

**Report of the
Brandon Medical Education Study**

**Submitted to the Steering Committee
By the
Co-Lead Consultants**

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July 3, 2012

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ACKNOWLEDGEMENTS

We wish to thank all those who assisted us by agreeing to be interviewed and sharing their expertise, experience and perspectives on “distributed medical education”. Their willingness to do so amid busy schedules was impressive and much appreciated.

Many of those same individuals deserve additional thanks for their participation in the Workshop hosted by Brandon University in January 2012. Their collegiality and genuine interest in the “options for distributed medical education in Manitoba” not only made the event a great success, but also helped “warm the room” during what were some of the coldest days of the 2012 Manitoba winter.

We also wish to thank all those who attended the meetings we held in various communities. Their perspectives on the medical education options and the issues of recruiting and retaining physicians in their towns and villages gave us important understandings of the “rural realities” that are not well captured in either the popular press or scientific literature.

We also wish to acknowledge a number of organizations and individuals whose contributions to this project deserve special mention. Senior staff at Manitoba Health and COPSE provided both valuable advice and data that were crucial to our elaboration of the Manitoba “context”, especially our analyses of physician human resources and the development of our “needs-based” projection model. At the University of Manitoba, Maureen Newman, Executive Assistant to the Dean of Medicine worked magic in arranging interviews and meetings, and Karen Howell, Project Manager, Office of the Dean, expertly guided us through the massive accreditation files. Keith McConnell, Director of Operations, Faculty of Medicine, deserves high praise for his instruction of a “student driver” in the use of the “road-tested” accounting vehicles we used to cost our recommended options; his patience in answering questions—many of which were naïve—and his prompt responses to multiple data requests were truly appreciated. We also wish to thank Rebecca Klass for ably assisting in our review and distillation of the burgeoning literature on DME, and for numerous other favours. Finally, it was our great good fortune to work with Amy Wyntjes. Amy relocated to Manitoba from New Brunswick in mid-2011 and joined the Office of the President at Brandon University as a Research Associate assigned to this project. Amy assumed responsibility for organizing the community consultations and the Brandon Workshop, and also took the lead in our environmental scan of DME programs at Canadian and foreign medical schools. As if all this were not enough, she cheerfully worked long hours to consolidate and edit both the draft and final reports to ensure we delivered “on schedule”.

We are thankful as well to the members of the Steering Committee who agreed to extend that schedule by one month. From the outset we were concerned that we would be hard-pressed to complete our agreed “deliverables” by the original deadline of March 31, 2012. In the event,

the extra month was not only welcome but essential to our completing a report that we hope serves the purposes of the Steering Committee.

We would be remiss (and also very foolish) not to acknowledge our spouses, Georgia Klass and Fran Horne, who showed great patience and tolerance in accepting the “opportunity costs” we imposed on them due to our project priorities, especially so during the last three months. To them we offer our sincere thanks and a promise to “dial-back” our professional commitments and spend more time with our families.

We hope the Steering Committee understands when we say a project of this scale and scope represents a “minefield” of potential errors of both the omitted and committed variety. While we can reassure the Committee that we have worked diligently to avoid all such errors, it is inevitable that some will have escaped our scrutiny. For such departures from “best practice” research and consulting, we alone assume responsibility.

EXECUTIVE SUMMARY AND GENERAL OBSERVATIONS

Here we provide explanatory commentary on important analyses, summary assessments and various recommendations reported in the following study. We deem it important to concentrate this end-point discussion on matters that will help the Steering Committee in its deliberations on what should and should not be included in any solution to the medical training needs of the province.

First, our key recommendation that the solution not involve the establishment of a new and independent medical school at Brandon University is based on our ‘all things considered’ assessment of that option in the context of *Manitoba’s* needs. That assessment was informed by both ‘lessons learned’ in other jurisdictions and by our ‘closer to home’ appraisals of the province-wide need for more physicians, especially family physicians in ‘full-service’ primary care practices. First, in terms of addressing this need for primary care physicians with a rural inclination and capability, we conclude that current programs, planned and in place, in the UMFOM are not just present, but exemplary. Second, we took particular note of the precedent set by the Northern Ontario School of Medicine as a pioneering venture mandated to specifically train physicians for these types of practices in rural and northern Ontario. We concluded that the NOSM model uniquely fit a ‘niche’ in its own environment, including a catchment population of nearly one million northern Ontarians and a *pre-existing* foundation of postgraduate medical education that had been painstakingly constructed and maintained in northwestern and northeastern Ontario by the Faculties of Medicine at McMaster University (NOMP) and the University of Ottawa (NOME). For principally those reasons, we have appraised the NOSM model to be a poor fit for Brandon, judged not only by the much smaller regional ‘catchment’ population, but even by that population when doubled to include all Manitobans who currently reside outside Winnipeg’s ‘perimeter highway’. These two elements combined with our conclusion from the analysis of the physician resource status of the province that the present current input of new MDs was in a reasonable range, *provides the underlying logic for our judgment that creation of a free-standing medical school in Brandon would be ill-advised.* We do so fully understanding this will be disappointing to many advocates, as well as to those among the attendees at our community consultations who asserted that anything short of a free-standing school would be ‘no solution’ to the problems they have long experienced in their towns and villages (see Section 3 for pertinent summaries). However, it is our judgment that fully implementing the Rural Track Options as we describe, and building toward the Satellite Option (Option 2) will meet the physician resource needs of Manitoba’s rural and northern communities in a more cost-effective and timely fashion.

We then gave more in-depth consideration to the other two options specified in our ‘project parameters’: a satellite program expansion of the University of Manitoba in partnership with Brandon University; and the continuation/expansion of existing models of rotational and education experiences at the University of Manitoba (respectively positioned, but not so-named, as options ‘2’ and ‘3’ in the parameters document). Following our comprehensive review of relevant precedents in Canada and abroad (see Sections 4 & 5), along with a careful elaboration of the Manitoba ‘context’ (see Section 6), we again came to an ‘all things

considered' rationale for incorporating these two options into a progressive model featuring a defined temporal sequence beginning with the Rural Track (option 3) and evolving, when conditions warrant, into the Satellite Track (option 2).

