & Rourke, 2007). Hensel, Shandling and Redelmeier (2007) summarize the literature as follows:

“...rural physicians are up to 4-5 times more likely than their urban counterparts to come from rural backgrounds (e.g., raised and schooled in a rural community). In addition, rural physicians are 2-3 times more likely to have had rural undergraduate training and 2-3 times more likely to have rural postgraduate training. All three characteristics are true of most rural physicians.”

Rural based medical education is often cited as a key component in increasing the number of rural physicians (Laven & Wilkinson, 2003). Rosenblatt et. al., (1992) found that the organization, location and mission of medical schools are closely related to the likelihood of their graduates to select rural practice. The provision of a positive clinical training experience and a chance to discover what rural medicine is about within a supportive educational environment is vital in nurturing a desire to pursue rural medical practice (Eley and Baker, 2006). Eighty percent of the graduates surveyed in a study of the Rural Clinical School at the University of Queensland stated that the program encouraged their desire to pursue a rural or remote medical career.

While rural rotations are not sufficient in themselves, exposure to rural practice does partially increase the likelihood of choosing to practice in rural communities. Mathews, Rourke and Park (2008) suggests that the Memorial University (MUN) medical school has made a contribution to the rural physician supply in Newfoundland and in Canada. In 2004, 12.6% of MUN graduates worked in rural Canada and 6.1% worked in Newfoundland. Similarly, Milligan et. al., (2009) found that by experiencing a rural surgery rotation at the University of Tennessee-Knoxville, more residents chose to practice in a rural setting when compared with residents before the initiation of the rural rotation.

Heng et. al., (2007) add that the Northeastern Ontario Family Medicine residency program in Sudbury and the Family Medicine North program in Thunder Bay have been successful in increasing the number of family physicians working in northern Ontario and rural areas. However, as noted above such practices in themselves are insufficient. Because of this, Lakehead and Laurentian Universities joined forces to establish the Northern Ontario School of Medicine (See details below.).

Overall, the literature supports the claim that students tend to practice close to and/or in environments similar to those in which they study (Ranmuthgala, Humphreys, Solarsh, Walters, Worley, Wakerman, Dunbar, & Solarsh, 2007; Heng et. al., 2007).

### **Rural Medical Education Provides A Good Training Environment for Rural Practice**

Rural and remote communities provide a rich learning environment in which students can rapidly acquire competences and confidence in a primary care and generalist setting (Maley, Worley & Dent, 2009). According to Snadden (2009, p.968),

“Rural areas do not just need family physicians with broad-based skills. They need specialists too, but they need ones that have a ‘generalist’ training. Currently, rural background students graduating with a rurally-based education can choose family medicine or an urban specialty training. Role modeling,

financial and status incentives encourage many of our young doctors to pursue sub-specialty fields. Their skills are then used on the smallest percentage of the very sickest of patients. Of necessity they have to pursue their training and future practice in urban-based tertiary care centres. This institutional pressure contributes to the maldistribution of physicians to rural areas – if we do not train generalists, there is nobody to work in rural areas.”

Numerous studies have illustrated the academic benefits of rural practice contexts. In a 2002 study conducted by Parry, Mathers, Al-Fares, Mohammad, Nandakumar & Tsivos, students noted that compared to traditional teaching hospitals, district general hospitals provided students with more educationally rewarding and stimulating teaching sessions. Similarly, Imperato, Rand, Grable & Reines, (2000) found community hospitals to be equivalent or superior to the principal academic hospital for teaching surgery. Both articles speculated that the positive outcomes came from greater individual attention and the personal atmosphere of a community hospital. Silagy, Prideaux, Newble & Jones (2000) report that rurally based students saw double the number of common medical conditions and assisted in, or performed, six times as many procedures as city-based students, with the result that the majority of the students were sure that they had a better educational experience than their urban counterparts (559).

Research has shown that a student’s academic performance is not compromised in a rural-based setting. In a study of the Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) model, students at surgical clerkship sites in community-based hospitals achieved a similar level of knowledge and on average scored higher on final examinations than students at urban teaching hospital sites (Tatum, Jensen & Langdale, 2009. See below for more details.). They further add that a student rotating in the community-based setting experiences an apprentice-type model and thus, the student is more likely to feel that the experience is much more individualized. In the study of students in the Parallel Rural Community Curriculum Program, Worley et. al., found that students’ academic performance improved in comparison with that of their tertiary hospital peers’ and in comparison to their own results in previous years. Masumoto et. al. (2008) also found that a change in academic standing was more pronounced in rural students than in urban ones.

Thistlewaite & Jordan (1999) emphasized the patient-centeredness of the community experience. In this study, students noted that the intimacy of the general practitioner environment tended to make students feel more at ease and therefore more likely to develop and pursue lines of questioning which they would not do in the ward setting. Students enrolled in the Rural Physician Associate Program (RPAP) at the University of Minnesota become part of a health care team in a rural community, working with a handful of primary care and specialist preceptors. Zink, Wagstrom Halaas & Brooks (2009), suggest that this model seems to foster an experience where patient-centered care occurs. They further suggest that the RPAP’s community model “appears to create a supportive learning environment that incorporates psychological safety, appreciation of differences, openness to new ideas and time for reflection – an ideal environment for developing professionalism (1005).”