For purposes of our detailed analyses, we refined the Rural Track option into a more specific temporal sequence we have called Rural Tracks 1 and 2. On our *pro forma* schedule, Track 1 would begin as early as July 2013 in progressing the required build-out of the Faculty of Medicine's postgraduate clinical campuses in Family Medicine and selected general specialties. Assuming official approval of the policy package, involving significant expansion in the number of R1 and R2 trainees in Family Medicine, our projected build-out of the PGME 'rural stream' at new FMEDEC sites proposed for Brandon, Boundary Trails and Steinbach could reach steady-state as early as 2016/17 (see details in Section 6d). At that time, or even one year earlier, with the Faculty having developed broader and deeper rural foundations in Family Medicine at the postgraduate level, the stage would be set for Rural Track 2. With sufficient numbers of R1 and R2 residents to supervise Year III and IV clerks, the rural CTU structure for Clinical Education could commence as early as 2015/6 for a charter cohort of twenty students. Implementation of Rural Track 2 is both logical and feasible but could be complicated by the proposed modification of the existing Med III/IV curriculum, particularly the suggested replacement of the 5-6 week 'block' rotation in Family Medicine with the 'longitudinal integrated community clerkship' (LICC) at the community campus locations.

With Rural Tracks 1 and 2 'alive and well', we propose an evolution to the Satellite Option (Option 2). We see this as the third (and final) phase in our model, with the decision to proceed conditional on the outcome of a more comprehensive assessment of the province's need for more 'home grown' physicians than was possible within the time and resource constraints of this project (see our analyses in Section 6d). In our opinion, that physician HHR assessment should be jointly managed by Manitoba Health and COPSE with the full participation of key stakeholders, including the University of Manitoba, Brandon University, the College of Physicians and Surgeons, Doctors Manitoba, the RHAs, and physicians from 'clinical teaching' practices. The central question to be addressed in that forum would be: is there a compelling case for an expansion of the entering class from the current 110? An affirmative answer to this question could be based on either or both of two criteria, one that the 'pipeline' of Manitoba trained physicians does not meet the evidence-informed needs of Manitoba's rural, northern and urban communities; the other, that the pipeline of foreign-trained physicians (IMGs) is poorly matched to those needs and, therefore, should be systematically reduced to some formally agreed target proportion of the annual requirement for new registrants with the CPSM. In our report (Section 6d), we have attempted to assist in those future discussions by making available a simple evidence-informed 'needs-based' projection model that, with refinements, could serve as a tool to narrow the boundaries of debate in those key policy discussions. If the outcome of those discussions confirms the need, we have no hesitation recommending the Satellite Option featuring a formal partnership between the University of Manitoba and Brandon University.

To complete this summary, we now offer our 'bottom-line' costings for Rural Track 1, Rural Track 2 and Satellite Options.

Table 8.1 Projected 'Bottom-line' Costs in 2020 for Rural Track 1, Rural Track 2 and Satellite Options (constant 2011/12 dollars)

	Rural Track 1	Option Rural Track 2	Satellite
1. Steady-state Operating Costs	\$3,490,000	\$177,000	\$11,023,313
2. One-time Costs	\$127,500	nil	\$232,500
3. Capital Costs			
@ \$350/SF (7.5K SF)	\$2,625,000	\$2,100,000	
@ \$550/SF min (30K SF)		\$3,300,000	\$16,500,00
@ \$800/SF max (34K SF)			\$27,200,00

In preparing these pro forma costs, we encountered a number of challenges not all of which we were able to fully resolve. Most problematic was costing of the clinical faculty required to supervise the third and fourth year clerks registered at the Satellite campus. The methods and metrics we used are based on the entrenched Winnipeg 'model' of geographic full-time physicians (GFTs) whose specialty practices are mainly located in the teaching hospitals overseen by the Winnipeg Regional Health Authority (WRHA). While we are advised that \$5.3 million would be required 'to make the rotations work' in the Winnipeg context, we are not comfortable charging (as we did) the identical sum to the Satellite option where the predominantly part-time clinical faculty would be recruited from community-based private practitioners. For this reason, we feel obliged to counsel the Steering Committee that our costing of the Satellite option should be regarded as the first not last word on the subject. To us, both fairness and prudence demand a fuller, more reality-based reckoning of the costs specific to this potential 'Brandon solution' (or indeed, to any other satellite campus outside the 'perimeter highway'). While the methods and metrics of that 'zero-base' budget template will require time and resources well beyond those that were available to this project, the Steering Committee has every reason to advise those to whom it reports that, when physician HHR analyses of need so warrant, the Satellite option deserves an appraisal that could well demonstrate 'value for money'.

We conclude with three additional comments and suggestions for the Steering Committee.

First, we urge that consideration be given to developing a permanent data resource that would serve as a tool for both the Faculty of Medicine and its education partners to monitor and mediate its Social Accountability mandate. Funded by the province, housed in the CPSM and maintained by the Manitoba Center for Health Policy, this data resource would track the flow of physician resources from admission to practice, and allow an evidence-informed approach to be applied regularly to decisions related to admissions to medical school, the value of educational programs, and licensing decisions; all linked to community needs.

Second, the difficulties encountered in our search for a transparent costing formula are not unique and would, with rare exception, be replicated across the country. The only solution we

can envision would be for the Association of Faculties of Medicine of Canada (AFMC) to take on the responsibility to monitor and standardize the ways in which physicians are remunerated for their teaching functions. Though this seems like a daunting task, the fact that it is already done by the Association of American Medical Colleges (AAMC) is encouraging.

Finally, we draw attention to the fact that of all the populations in the Province to whom health access has proven most difficult over time, it is the aboriginal communities in very remote regions and the mixed impoverished groups in urban cores. These Manitobans carry the heaviest burden of mortality and morbidity and therefore have the greatest need for health care and other services. While the focus of our discussion has been directed by mandate to physicians' services in the more generic 'rural and northern' contexts, we urge all parties who might consider implementing the 'solutions' we propose to keep front and center this priority of need, and the much broader array of interventions that will be required to help those whose egregious social and economic environments greatly diminish their health and well-being.

SECTION I

PROJECT MANDATE AND TERMS OF REFERENCE

As consultants to the Steering Committee, we have been engaged:

“to conduct a feasibility study concerning medical education for primary care physicians to practice in rural and northern communities in Manitoba”; and “to review and evaluate medical education in Brandon in a comprehensive manner including;

- the potential for a freestanding medical school in Brandon (hereafter Freestanding Option);
- the potential for a satellite program expansion of the University of Manitoba in partnership with Brandon University (hereafter Satellite Option);
- the potential of continuing or expanding existing U of M models of rotational and educational experiences (hereafter Rural Track Option)”.

We have taken note of the caveat that our consideration of these options take into account the broad context of the full spectrum of medical education training needs across the province, with *the primary target of the study being the medical educational requirements for primary care physicians in rural and northern communities in Manitoba.*

Introduction: Setting the Problem

The Province of Manitoba endures persistent physician human resource difficulties. There is a general problem of recruitment and retention of physicians, but with ongoing urbanization of the general population and the medical profession, attracting and keeping doctors in rural, remote and aboriginal communities is a source of special concern.

Over the years, numerous strategies have been devised to deal with these problems, and a substantial history of collaboration amongst Government, the Regulatory Authority and the University of Manitoba Faculty of Medicine bears witness to the complexity and persistence of the issue.

Attempted solutions have included the provision of a wide variety of incentives to medical trainees and physicians to encourage them to establish their practices in rural and remote areas, as well as programs to improve the quality of life and practice for physicians to ensure that, once recruited, they are happy to stay on. The strategy with the greatest durability is the placement of immigrating physicians who have trained in a variety of countries and educational systems (other than Canada and the United States) into rural or remote areas of the province. All of these approaches have had certain value, and each has had its own drawbacks, but, notably, none has proven sufficient to put the problem to rest.

This problem is not by any means unique to Manitoba, and observations on its nature and origins made in other regions may prove to have relevance in the Manitoba context. Beginning in the decades of 1960 to 1970's, perceptive medical educators connected the dots between the persistent drive of most medical graduates toward urban practice and the context of their medical educational experience, exclusively set in urban academic health science centers. It became apparent that a targeted personnel pipeline had inadvertently been created, which drew students from largely urban or suburban backgrounds and situated them for a minimum of eight years of their lives in large urban environments. Especially for their graduate medical years, their experience was shaped by and within the uniquely charged environment of the teaching hospital. Not surprisingly, the outflow from this pipeline is almost entirely directed back to this same urban environment. Given this immersion program, a practice location in a rural or remote location became unusual, even for students originating from rural backgrounds.

The original proponents of what came to be called Distributed Medical Education (DME) proposed the construction of a different pipeline; one that begins by recruiting students from rural areas to begin with, then locating as much as possible of their medical training in rural areas, so that their natural first choice for practice would be influenced by the setting of their training. Tentative efforts to create this form of pipeline began in the US in the 1960's and then, stimulated by looming physician shortages in rural and remote areas, many more examples of this format of medical education were initiated in the late 1990's.

The original community-based medical educational programs were driven as much by ethical and educational considerations as by matters of physician human resources. But schools in such diverse settings as East Lansing Michigan, Sherbrook Quebec, Rootstown Ohio, Beersheva Israel, and Hamilton Ontario were early adopters of this new educational idea.

In many rural areas, attention was drawn to these innovative programs; the community drive to achieve a rural medical education program in Northern Ontario (the eventual NOSM) had its origins as far as the 1970's. These grassroots movements have more recently been mirrored by efforts in the community of Brandon and its surroundings to stimulate interest in the initiation of a medical education program for the Brandon region.

The outcome of this activity was a recent decision by the Provincial Government, represented by the Provincial Committee for Post-Secondary Education (COPSE), to initiate a study to advise the Province on the value of increased investment in distributed medical education in the province.

The mandate of the Brandon Medical Education Study (BMES) is to examine and weigh the relative benefits of three optional routes for the expansion of medical education programs in Brandon. The proposed options range from expanding existing models of distributed education that have been introduced by the Faculty of Medicine at the University of Manitoba, through the development of a satellite program of the University of Manitoba Faculty of Medicine in partnership with Brandon University, and including the potential for a stand-alone medical school in Brandon.

An important parameter of the study included the injunctions, first; to consider broad provincial need, rather than more parochial interests, when addressing disparities in access to medical resources among urban, rural, remote and first nations communities, and second; the need to consider the issue within the full continuum of medical education (undergraduate, postgraduate, and continuing). In other words, while the study leaders were asked to advise on a Brandon medical educational solution, they were also urged to make recommendations that would consider the needs of province-wide rural, remote and special¹ communities and which could serve as a template for programs that will address recruitment and retention of physicians for the whole province.

A major component of the study has been work to construct a human resource model for physicians in Manitoba. Based upon this model, projections have been made to predict needed numbers of primary care physicians (largely synonymous with the specialty of family physicians) through to 2020. This data has allowed us to estimate numbers of students and trainees that will need to be supported in distributed educational programs if the goal of even distribution is to be attained by this mode of education. The range of costs associated with the various options of distributed education has been calculated to provide overall resource requirements for these models. We point out however, as a major caveat, that the meaning of these quantitative cost projections must be factored to include the qualitative elements of educational value. This task can only be accomplished by an exercise of judgment which attempts to merge estimates of the overall value of educational programs and their outcomes to a rather broad range of reasonable cost estimates.

This approach seems most in keeping with what we perceive to be the sentiment at the heart of the idea of “distributed medical education”. Distributed medical education is more than a catch phrase; it reflects the cultural idea that the setting of medical education can be as important a determinant of educational outcome as the didactic content of the curriculum. Based on empirical evidence, the likelihood of sufficient numbers of rising medical students and residents settling into practice in rural and remote areas of this province will be increased if their life experience and education are centered in such environments. A central hypothesis, in the context of this study, is the idea that in order to sustain sufficient numbers of well qualified doctors in rural and remote regions of the province, regular cohorts of medical students, many of whom will have rural, remote or aboriginal origins, will need to be educated in rural and remote locations throughout the continuum of medical education. How to best educate these cohorts using some variant(s) of DME is the over-arching question addressed in this Report.

Pursuant to our mandate, we not only recommend preferred options, but also address the implementation strategies for each of these options and their overall resource requirements. Due mainly to the complexities of the resource cost analyses, we requested and received a one month extension to April 30, 2012 for submission of our final Report to the Steering Committee.

¹ Special communities in the province include treaty and non-treaty First Nation, Metis and French-speaking peoples.

SECTION II

ACTIVITY SUMMARY

The Way Forward: Work Plan

The Brandon Medical Education Study Steering Committee approved the following “Work Plan and Deliverables” document prepared by Dr. John Horne and Dr. Daniel Klass outlining each of the components to be addressed as part of the final Recommendations Report. This detailed overview explains the key elements of the analysis process and sets the course of study for both the consultants and research staff.

I. STUDY INITIATION

Initial meetings with representatives of the Brandon Medical Education Study (BMES) Steering Committee have occurred. Goals of these meetings were to review and discuss the “Proposed Parameters” (see Appendix 5) for the study, including governance, process, research/study plan, budget and scope.