High patient to student ratios available at remote sites (Conlin, 2004) not only provide medical students with opportunities to meet learning objectives, but also a range of experiences that influence medical careers. In his commentary titled *Community-based or tertiary-based medical education: So what is the question?* Gibbs (2004) states “The value derived from

sharing the teaching load, taking the student to where most of the clinical material resides and where most will practice cannot be underestimated” (589).

### **Where students come from matters**

Many studies support the contention that medical students with rural origins were more likely to become primary care physicians and engage in rural practice than their urban counterparts. (Mathews, 2008; Laven & Wilkinson, 2003; Masumoto, Inoue & Kajii, 2008; Rourke, 2005; Rabinowitz et. al., 1999; Easterbrook et. al., 1999; Geyman, et. al., 2000). Hancock et. al., (2009) and Rabinowitz et. al., (1999) argue that “rural upbringing”, defined as spending all of one’s childhood in a rural location, more than ten years in a rural location, or calling a rural place one’s childhood home, is the strongest predictor of rural practice choice. These same students also tend to practice in communities of a similar size range of their hometown (Matsumoto et. al., 2008). Hancock et. al., (2009) cite the desire for familiarity, sense of place, community involvement, and self-actualization as the major motivations for initial and continuing small-town residence choice. “Rural exposure through recreation, education, long-term residence, or a combination of these provides an early foundation of familiarity, resilience, and community/place integration that drives interest in post-graduate rural practice” (Hancock, 2009, 1374). Masumoto et. al., found (2008) that rurality of place of origin has a linear relationship with that of future workplace. Laven & Wilkinson (2003) and Easterbrook et. al., (1999) found that the likelihood of working in a rural practice is approximately twice greater among doctors with a rural background. To capitalize on these findings, many rural medical school programs offer preference for admission to students with rural origin. Rabinowitz et. al., (1999) found that graduates of the Jefferson Medical School Program that preferentially admitted applicants with rural backgrounds were 3 times more likely to practice in rural areas than those who graduated outside of the program.

Ranmuthugala et al. (2007) reviewed evidence concerning the claim that “rural exposure increases uptake of rural medical practice” and concluded that it was largely “inconclusive” because

“‘Rural exposure’ is complex and is quite varied in content and delivery. . .Rural exposure comprises more than merely decentralizing a training program. The establishment of Rural Clinical Schools [in Australia] to provide rural exposure also meant an expanded rural curriculum and increased emphasis on rural curriculum, with the intention of providing students with a favourable attitude towards rural practice. Is therefore necessary to identify the particular aspects of rural exposure that results in a favourable attitude towards rural practice, thereby influencing students to return to rural areas” (pp.286-287).

Just being rural does not guarantee rural practice. Adding seats at urban schools for rurally raised students is not the answer. As the University of Louisville notes in their rationale for the Trover Rural Scholars Program (High School Rural Scholar: Trover Health System),

“ . . . a student with an affinity for small town practice often attends college in a larger city. Next, many students enter training programs that require them to be in large medical centers for another 4-12 years. By the end of this phase, termed ‘urban disruption’, the student has become accustomed to big-city amenities, met new friends and perhaps become engaged or married to someone who is more likely to have ties to a larger city environment. The result is that although the basic affinity was present, recent experiences overwhelm the affinity and the student chooses urban or suburban practice.”

Rosenblatt, Whitcomb, Cullen, Lishner and Hart (1992) argue that universities interested in improving rural physician supply will need to create conditions that increase student interest in family medicine specifically. Their research found that family physicians have a predilection for rural practice. “They are far more likely than any other medical specialist to practice in the small and isolated rural counties where physician shortages are most acute and access to medical care most impaired” (1564). Donnon, Woloshuk, & Mybre (2009) found that students who identified family medicine as their discipline of choice were three times more likely to consider a rural community placement option.

The answer to the lack of doctors in rural practice is one that combines selection by background and interests with relevant education and training within a rural context. In order to address the health needs of rural Canadians adequately, rural doctors need to have a generalist training (Snadden, 2009; Milligan, Nelson, Mancini, and Goldman, 2009; and Hays, 1999). To be effective, an individual’s scope of practice requires a broad core as well as specific advanced clinical knowledge and skills, including Aboriginal health issues, emergency care skills and knowledge of population health (McConnel, Pashen & McLean, 2007; Smith and Hays 2004). Many physicians situated in rural hospitals provide obstetrical deliveries, administer anesthetics, assist in the operating room and staff the emergency room (Society of Rural Physicians of Canada (SRPC), 2009, 6). Humphreys (2009) adds that for most small rural and remote communities the focus must be on primary health care as the first point of contact with the health care system. The more remote a doctor is located, the broader her/his scope becomes (Smith & Hays, 2004). It is in these settings where the rural doctor plays a key role within the local social structure (Farmer, Lauder, Richards, & Sharkey, 2003). These doctors live and work within the communities they serve. Engagement in community life is deemed as important to their patients as the medical advice they give (Thomlinson et. al., 2004).

### **Alternative Training and Education Models**

The University of Manitoba has been accepting students into its medical program since at least 1979 and therefore its solutions to supplying needed medical practitioners merit special attention. Only some of its more salient solutions are mentioned here. “Throughout its history, UM has . . . adopted measures to increase the representation of rural and northern students in the medical education program and/or to encourage focus on rural and northern practice” (Watt, 2010, p.1). Data from the university’s Faculty of Medicine were included in the Curran, et al. (2007) report and comparisons with other Canadian universities as of 2003 can be made from the tables in that report. Here we will only mention some material from Watt (2010) and the Faculty of Medicine (2008) report *Our Medical School: Imagine Its Potential*.

Regarding Post-Graduate Medical Education (PGME), according to Watt (2010, pp.2-3),

“There are a total of 113 seats in the PGME program, of which 10+ seats are dedicated to training in rural family medicine (northern and remote). Three additional PGME seats are dedicated to francophone practice, which is primarily focused on providing service to rural areas. Those who train in the Urban Family Medicine graduate spots are also qualified and able to carry out rural practice (18 positions per year). There are also some graduate specialties such as Internal Medicine, Pediatrics, General Surgery, Obstetrics and Gynecology and Psychiatry where a portion of graduates practice rurally.”

Given this array of pathways to rural training and practice, it is difficult to know how to count input and output of rural/remote versus others. Using the table in Appendix One, it appears as if in the 10 year period from 2000 to 2009, the University of Manitoba has produced a total of 42 “doctors practicing outside Winnipeg by year of registration”, for an annual average of 4.2 per year and a total of 13.6% of the 310 registrations listed in the table. Relative to the other 9 years, the figure of 14 for 2008 is exceptional. If that figure is removed from the count, there would be a total of 28 (9% of the total) doctors, or 3.1 per year.

There are currently 110 seats in the UGME application process and, like the medical programs themselves, the process has evolved over time. As of 2009, consideration of applicants was based on 3 broad categories, Adjusted CPA = 10%, MCAT = 50% and a Personal Assessment Score = 40%. The Personal Assessment Score includes a “diversity provision and [a] rurality index [which are] weighted in terms of calculating the overall weight of the personal assessment [but are] confidential and not shared publicly by UM” (Watt, 2010, p.4).

Using statistics provided by the Council on Post-Secondary Education (which are not entirely clear), it appears that in the 31 year period from 1979 to 2009 there were a total of 13,181 applications to the University of Manitoba UGME program with 1145 (8.6%) coming from students in rural communities. The annual average of all applications was 425, ranging from 184 to 957 (i.e., range 773). The annual average number of rural applications was 37, ranging relatively widely from 17 to 71 (i.e., range = 54). The annual average number of rural applicants admitted was 17, ranging from 7 to 49 (i.e., range = 42). (Since the relatively high 2009 figure of 49 was considerably higher than the previous high of 26, it is not clear that the basis of comparison for ‘rural applicant’ was the same in 2009 as in previous years. Omitting the 2008 figures, the average number of rural applicants would be 16 ranging from 7 to 26.) The annual average percentage of rural applicants admitted (of rural applications) was 46%. The annual average number of all applicants admitted was 86, ranging from 72 to 110 (i.e., range = 38). The annual average percentage of all applicants admitted was 20%.

Among the developmental strategies from the Faculty of Medicine (2008) report, the following are particularly relevant to rural and remote education.

“Strategy #1: More emphasis should be placed on the enrollment of rural students in Medical school. . . [including] “in 2007 an Assistant Dean, Admissions who is based in Brandon. . . Streamlining of the admission process for all qualified First Nations, Métis and Inuit applications. . . Specific weight. . . attributed to an applicant’s ‘rurality’ . . .

Strategy #2: Improved student access in rural and remote locations to a high school education to adequately prepare students for advanced education. . .

Strategy #4: . . . Implement an increased number of demonstration projects across the province, including rural/remote areas. . .

Strategy #9: Rapid planning to expand teaching environments, explore Faculty positions for rural and remote physicians. . . beginning July 2009, the University of Manitoba’s Faculty of Medicine will offer a two-year Rural/Northern Physician Placement initiative program. Under the program, residents will receive unique education to prepare them for practice in our most remote and challenging environments. Participants must return a minimum two years of service to a northern Manitoba community where there is a need for their service. Upon completion of their service commitment, these physicians will have access to a guaranteed re-entry residency position in the speciality of their choice at the University of Manitoba. . .

Strategy #10: . . . Increased support from rural Regional Health Authorities to create ‘teaching units’ . . . move quickly to budget for, and realize the benefits of Tele-Health, Tele-Education, and health informatics more broadly to enhance and fully support any distributed education ventures. . .” (Faculty of Medicine, 2008, pp.5-9).

## Some University Models

To facilitate comparisons among the variety of education and training models existing in different universities around the world, we have tried to provide brief descriptions of some of them in a standard format. In general terms, programs and schools of rural and remote medicine are based on the “hypothesis of the homecoming salmon” which says that if one educates young people who are familiar with a region, feel at home there and “would find it natural to live and work there”, they will return to their place of origin and stay. Success of programs and schools should be measured by the relative success of this hypothesis compared to others, e.g., if we pay people more, reduce their on-call hours, design special curricula and experiences, find employment for their spouses, provide more electronic and human supports, increase local post-graduate training, etc. they will stay. Strasser and Lanphear (2008, p.2) provided the best overview of results of all the tests of alternative hypotheses when they wrote. “There is, in fact, no single solution to the rural medical workforce crisis. Improvement does come through a series of linked initiatives, each having an incremental effect and together they yield substantial change...”