2. STUDY SCOPE

Brandon University has received funding to conduct a feasibility study concerning the medical education for primary care physicians to practice in rural and northern communities in Manitoba. The proposed study presents an important opportunity to review and evaluate medical education in Brandon and should include analysis on:

- The potential for a medical school in Brandon;
- The potential for a satellite program expansion of the University of Manitoba in partnership with Brandon University; and
- The potential of continuing or expanding existing models of rotational and educational experiences.

These options will be considered in the broader context of medical training needs of the province and will consider undergraduate, postgraduate and continuing medical educational components of the medical education continuum with the context of the provincial need. The study should address implementation strategies for recommended options, including overall costs. The assessment will include, but may not be limited to, projected costs to reach full accreditation requirements, one-time, capital and on-going operating costs, identification of existing and projected assets and resources required, and finally an explanation of the

methodology, basis and assumptions used to calculate these costs. The “feasibility study” will include a breakdown of the following components.

i. Community Consultation

The Steering Committee directed that rural/northern-dwelling Manitobans be given the opportunity to participate in “town hall” meetings to share their perspectives on any needed improvements in the medical system and as well as their thoughts on a medical program in Brandon. The Consultants’ role will be to “listen and learn” at these sessions.

ii. Environmental Scanning

Environmental scanning will involve information gathering on current and evolving approaches to medical education for primary care physicians to practice in rural and northern communities. Current assessments of the provincial need for physicians in these communities, as well as ongoing efforts to meet these needs through existing efforts by the University of Manitoba and Manitoba’s Office of Rural and Northern Health will be included.

Institutional structures outside Manitoba will also be considered to provide examples of “stand alone” and “satellite programs” for rural/northern medical education. Inclusive examples of the “stand alone” structure will include the Northern Ontario School of Medicine, the University of Tromsø (Norway), James Cook University (Australia), Flinders University (Australia), and various medical schools based in the United States. Noted Canadian examples of the “satellite programs” include UBC’s collaboration with UVIC, UNBC and UBC Kelowna, Dalhousie Medicine New Brunswick, University of Saskatchewan’s program in Regina and University of Sherbrooke’s programs in Moncton and Chicoutimi. The report will also highlight WWAMI’s regional medical education program out of the University of Washington School of Medicine and programs in North Dakota, Philadelphia, and Minnesota.

Through a combination of key informant interviews and the analysis of available documents and reports, selected programs will be referenced in the report with full program descriptions and comparisons. These programs will be compared on the basis of the following components:

- Governance;
- Rural/northern content of undergraduate curriculum, postgraduate training in rural/northern primary care, and continuing medical education for rural/northern primary care physicians;
- Opportunities for international medical graduates;
- Accreditation status/issues;
- Student recruitment and selection practices and student financial incentives;
- Faculty recruitment, development and remuneration and research capacity building;
- Community focus;
- Infrastructure and finance;
- Program performance/outcomes (i.e. indicators of success, cost per student, etc.)

iii. Key Informant Workshop

As an addition to the Environmental Scan, the consultants will develop a selected list of key informants who will be invited to participate in a workshop on distributed medical education to

be held in Brandon in mid-January. The list of invitees will include both national and international medical educators whose expertise and experience is directly relevant to the Brandon Medical Education Study. The goal of this workshop will be to allow the participants an opportunity to offer their comments, suggestions and criticisms of the three-option assessment.

iv. Critical Review of Options

Drawing on the evidence and argument obtained through the various components listed above, the three options will be critically appraised for their “feasibility” in terms anticipated by the Steering Committee’s Proposed Parameters document.

v. Defining the Elements and Projecting the Costs of the Recommended Option

Drawing on the results of the all components of the critical review (as listed above), the most “feasible” option will be recommended. The various elements of this option will be detailed and described using the same generic categories applied during the environmental scan comparisons, and elements of demonstrated best practice will be applied to the new Manitoba option.

vi. Report Preparation and Submission

The consultants will prepare and submit to the Steering Committee a report containing findings and recommendations with supporting rationale. This will include a summary of the public consultation sessions, findings from the environmental scan (interview and document reviews) and synopses from the key information workshop. It will conclude with a critical review of the options with a final recommendation detailed.

3. Schedule of Consultants’ Activities and Related Time Constraints

- Public Consultation Sessions
 - o October 2011 – January 2012 (estimated 5 to 10 consultant days)
- Environmental Scans (key informant interviews and document reviews), Key Informant Workshop and Critical Review of Options
 - o October 2011 – January 2012 (estimated 60 to 80 consultant days)
- Concluding Review of Options, Preparation and Submission of Report to Steering Committee
 - o January – April 2012 (estimated 35 to 60 consultant days)

Project Timeline

The following lists crucial events in the development of the Brandon Medical Education Study (BMES). This Timeline includes a detailed listing of events, meetings and milestones leading to the final Recommendations Report with the inclusion of participants and relevant information relating to goals and outcomes of the indicated listing.

2 May 2011

Council on Post-Secondary Education (COPSE) confirms one-time Payment of \$350,000 for Brandon Medical Education Study (BMES)

Dr. Deborah Poff, President of Brandon University and Chair of the BMES Steering Committee received a letter from COPSE confirming the transfer for \$350,000 (inclusive of \$265,000 from Council and \$85,000 from Manitoba Health).

14 July 2011

Brandon Medical Education Study Steering Committee Meeting

- Brandon University (Brandon, MB)

At this first meeting of the Steering Committee following the approval of the grant funding, the Chair invited introductions from members and provided a background briefing on the origins of the feasibility study. Discussions around the hiring of two lead consultants and a research associate were also addressed, and a tentative schedule was set for the first round of meetings into the fall.

9 September 2011

COPSE approval received RE: Terms of Reference for the BMES

COPSE's approval of the Terms of Reference/Proposed Parameters for the BMES confirmed the go-ahead for the study and the recruitment of consultants/ research associate for the completion of the Recommendations Report.

21 September 2011

Preliminary Meeting of BMES Consultants and Research Assistants

- University of Manitoba Bannatyne Campus (Winnipeg, MB)

Dr. John Horne, Dr. Daniel Klass, Ms. Rebecca Klass & Ms. Amy Wyntjes met for the first time to discuss the scope of the project, work plan, and timelines. Discussion also centered around projected activities and events related to the project, including Steering Committee meetings, site visits to existing models of

distributed medical education, visits to communities in rural and northern Manitoba and a best practice Workshop to be held in January 2012.