### 1. Northern Ontario School of Medicine

*Location:* at Lakehead University in Thunder Bay and Laurentian University in Sudbury

*Year established:* 2002

*Year of first class entrance:* 2005

*Size of first class applicants:* 2,098 (2,098-1,892, 2005-2008)

*Size of first class:* 56 (same each year, 2005-2008)

*Main source of students:* 80 to 90% Northern Ontario, 40 to 50% from rural remote areas, 5 to 11% Aboriginal

*Year of first graduation:* 2009

*Area of catchment:* 800,000 sq km

*Population of Catchment area:* 840,000

*Mandate:* “providing undergraduate and postgraduate medical education programs that are innovative and responsive to the individual needs of students and to the health care needs of the people of Northern Ontario”

*Admission procedures:* MCAT is not required, GPA  $\geq$  3.0 on 4.0 scale required, applicants scores weighted “highest for applicants from Northern Ontario and other targeted backgrounds” (i.e., Aboriginal, rural, remote or Francophone), top 400 interviewed.

*Primary training aims:* family practice, primary care, community/public health

*Delivery modes:* “holistic curriculum...clinical placements occur in a diverse range of communities [over 70] and clinical settings supported by high quality electronic communications in the virtual learning environment”. “For one month of their first year, and 2 months of their second year, students are placed in remote and rural Aboriginal communities and get all of their instruction electronically. By their third year, they’ll do 9 months in a remote community.”

*Governance structure:* “registered as a not-for-profit corporation”, 35 NOSM Board members, Academic Council, “community engagement involves the development of interdependent partnerships where the communities, through Local NOSM Groups (LNGs), are as much a part of the School of Medicine as the main campuses in Thunder Bay and Sudbury...the LNGs act as the steering committee for all NOSM activities in the large rural or small urban communities that host third-year medical students. LNG members include local clinical faculty members, hospital leaders, local government

nominees, members of the physician recruitment committee and representatives of local post-secondary institutions in these communities”.

*Success rates:* In a very carefully executed study of 194 graduates of rural and remote medical programs at Sudbury and Thunder Bay, covering the period from 1993 to 2002 (just prior to opening NOSM), Heng, et al. (2007) found that “7 out of 10 graduates established initial medical practice in northern or rural areas” and concerning retention, “just over two-thirds (68%) of all person-years of medical practice by...graduates [from the two programs] to place in such areas”. “One person-year in rural practice” was defined as “1 year of medical practice by a family physician in one or more communities classified as rural” and the latter were defined as “places with less than 10 000 people and where less than 50% of the work force commutes to work in an urban area”. These results were supplemented by a study by Chan and Schultz (2005) which reported that “between 1992 and 1993 and between 2001 and 2002, northern Ontario was the only region of the province with a consistent increase in physician supply...The authors of that report suggested that the...programs, coupled with other measures, such as incentive grants, bursaries with return-of-service obligations and locum programs, contributed to an increase in physician supply in northern Ontario”.

*Sources:* Strasser and Lanphear (2008), Kondro (2006), Heng, et al. (2007), Chan and Schultz (2005).

## 2. University of Tromsø Medical School

*Location:* northern Norway

*Year established:* 1968

*Year of first class entrance:* 1972

*Size of first class applicants:* about 900

*Size of first class:* 50

*Main source of students:* “Half of the places are reserved for students from Northern Norway, and the northernmost county which has the greatest lack of physicians, is guaranteed 8 places each year...10% of the students may be accepted with somewhat lower qualifications than the other applicants if they belong to an ethnic minority, such as the Lappish group”.

*Year of first graduation:* 1979

*Population of Catchment area:* 450,000

*Admission procedures:* “No tuition fees are charged at medical schools in Norway”.

*Primary training aims:* “a better balance between clinical medicine, basic science and community medicine...the aim is to present patients whose cases throw light on the basic science topics as well as clinical and community medicine. Throughout the curriculum main emphasis is put on teaching ethics, cooperation with other health personnel, priorities of the most important health problems and health economics...An important goal of the curriculum is to teach the student a scientific approach in order to acquire a critical and searching attitude while practicing medicine, and to be able to evaluate scientific and health work.” In short, this program is aimed to train medical practitioners and research scientists. The program includes a thesis that “may be based on an experimental, clinical or community medicine study of original nature...”

*Delivery modes:* “medical training takes 6 years, and the students are admitted after 12 years of school”. The curriculum is divided into 3 stages. Stage 1= 1 year of undergraduate studies (philosophy, community medicine, social/biological sciences, chemistry/biochem, physiology, intro clinics; Stage 2= 2 1/2 years “integrated teaching in basic science, clinical and community medicine...selected clinical cases”...Stage 3=2 1/2 years “clinical sciences presented in traditional way. Four months of practical clinical work at other hospitals, 2 months in the primary health care in rural Norway.”

*Governance structure:* There are 3 institutes (medical biology, clinical medicine, community medicine) with “many departments, and each institute has a council comprising elected representatives from all groups including staff members, students and non-scientific personnel. Above the institutes there is a Board of Medicine and a Board of Education.”

*Success rates:* First 11 year results showed 56.1% of grads stayed in northern Norway, 82% of those who grew up in that area stayed, compared to 37.7% who grew up in the south. “there are no serious vacancies in the primary health care services in the region”.

*Sources:* Magnus and Tollan (1993), Løchen (1991)

### 3. James Cook University School of Medicine

*Location:* Townsville and Cairns

*Year of first class entrance:* 2000

*Size of first class:* 64 students

*Main source of students:* “In the first two entry cohorts, approximately 50% of students are from northern Australia and approximately 40% have a rural background”. Selection criteria gives precedence to applicants from rural Australia, points for rurality of school experience, semi-structured interview. Recruitment starts early in high school and grade schools.

*Year of first graduation:* 2005

*Population of Catchment area:* Townsville’s population is 160,000, Tropical Australia 995,000

*Mandate:* to increase “the number of medical graduates who understand rural, remote, Indigenous and tropical health issues and who would subsequently choose rural (non-metropolitan) practice”

*Admission procedures:* “a selection process that has increased access to the medical school for students with a rural background, particularly from northern Australia”.

*Size of enrollment (most recent):* 700 (years 1-6)

*Primary training aims:* Preparing doctors to serve in rural and remote communities, curriculum focus on tropical health and exotic medicine.

*Delivery modes:* program is 6 years long, “highly integrated, more community based and oriented to small group-learning processes. . .we enjoy the support of many community groups in program design, implementation, assessment and evaluation”. Strategies include “training local rural background students; utilizing suitable curriculum design; providing career opportunities locally; and providing postgraduate training locally. . .greater exposure to emergency medicine than any other medical course in Australia or New Zealand”. “That graduating students remain committed to non-metropolitan practice supports the school’s contention and that of others around the world, that medical education undertaken in non-metropolitan settings, with a broad-based curriculum, is the best vehicle for increasing the rural medical workforce”.

*Success rates:* “two-thirds of students have sought and taken posts...in northern Queensland”.

*Sources:* Hays (2001), Veitch, Underhill and Hays (2006).

### 4. University of Washington School of Medicine (WWAMI =Washington, Wyoming, Alaska, Montana, Idaho)

*Location:* “The University of Washington School of Medicine (UWSOM) is a state medical school serving a 5-state region...the largest geographic region in the United States for which there is only a single medical school.”

*Year established:* 1993

*Delivery modes:* “Students spend their first preclinical year in their home state, joining their Seattle-based classmates at the UWSOM campus for the second year. Students strongly are encouraged to complete their basic third-year clinical clerkships in their home state. Fourth-year clerkship electives are available throughout the region and are open to all students...Sites are assigned 1 to 2 students for a 6-week surgical clerkship...the student works directly with the attending surgeons...online simulated cases are used to supplement any categories [of surgical problems] in which students do not have a patient encounter”.

*Success rates:* Survey research on 346 third-year students in the 2005-07 period revealed that “Students at WWAMI sites rated their educational experiences as equivalent or better than the experiences of their classmates at the sites in Seattle for all 5 [assessment] measures. Significantly higher ratings were observed at WWAMI sites for measures of time spent by faculty in student observation, the quality of the clerkship as a whole, and the overall contribution of the clerkship to the student’s medical education.”

*Sources:* Kondro (2006), Tatum, et al. (2008)

### 5. University of British Columbia satellite at University of Northern British Columbia (i.e., the Northern Medical Program)

*Location:* Prince George, BC and Victoria, BC (but our figures apply to UNBC campus only)

*Year established:* 2002

*Year of first class entrance:* 2004

*Size of first class:* 24

*Main source of students:* northern BC

*Year of first graduation:* 2008

*Area of catchment:* 500,000 km<sup>2</sup>

*Population of Catchment area:* 300,000

*Size of enrollment (most recent):* 32

*Primary training aims:* “the goal was to rapidly double the number of students admitted to medicine annually and to permit a portion of entering students to complete almost all of their undergraduate education at a single site of their choice” (Snadden and Bates, 2005, p.589).

*Delivery modes:* The program delivered is that of the University of British Columbia medical curriculum. “Students spend the first semester (August to December) at UBC in Vancouver and then move to the Northern Medical Program in Prince George for the remainder of their education. . .Core clinical training (known as clerkships) takes place during third year with the support of physicians who combine patient care with teaching. . .During the fourth year, students have elective opportunities throughout BC, Canada and beyond and participate in the Canadian Resident’s Matching Service (CaRMs) match. . .The NMP utilizes state-of-the-art teleconferencing to broadcast and receive lectures from medical professionals throughout BC.” The first two years of courses focus on biological and behavioural sciences, with ‘Problem Based Learning’ and “clinical material from the first day”. While some faculty members engage in research and students can be involved in research activities, the program is not particularly aimed at producing “medical practitioners and research scientists” along the lines of the Tromsø model.

*Success rates:* According to Snadden and Bates (2005, p.590), “. . .it will be a decade before we know what effect we have made on the numbers of Canadian-trained physicians in the small communities, rural and northern areas of BC. The first signs, however, are encouraging”. Lovato, Bates, Hanlon and Snadden (2009) reported results of a small qualitative study of the “community-wide impacts” of the NMP on Prince George, based on interviews in 2004 with 8 key informants from the sectors of “health, education, business, economy, local politics, and media”. While the NMP was very new and the informants were certainly not disinterested, unbiased observers of the local scene, the results are worth mentioning. The “perceived impacts” were listed as “Improved recruitment and retention of doctors, Canadian medical graduates and allied health professionals. . .Increased number and quality of university faculty, enhanced university status. . .Businesses can attract workforce more easily. . .New high-income jobs and government dollars diverted from the south and urban centres . . .Improved relationships between provincial government and community. . .Positive media interest from across Canada” (p.459). The authors concluded that “the development of social capital” should be included along with the standard outcome variables of such initiatives, e.g., “learner outcomes, including examination performance, career choice and eventual location of practice”. According to Hanlon, Ryser, Crain, Halseth and Snadden (2010, p.257), “When the NMP was announced in 2002, there were 25 doctors in Prince George with faculty appointments in a well-established family medicine residency programme. By 2005, the number of doctors with faculty appointments had risen to 140.” “Most of the [25] doctors. . .interviewed reported feeling that morale. . .improved since the NMP commenced as a result of the stabilizing of human resources, and increase in specialists, enhanced support and better cooperation within the medical community. Participation in the NMP itself has improved doctor job satisfaction” (p.259).