22 September 2011

Meeting of Steering Committee Chair, Vice-Chair and Consultants

- University of Manitoba Bannatyne Campus (Winnipeg, MB)

Consultants Dr. John Horne and Dr. Daniel Klass and Research Associate Amy Wyntjes met in person with Dr. Brian Postl (Steering Committee Vice-Chair) and via conference call with Dr. Deborah Poff to present the proposed scope of study, planned events, communications strategies and timelines.

28 September 2011

Meeting with Assiniboine Municipal Health Committee Executive

- Brandon University (Brandon, MB)

Members of the Assiniboine Municipal Health Committee (Mr. Ross Tycoles, Mr. Rick Plaisier and Ms. Donna Morken) met with Dr. Deborah Poff, Dr. Scott Grills and Amy Wyntjes to share their input on the BMES and to assist in planning of the public consultations sessions.

5 October 2011

BMES Steering Committee Video Conference

The Steering Committee was introduced to project staff, Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes, who provided a verbal update on the projected scope of the feasibility study report including the environmental scan, best practice interviews, and literature review that will be concluded with the critical review of options and recommendations. Plans for rural visit locations, stakeholder meetings, and the key informant Workshop were also shared during this video conference.

7 October 2011

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass, Rebecca Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for upcoming events and timelines.

28 October 2011

Public Consultation Session – Portage La Prairie

- PCU Centre (Portage La Prairie, MB)

Dr. Daniel Klass, Dr. John Horne, and Dr. Deborah Poff chaired the first scheduled public consultation meeting in Portage La

Prairie. Attendance numbered around 20 people, and interesting opinions and insights were shared from this area's perspective concerning the feasibility study. RHA reps, municipal government and community leaders were among those present at this meeting.

28 October 2011

Meeting with CEO of Association of Manitoba Municipalities (AMM)

- Brandon University (Brandon, MB)

Amy Wyntjes met with Mr. Joe Masi, CEO of the AMM, to update his organization on the Study's progress to date, and answer any questions regarding the proposed timeline.

9 November 2011

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass, Rebecca Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for upcoming events and timelines.

17 November 2011

Public Consultation Session – Boissevain

- Red Coat Inn (Boissevain, MB)

Dr. Daniel Klass, Rebecca Klass and Amy Wyntjes met with approximately 25 community members to answer questions and hear concerns on the proposed options under analysis in the Study. In attendance were RHA representatives, municipal council leaders from Boissevain and surrounding areas, concerned citizens and members of the local media.

22 November 2011

Consultation Session at Association of Manitoba Municipalities (AMM) Annual Convention

- Keystone Centre (Brandon, MB)

At the invitation of Mr. Joe Masi, CEO of the AMM, Dr. Deborah Poff and Amy Wyntjes gave a brief presentation and overview of the Study and background, answered questions, and listened to comments from municipal government leaders. Municipalities from across the province were represented at this large, annual summit.

23 November 2011

Presentation to University of Manitoba Faculty of Medicine Department Heads

- University of Manitoba Bannatyne Campus (Winnipeg, MB)

Identified as key group to reach out to directly, Dr. John Horne and Dr. Daniel Klass presented a brief overview of the Study at the meeting of Department Heads from the Faculty of Medicine at the University of Manitoba. The consultants subsequently met with many of these physicians individually about the Study to share feedback/concerns/ideas.

23 November 2011

Meeting between Project Staff

- University of Manitoba Bannatyne Campus (Winnipeg, MB)

Dr. John Horne, Dr. Daniel Klass, and Amy Wyntjes met to review planning for remaining public consultation sessions in rural and northern Manitoba and firm up timelines for the month of December.

24 November 2011

Meeting with Brandon Area Physicians

- Brandon Regional Health Centre (Brandon, MB)

A full discussion of options for Medical Education in Brandon and surrounding areas, especially as it effects practicing doctors.

24 November 2011

Public Consultation Session – Virden

- Virden Regional Multi-Purpose Recreation Facility (Virden, MB)

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes briefly presented to this largest group of citizens to date in Virden and heard many opinions and anecdotal evidence on the validity of a medical education program in Brandon. In attendance were members of the Assiniboine RHA, Virden and surrounding area municipal councils, local business people, interested citizens and members of the local media.

8 December 2011

Public Consultation Session – Neepawa

- Viscount Cultural Centre (Neepawa, MB)

Dr. John Horne and Amy Wyntjes met with citizens in Neepawa and heard unique perspectives on health care delivery in that community and the role of a medical education in Brandon and at the University of Manitoba in relation to the best options of service delivery for the community. In attendance at this meeting were local physicians, business people, interested citizens and members of the local media.

20 December 2011

BMES Steering Committee Conference Call

Project staff provided a verbal update to the Steering Committee and answered questions on progress to date, revised timelines, and go-forward items. Synopses of public consultation sessions held to date in rural, southwestern Manitoba were also shared.

15 January 2012

Public Consultation Session – Thompson

- Mystery Lake Motor Hotel (Thompson, MB)

Dr. Deborah Poff and Amy Wyntjes travelled to Thompson to give the citizens of this community an opportunity to weigh in on rural and northern-focused medical education in Brandon. Unfortunately, poor attendance led to an early adjournment of the meeting.

18 January 2012

Public Consultation Session – Brandon

- Brandon University (Brandon, MB)

Dr. Deborah Poff and Amy Wyntjes presented a brief power point to an audience of approximately 25 people at the Brandon University Dining Hall and answered many questions regarding the establishment of a medical program at BU. In attendance were members of the RHA, physicians, Brandon City Council, Student Union, faculties, concerned citizens and members of the local media.

19 January 2012

Welcome Reception – Workshop on Options for Distributed Medical Education (DME) in Manitoba

- University House (Brandon, MB)

Dr. Deborah Poff and Dr. Alex Michalos welcomed the Workshop attendees to their home for hospitality and initial introductions prior to the start of the business sessions of the Workshop the following day.