*Sources:* UBC and UNBC websites; Snadden (2009).

## 6. Jichi Medical School

*Location:* Tochigi, Japan (town of 20,000 people 100 kilometres north of Tokyo)

*Year established:* 1972

*Main source of students:* All prefectures in Japan.

*Admission procedures:* “Every yeartwo or three high school graduates who are in agreement with the fundamental principles and philosophy of JMS are recruited from each prefecture across Japan. The total number of entrants has been about 100 every year, which is close to the average number for Japanese medical schools overall.” “It has been shown that medical schools located outside urban areas are more likely to succeed in recruiting graduates from rural areas (Rosenblott et al. 1992, Magnus &

Tollan 1993). . .students of JMS are more likely to have experienced country life, compared with those of most medical schools located in urban and metropolitan areas. It has also been reported that primary care doctors move significantly shorter distances from their residencies than those from the other specialties (Dorner et al. 1991).”

*Primary training aims:* “The object of JMS has been to train doctors with clinical skills and a commitment to rural practice combined with the goal of making progress in medical science and promoting community health.”

*Delivery modes:* “Successful applicants usually study for 6 years at JMS and on their graduation return to their home prefecture for 2-3 years of postgraduate medical training. This training is included as part of the 9 years of contracted medical practice.” “All of the expenses associated with education at JMS are advanced to the students as a repayable loan. These expenses include tuition, entrance and equipment fees and living expenses for the 6 years of study at JMS. A contract between JMS and each student is a prerequisite condition for entry into the course. . .students can be exempted from repaying the loans if they complete a 9-year postgraduation period of work at a public hospital, clinic or government office to which they are appointed by the governor of their home prefecture. The working period specified by the contract is one and a half times the number of years of study at JMS.”

*Governance structure:* The school “was established and is managed by representative government agencies responsible for community health issues from the total of 47 prefectures of Japan. Management of JMS is supervised by the Ministry of Home Affairs of Japan. Each prefecture has provided the same level of funding to JMS every year. The funding by each prefecture, except for one, has been subsidized by the national government, as part of the local tax scheme. About one-third of the funding has been dispursed to the students as loans...”

*Success rates:* In 1995, there were 792 (42%) of 1871 graduates working in rural areas. It was not “possible to collect information on the activities of other Japanese medical schools in rural doctor recruitment because relevant data have not been published. . .However, there is no doubt that JMS has produced the most graduates working in rural areas among Japanese medical schools. . .Nine years of rural assignment are obviously effective for establishing JMS graduates in rural areas in the long-term. Although improvements are needed as mentioned, the JMS recruiting system has demonstrated its efficacy and serves as a practical response to the shortage of rural doctors, which has been a global problem that has not yet been resolved.”

*Sources:* Inoue, Hirayama and Igarashi (1997).

## **Satellites in Development**

In May 2006, announcement was made of a satellite of McMaster University’s medical school to be opened at the University of Waterloo Downtown Kitchener Health Sciences Campus (McMaster, 2006), and in November 2008 announcement was made of a satellite of the University of Western Ontario’s medical school to be opened on the campus of the University of Windsor (Western, 2008). While the news releases did not emphasize any commitment to rural and remote medical education, they did recognize the importance of decentralizing medical education and research in the interest of building communities of medical practice outside the traditional urban and metropolitan hubs. New communities of medical practice can be huge engines of community development as well as providers of needed medical training and service. The McMaster program produces graduates in 3 years rather than 4, making it especially attractive for solving supply problems. In the words of the February press release, “A dynamic community with innovative thinking as its hallmark, along with a rapidly growing population, will allow for transformation of research advances and knowledge into health benefits, economic opportunities and improved health care.”

## **Some Methods of Delivering Education and Training**

### Online Interprofessional Health Sciences Education

The Institute for Interprofessional Health Sciences Education was established by Health Canada in 2005 to

“...design, develop, deploy, and evaluate online interprofessional education (IPE) modules to support interprofessional health care practice. The IIHSE was founded to promote interprofessional education across institutions, faculties, practice sites, and communities of practice. . .The Institute uses distributed learning – e-learning combined with *in situ* learning – for the delivery of interprofessional education, including the use of Web-based teaching and learning tools for encouraging problem-based learning, reflective practice, and the creation of a community of practice around IPE. . .” (Luke, et al., 2009, p.163).

E-learning is supposed to be a useful approach for addressing issues of “collaboration constraints such as time, scheduling, and geography. . .e-learning and collaborative models of educational delivery. . .are time and cost effective and allow for sharing of resources and expertise” (Luke, et al., 2009, p.164). As one would expect, there are also disadvantages. In particular Luke, et al. (2009, p.165) mention the following.

“The development of e-learning is costly in relation to providing face-to-face instruction. All materials must be preassembled, media created (which itself involves a long developmental trajectory), and a system put in place to house learning materials and track learner progress. Finding experienced facilitators for e-learning may be a challenge. Our recommendation is to find content experts and teach them how to teach online. Ongoing support for the facilitators and the learners is essential. Socializing professionals in practice to learning in this way may also be a challenge. . .the varied clinical schedules of our student participants created problems in trying to organize student team clinical placements following online courses. It was also difficult to recruit physicians to participate in the practice stream. A willingness to innovate may be a key driver of future interprofessional practice, or rather its effectiveness.”

### Telehealth

According to Pong and Hogenbirk (1999, p.3), in 1958 Canada became “one of the first countries in the world to apply telecommunications technology to health care delivery”. With such a running start, one would have thought that more progress would have been made by now. In fact, the term ‘telehealth’ applies to a wide variety of forms of telecommunications technologies applied to a wide variety of health-related activities.

“Telehealth, broadly defined, is the use of communications and information technologies to overcome geographic distances between health care practitioners or between practitioners and service users for the purposes of diagnosis, treatment, consultation, education and health information transfer. Telehealth is increasingly seen as an important tool for enhancing health care delivery, particularly in rural and remote areas where health care resources and expertise are often scarce and sometimes non-existent” (Pong and Hogenbirk, 1999, p.3).

The year before the Pong and Hogenbirk article appeared, the Canadian Society of Telehealth was founded and even before that, the *Journal of Telemedicine and Telecare* was launched. So it is fair to say that the field has not suffered from inattention. An array of problems remain, besides statutory regulation and licensing, which was the central topic of Pong and Hogenbirk’s 1999 paper, and reimbursing issues, which was the central topic of Pong and Hogenbirk (2000). The National Initiative for Telehealth Guidelines (NIFTE) issued its *Environmental Scan of Organizational, Technology, Clinical and Human Resources Issues* (NIFTE, 2003) in a major effort to address the “major barriers to widespread use of telehealth

and/or the evolution of telehealth into the existing health care systems” (NIFTE, 2003, p.ix). The NIFTE

“...was founded to bring the stakeholders together to develop and reach consensus on a comprehensive framework of guidelines that can be utilized by the various organizations within the health community such as health provider organizations and the Canadian Council for Health Service Accreditation (CCHSA)” (NIFTE, 2003, p.ix).

A summary of the 2003 NIFTE guidelines was published by Hogenbirk, et al. (2006), covering “(1) organizational interoperability; (2) technical interoperability; (3) personnel requirements; (4) quality and continuity-of-care responsibilities; (5) telehealth services; (6) remuneration; and (7) quality assurance processes [i.e., accreditation issues]” (p.64). The National Initiative seems to have been an *ad hoc* effort by some well-informed and concerned people, and the limitations and important areas of agreement for their work were identified in the summary publication. Among other things,

“The survey respondents and key informants were not a random sample, but were broadly representative of people involved in telehealth across Canada. Some respondents and key informants belonged to the same organization. . .interviews. . .did not include official representatives from regulatory bodies or professional organizations. . .Notwithstanding the possible limitations. . .The majority of the [84] survey respondents and [48] key informants were in favour of accreditation. . .” (Hogenbirk, et al., 2006, pp.69-70).

Six years after the NIFTE guidelines and three years after the summary publication, Snadden (2009, pp.967-968) wrote

“Are we thinking about what kind of system we need to develop to allow young doctors, who choose to work in rural areas, feel they have accessible support and time away? Increasingly, we work more with different members of the health care team (Brems et. al. 2006; Hays 2008) and we use technology such as telehealth networks (Jarvis-Selinger et al. 2008). There are examples of such developments working well in rural areas to enhance our ability to deliver services, but uptake seems patchy and we have to ask ourselves if we are ready and able to move to widespread adoption of such techniques? It would appear not as we still seem to get mired in tradition, policy or payment issues that prevent us from moving on.”

This is not the place to review and assess the contribution that telehealth technologies can make to supply-side health-related activities, but such technologies should be in the mix of matters for review in the feasibility study.

### Telephone Triage

Hogenbirk, Pong and Lemieux (2005) conducted a survey of 2389 patients who had participated in an experiment in telephone triage. The idea behind such triage is that it is supposed to “help reduce medically unnecessary visits and thus free-up available resources ,as well as to help reduce patient travel and associated costs”. The authors cautioned readers that their results may have been distorted because their sample of respondents might have been biased by “self -selection and social desirability bias”. Notwithstanding this caveat, they reported that “teletriage may have decreased visits to emergency departments relative to patient intent, and this effect appears to be stronger in communities with weak or no commuter flows. . .than in urban areas. . .Visits to physicians’ offices or clinics may have increased relative to patient

intent, but only for non-urban areas. . .with strong, moderate, weak, or no commuter flows” (Hogenbirk, Pong and Lemieux, 2005, p.229).

After reviewing several papers indicating inconsistent results and unclear messages, the authors concluded that

“The teletriage service was likely one of several factors that influenced the northern Ontario patient’s use of medical services. Other factors include availability, access, cost, and time. For example, the higher percent of patients living in remote areas who intended and then went to the ED and the lower percent who intended and then visited the physician’s office or clinic may reflect the perceived or actual availability of medical services in these regions. The literature suggests that residents of northern Ontario have insufficient primary care relative to all Ontario residents (Shah et al., 2003), and that residents of the Canadian north have significantly lower self-reported health status and significantly higher self-reported un-met health needs relative to all Canadians” (Mitura and Bollman, 2003).