20 January 2012

Workshop on Options for Distributed Medical Education (DME) in Manitoba

- Brandon University (Brandon, MB)

Workshop participants were welcomed to the Brandon University campus from across Canada, the US and Australia to share their experience, expertise and insight into distributed medical education (DME) the options being considered in the BMES. The keynote speaker was Dr. Paul Worley, Dean of the School of Medicine at Flinders University in Adelaide, Australia. Other universities represented included the University of British Columbia, the University of Manitoba, McMaster University, the

Northern Ontario School of Medicine, Dalhousie University, and the Central Michigan University College of Medicine. External organizations represented included the Ontario Ministry of Health and Long-Term Care, the Association of Faculties of Medicine of Canada and the Medical Council of Canada. From within Manitoba, representatives from the City of Brandon, Brandon Regional Health Authority, Assiniboine Regional Health Authority, Office of Rural and Northern Health and Doctors Manitoba.

Day 1 of the Workshop saw presentations and panel discussions around the current Manitoba health human resources climate, as well as an analysis of DME in the Canadian, American and International context. Afternoon sessions centered on DME models, governance, management and leadership.

21 January 2012

Workshop on Options for Distributed Medical Education (DME) in Manitoba

- Brandon University (Brandon, MB)

Day 2 of the Workshop was a half day consisting of more panelist discussions on DME resources and a specific presentation on Canada's only free-standing rural medical school, the Northern Ontario School of Medicine. The Workshop adjourned with a general discussion on the three options being considered based on the information heard at the Workshop.

30 January 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass, Rebecca Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for upcoming events and timelines.

16 February 2012

Meeting of Steering Committee Chair and Association of Manitoba Municipalities (AMM) Executive

- Brandon University (Brandon, MB)

Dr. Deborah Poff met with Mr. Joe Masi (CEO) and the Executive of the Association of Manitoba Municipalities (AMM) to provide them with a status update on the progress of the feasibility study to date.

21 February 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

9 March 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

16 March 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

22 March 2012

COPSE Approval received RE: Extension on Deadline for Report Submission

At the request of project consultants, Dr. Deborah Poff shared a telephone call with Mr. Josh Watt, acting Secretary of COPSE, to request an extension on the deadline for the written submission of the Recommendations Report. On behalf of COPSE, Mr. Watt approved a date of 30 April 2012 for final submission of the report.

23 March 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

30 March 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

13 April 2012

Conference Call between Project Staff

Dr. John Horne, Dr. Daniel Klass and Amy Wyntjes met via conference call to review next steps and schedule coordination for remaining tasks and editing processes.

20 April 2012

Drs. Horne and Klass submitted their Draft Report to the Steering Committee

30 April 2012

BMES Steering Committee Meeting

- Brandon University (Brandon, MB)

Steering Committee met via teleconference with the consultants to discuss the Draft Report. Following the meeting, the consultants edited and revised the Draft Report and submitted their Final Report during the first week of May.

22 May 2012

Steering Committee scheduled to meet to discuss the final Report and Recommendations prior to transmittal to COPSE

SECTION III

COMMUNITY CONSULTATIONS

Background

The initial momentum leading to this review of options for medical training in Brandon originated within community-based groups. The Association of Manitoba Municipalities, the Manitoba Chambers of Commerce and the Manitoba Women’s Institute each passed motions in support of the initiative, which led to the eventual request from the Council on Post-Secondary Education (COPSE) for a Brandon University-based proposal to examine this issue. The Brandon Medical Education Steering Committee therefore identified the role of public engagement and consultation as a key factor in the analysis of options for medical education in southwestern Manitoba. Upon approval and receipt of the \$350,000 grant from COPSE, the Steering Committee immediately created a line item in the project budget entitled “Consultations and Focus Groups with Rural and Northern Regions in Manitoba.” Subsequently, project staff worked together with identified community stakeholders to establish a comprehensive listing of communities to visit and organizations to engage in order to facilitate the “listen and learn” component of this Recommendations Report.

Communications Strategy

In advance of these sessions, project staff identified key organizations, groups and individuals within each community and extended to them invitations with some initial context around the study development and projected goals for the session. Identified key stakeholders included (but are not limited to) representatives from municipal government, First Nations communities, regional health authorities (physicians, nurses, administrators, allied health care professionals, etc.), chambers of commerce, economic development organizations, school districts, media, and local business. Consultation participants were asked to consider the following questions in advance of each session:

- What is the status of health care delivery in your community?
- How can we improve access to primary care in rural/northern Manitoba?
- What strategies do you think will keep primary care physicians in your community?
- What is your opinion on the establishment of a medical program in Brandon?
- Do you think a medical program at Brandon University will have a positive impact on the status of primary care in rural/northern Manitoba?

At the time of each consultation session, participants were provided with an Executive Summary of the initial proposal and a document summarizing the background/governance information of the feasibility study. Project staff worked with local organizations that assisted

with putting up posters in and around the community advertising the event, and advertisement space was also purchased in each community through their local newspaper inviting the general public to attend the sessions.

Locations and Dates

In total, eight consultation sessions were held in association with this study throughout rural southwestern, central, and northern Manitoba. The listing is as follows:

- 28 October 2011 – Portage La Prairie (PCU Centre) – PUBLIC
- 17 November 2011 – Boissevain (Red Coat Inn) – PUBLIC
- 22 November 2011 – AMM Annual Convention (Keystone Centre) – CLOSED
- 24 November 2011 – Brandon Physicians (Brandon Regional Health Centre) – CLOSED
- 24 November 2011 – Virden (Virden Regional Multi-Purpose Recreational Facility) – PUBLIC
- 8 December 2011 – Neepawa (Viscount Cultural Centre) – PUBLIC
- 15 January 2012 – Thompson (Mystery Lake Motor Hotel) – PUBLIC
- 18 January 2012 – Brandon (Brandon University) – PUBLIC

Although attendance numbers ranged depending on the location of the sessions, participants provided valuable insight and asked important questions related to the development of the study and the options being considered. Further details on each of these sessions can be found in the Timeline included in Section 2 of this report.

Groups and Organizations Engaged

ASSOCIATION OF MANITOBA MUNICIPALITIES (AMM)

Showing a vested interest in this project from early on in its development, the AMM invited project staff to consult with municipal government representatives from across Manitoba on November 22nd, 2011 at a special session held during their Annual Convention this year in Brandon. Project staff and the Steering Committee Chair also met with the AMM CEO and Executive on several occasions to provide them with project updates.

ASSINIBOINE MUNICIPAL HEALTH COMMITTEE

Project staff met several times with representatives from the Assiniboine Municipal Health Committee to discuss the study and allow members to share their concerns and opinions regarding medical education in Brandon. This group comprises concerned citizens from rural southwestern Manitoba who have an interest in health service delivery in that region.

Consultation Structure

Generally, each session began with the introduction of project staff in attendance, along with an informal identification of various group representatives in the audience (i.e. town councilors, RHA, media, etc.). Staff also established a slightly more detailed context for the evening by outlining how the initial events that led to the submission of the proposal progressed through to the approval of funding for the study. Before moving to the “Question and Answer” format that took up the majority of the evening, one member of project staff offered a brief PowerPoint presentation to set the stage for discussion. The presentation outlined current health care-related demographics in the Canadian and Manitoba context, and highlighted especially the challenges faced by those living in rural, remote and northern communities. The presentation also cited various reports and statistics related to the location of medical education for the purpose of primary care in rural communities, and successful models of distributed medical education in Canada, the US and abroad. See Appendix 15 for the PowerPoint slides, and information documents provided during the consultation sessions.

Major Themes

For the purposes of this report, feedback received from community and group consultations will be presented through a breakdown of the various themes that staff heard consistently at the sessions.

EARLY ENGAGEMENT

It was suggested in one of the first consultation sessions that a key to recruiting more Manitoba students to medical school at the University of Manitoba is to engage them earlier in their secondary school careers – starting in middle school and up through to high school. This individual shared the opinion that if school boards supported an in-depth pre-med program through more Advanced Placement courses, students from rural backgrounds would be better prepared for their studies at medical school. By establishing a process for identifying potential medical students earlier, it will ensure that fewer students are lost in the system.

CAPACITY WITHIN THE REGIONAL HEALTH AUTHORITIES

The question of capacity within the regional health authorities for supporting a medical school was posed in various ways during the consultations. Consultants and project staff heard from representatives from several RHAs about their specific resources related to the number of students already coming into the area. Concerns were shared that students may not get the appropriate practicum experience if there is difficulty maintaining the necessary number of spaces for them, given the commitment already required through the University of Manitoba programs. Those expressing the concern were assured that infrastructure and health human resources would be addressed in the Recommendations Report and that these issues are common when planning a new medical education program (as seen at UNBC, in Tromso, etc.). It was clear that an analysis of programs and existing service rotations is needed according to

each RHA to determine feasibility, but that establishing a connection between local rural students with local rural doctors would be very beneficial.

RECRUITMENT OF RURAL STUDENTS

This was a key theme in each public consultation session. Community members recognized that in order to create a level of attachment to a rural/remote/northern community, it is crucial to admit students familiar with the rural lifestyle. This is demonstrated in existing medical programs that utilize the “rurality index” during the admissions process. Furthermore, citizens agreed that it is of crucial importance to streamline the acceptance of Canadian students into Canadian institutions. Anecdotal evidence was shared by individuals who knew of students that were forced to attend medical school outside of Canada, but wish to come back to practice after graduation. By “pipelining” Manitoba students in Manitoba medical education programs, this issue would diminish and new physicians might be more willing to establish longer-term practices in their own communities.

RETENTION FACTORS AND RETURN OF SERVICE AGREEMENTS

Consultation participants questioned the validity of return-of-service agreements as retention tools in rural, remote and northern Manitoba. Project staff advised that these methods of retention are generally ineffective and offer no evidence that they work. Furthermore, other distributed medical education programs in Canada have demonstrated that the “rurality index” and choosing the right student through pre-selection is the best method of retention in rural, remote and northern communities. Matching backgrounds, interests and passions for the rural lifestyle are crucial to students staying in rural areas.

Community members also seemed to recognize that retention of physicians in a rural/remote/northern community is not solely the responsibility of the RHA, but that all residents share an equal role in making physicians feel welcome and part of the community.

STUDENT INTEGRATION INTO COMMUNITY

Comments were shared about the challenges and opportunities for integrating students into small communities. Parallels were drawn regarding the integration of IMGs into the community, and it was observed that there are similarities in order to enhance retention. By making students feel welcome and a part of the community, they will be more likely to have a positive experience and perhaps seek to set up practice in rural communities. Additionally, an enhancement of groups linking physicians and other allied health care will create stronger attachments within the community. Municipal government representatives often shared this opinion in the various communities visited.

NORTHERN/ABORIGINAL COMMUNITY ENGAGEMENT

Models of distributed medical education across Canada and around the world demonstrate that exposure to general practice medical training in rural communities will enhance their experience and therefore potentially increase the chances of their setting up practice in

underserved areas. Consultation participants questioned the retention of physicians in northern and Aboriginal communities that are often serviced through rotational cycles which lack longevity and consistency. A potential solution to this issue that was shared during discussions refers to the “pipelining” of students within the right demographic and with optimal backgrounds into pre-med and medical programs in order to better serve these areas.

CULTURAL CHANGE WITHIN INSTITUTIONS

Questions and comments arose in several of the consultation sessions around a “change of culture” in medical schools away from the sub-specialty, urban practice to the more broad-based, rural primary care practice. There was an expressed sense that medical students are pushed to enter sub-specialties that will bring more research funding to the university, and not to enter family medicine programs. In addition, project staff heard that the notion of culture refers also to a change of mind-set around existing health administration organization. For example, recruitment and retention is not just about physician practice, but also about support for physicians through allied health care professions (nursing, support staff, etc.). Change has to be a through a big-picture approach that will incorporate the RHAs, Provincial Government, medical school, communities/municipalities and physicians.

Furthermore, rural residents also believe that the “cultural change” piece also applies the health care service delivery in that rural physicians sometimes experience difficulties reaching physicians within the Winnipeg perimeter for referrals and emergency cases. Residents felt that opening the dialogue and creating better partnerships between rural and urban could start with the Faculty of Medicine at the University of Manitoba.

Feedback on Options

Feedback on the options analyzed in this Recommendations Report came through discussion on the themes explored above. The following points reflect a culmination of this feedback, broken down by recommendation.

SUPPORT FOR STAND-ALONE MEDICAL SCHOOL

- Local medical school will better attach local students through a process of earlier engagement
- An independent teaching centre in Brandon will be accountable to the needs of the community given the closer proximity
- Expressed fear of a distributed program being an “appendage” of the University of Manitoba – many opinions that this program does not support enough positions for rural students
- Expressed worry over being tied to the University of Manitoba program – not having autonomy means potential issues over budgeting/curriculum matters
- Connection to training in the rural community should enhance retention by not creating a connection to urban centres – large turnover of physicians in rural areas

- Local school would mean more seats for only rural students, and preventing them from having to leave Canada for training – “rural pipeline” from rural schools
- Training in smaller centres means both students and physicians would have less travel time to receive training

SUPPORT FOR PARTNERSHIP/EXPANSION OF EXISTING PROGRAMS

- Training physicians in another urban centre would not facilitate attachment to rural communities – but will improve Brandon’s situation
- Developing more clerkship and residency programs in Brandon would help solve challenges in southwestern Manitoba and cost less than infrastructure and accreditation of a new program
- Programs can be enriched in rural areas and partnerships can form linking the development of regional centres

Conclusion

It is clear that the public consultation sessions held over the past four months in rural, northern and southwestern communities provided valuable insights not only into the options being considered in this Report, but also into the status of health care delivery in Manitoba. Project staff greatly appreciated the opportunity to visit and hear from the communities and organizations with a stake in this study and their feedback is of great value to this analysis.