### **Evaluating University Models and Methods for their Feasibility as Solutions to Medical Services Supply Problems in Rural and Remote Communities of Manitoba**

In the proposed feasibility study, we intend to evaluate the models and methods described above with an aim to determining which seem to provide the most likely successful solutions to the medical services supply problems in rural and remote communities in Manitoba at the most reasonable costs. While training primary care physicians is, as we have seen, central to practically all solutions, focus cannot be limited to such training. The study will review the contributions that can be made by other health care practitioners and by a variety of methods of training and health care service. It will include issues of quality care, meeting accreditation standards, and the diverse (not just financial) overall costs and benefits to rural and remote communities and to the Province of Manitoba in general.

#### **Governance Model**

Brandon University will be the recipient of the funds and will be responsible for conducting the feasibility study. Brandon University will invite participation from our sister institutions: the University of Manitoba, the University of Winnipeg and the University College of the North in conducting this study. As well, representatives from the Northern Ontario School of Medicine will be invited to serve in an advisory capacity to this project.

#### **Initial Memorandum of Understanding for the Feasibility Study**

The Presidents of the University of Manitoba, the University of Winnipeg and the University College of the North will be invited to meet for the purposes of initiating and signing a memorandum of understanding to facilitate the feasibility study. Should any of these institutions prefer not to participate in this study, the remaining institutions will become signatories to the MOU.

#### **Planning and Implementation Committee**

The purpose of this committee will be advisory to the project. The membership will include the following:

- The Vice-President Academic of the institutions or their designate;
- The Dean of Medicine or, in other institutions, the Dean of Health Related Studies;
- Two faculty members from each institution with relevant expertise, to be determined by those institutions;
- One person from each health authority
- One primary care physician, selected by each institution
- One budget analyst from each institution
- One or more representatives from the Northern Ontario School of Medicine

### Advisory Committees

Brandon University will and other institutions may establish local advisory committees with representation as determined by those institutions to serve local needs and interests.

### Timeline

This project will be completed and report submitted to the Council of Post Secondary Education by September 2011.

<b>Work Plan Steps</b>	<b>Description</b>
<b>Project Activities</b>	<ul style="list-style-type: none"> <li>• Hiring the consultant.</li> <li>• Negotiation and signing of the Memorandum of Understanding among the Universities and the University College.</li> <li>• Creation of Planning and Implementation Committee.</li> <li>• Creation of Community Advisory Committee(s).</li> <li>• Planning and Implementation of the Comparative Rural Medical School Models workshop.</li> <li>• Visit relevant rural medical schools.</li> <li>• Conduct consultations and focus groups.</li> <li>• Submit final report of feasibility study to COPSE (and government).</li> </ul>
<b>Proposal parameters</b>	<ul style="list-style-type: none"> <li>• Development of the models and methods that the feasibility study is attempting to evaluate.</li> <li>• Identification of desired results, or vision of the future both short and long-term.</li> <li>• Listing of the factors that will influence change in the context of education, recruitment and retention of primary care physicians and other health care practitioners by a variety of methods of training and health care service for rural and remote Manitoba.</li> <li>• Listing of the general successful strategies or “best practices” that have helped similar programs achieve the kinds of results the program promises.</li> <li>• Analysis of the curriculum, organizational structure, governance, recruitment and delivery models of successful programs.</li> </ul>

<b>Medical School at Brandon University Feasibility Study Budget</b>	
Consultant - ten months at 2/3 time. Qualifications as MD/PhD with significant teaching and administration experience in undergraduate medical education.	
Research assistance, writing, printing costs logistical arrangements (optional proposals).	
Planning and Implementation Committee	
Consultations and focus groups with Rural and Northern Regions in Manitoba.	
Community Advisory Committee	
1.5 day workshop - includes delegates from James Cook, WWAMI, Northern Ontario, University of Manitoba Deans of Medicine, as well as key stakeholders from Brandon and Rural Manitoba. For travel, accommodation, food and no honoraria.	
Travel to example medical schools - James Cook, WWAMI, Tromso, Northern Ontario and US Midwest.	
Miscellaneous consumables and other costs	
<b>Total</b>	

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### Appendix One

<b>Doctors Practicing Outside of Winnipeg by Year of Registration</b>										
<b>Area of origin</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Manitoba	3	4	2	4	1	1	6	4	14	3
Other Provinces	1	1	1	0	1	2	2	2	2	0

Sub Sahara Africa	13	18	18	20	0	5	2	0	3	1
North Africa/Mid-East	0	0	0	0	2	14	26	33	27	18
South Asia	0	0	1	1	3	2	3	8	5	12
Europe	0	0	0	0	2	2	1	1	3	1
United Kingdom	0	0	1	0	0	0	2	0	0	1
Americas	1	0	0	1	2	0	1	1	0	1
<b>Total</b>	<b>18</b>	<b>23</b>	<b>23</b>	<b>26</b>	<b>11</b>	<b>26</b>	<b>43</b>	<b>49</b>	<b>54</b>	<b>37</b>

In the last decade, less than 20% of new rural doctors practicing in Manitoba were trained in Canada.

Source: Dr. Robin Carter using data from the College of Physicians and Surgeons of Manitoba

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