SECTION IV

OVERVIEW OF DME PROGRAMS

Canadian DME Programs

	UNIVERSITY OF BRITISH COLUMBIA
<i>Program Location</i>	Vancouver, the University of Northern British Columbia in Prince George (Northern Medical Program), the University of Victoria in Victoria (Island Medical Program) and UBC Okanagan in Kelowna (Southern Medical Program)
<i>Year Established</i>	2004 (Island and Northern Medical Programs); 2011 (Southern Medical Program)
<i>Year of First Class</i>	2004 (Island and Northern Medical Programs); 2011 (Southern Medical Program)
<i>Graduating Class Size</i>	32 students in each DME program
<i>UGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - Years 1 and 2 – Foundations of Medicine, Clinical Skills, Family Medicine with practical clinical skills training - Years 3 and 4 – Clerkships and Clinical Electives with four-week summer practicum working with a physician in a rural/remote area through BC and the Yukon - Same curriculum offered at all UBC sites
<i>PGME Educational Models (inclusive of rural/northern components)</i>	- UBC Family Practice Residency Training Program – includes site locations across rural BC
<i>CME (rural/northern components)</i>	- UBC Rural Continuing Professional Development (RCPD) – with support from Rural Coordination Centre of BC, rural physicians are offered opportunities to address CME needs of living in rural areas
<i>Mission Statement/Vision</i>	<ul style="list-style-type: none"> - UBC Faculty of Medicine Mission: “We, the members of the Department of Medicine of the University of British Columbia, will work with all our partners to provide the highest possible standards of excellence in patient care, teaching and research. In pursuing this mission, we will emphasize open communication and ethical behavior, recognizing that it is a privilege to provide responsible and innovative stewardship of human, financial and all other resources.” - <u>Island Medical Program</u> – “Through knowledge, creating health.”
<i>Program Governance/ Management Structures</i>	- University President’s Council (UPC) – negotiated together with Government to produce funding

	<ul style="list-style-type: none"> - Inter-University Planning Committee – between UBC and distributed university partners and the Ministry of Health and Advanced Education - Distributed Program Planning Committee (DPPC) – committee reporting to the Dean of the Faculty of Medicine on DME programs and budget flows - Any issues/problems that cannot be resolved are reported back to the UPC
<i>Resources/Finances</i>	<ul style="list-style-type: none"> - Provincial Government negotiates funding for academic space across the province in various hospitals - Grant funding for distributed programs goes to UBC and is held in trust until it flows through the Distributed Program Planning Committee - Equal allocation of voting on committee between institutions – those that oversee the budgets prepare them
<i>Outcome Metrics</i>	<ul style="list-style-type: none"> - Still too early to gauge outcomes of DME programs, however it is anticipated that outcome metrics can be gauged within ten years of program establishment
<i>Student Recruitment/ Selection Processes</i>	<ul style="list-style-type: none"> - Entrance requirements are the same across all UBC DME sites, with the exception of consideration the evaluation based on suitability for training and practicing in a rural context - Percentage of seats reserved for Aboriginal students
<i>Student Financial Incentives</i>	<ul style="list-style-type: none"> - Government of BC offers support programs to aid in new physician retention in underserved communities – Loan Forgiveness Program (with BC student loan) - Continuing recruitment and retention packages for physicians that choose to continue their practice in underserved communities
<i>Faculty Recruitment/ Development</i>	<ul style="list-style-type: none"> - Programs recruiting physician to teach as part of the clinical faculty - Faculty development programs – goal is to assist clinical and academic faculty as well as local physicians by meeting the needs of distributed sites - Programs are run in conjunction with the UBC Faculty of Medicine Office For Faculty Development for support and teaching resources
<i>Faculty Remuneration</i>	<ul style="list-style-type: none"> - Payment of clinical faculty comes from the Ministry of Health based on a formula with unit values based on time and/or sessions
<i>Research Capacity Building</i>	<ul style="list-style-type: none"> - Northern Medical Program – multidisciplinary approach to research through basic medical sciences, medical education and health epidemiology - Faculty of Medicine collected a total of \$295 million in research funding in 2010-11 - Research opportunities exist for undergraduate MD students in the faculty (i.e. NSERC, Summer Student Research Program, Research Mentorship Program, etc.)
<i>Community Focus</i>	<ul style="list-style-type: none"> - <u>Northern Medical Program</u> – NMP Community Partnership – provides communities with an opportunity to host medical students in the NMP during UGME (goal is to facilitate exposure to northern communities and the opportunities that exist in these areas); Doctor, Patient, and Society Program (students receive clinical skills training while working with volunteer patients) - <u>Island Medical Program</u> – Volunteer Patients; Doctor, Patient and Society Program - <u>Southern Medical Program</u> – Volunteer Patients
<i>Infrastructure</i>	<ul style="list-style-type: none"> - Video-conferencing technology is a key component of program – campuses

	<p>and affiliated centres are all linked via this technology</p> <ul style="list-style-type: none"> - <u>Northern Medical Program</u> – Years 1 and 2 completed at the Dr. Donald Rix Northern Health Sciences Centre at UNBC, and years 3 and 4 incorporated into the Northern BC Health Authority (primarily the University Hospital of Northern British Columbia) - <u>Island Medical Program</u> – Years 1 and 2 completed at the Medical Sciences Building at the UVic, and Years 3 and 4 incorporated into the Clinical Academic Campus at Royal Jubilee Hospital, Victoria General Hospital, and regional centres - <u>Southern Medical Program</u> – Years 1 and 2 completed at the Health Sciences Centre at UBC Okanagan, and Years 3 and 4 are completed through clinical training at hospitals and health centres including Kelowna General Hospital, Vernon Jubilee Hospital, Royal Inland Hospital, etc.
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NORTHERN ONTARIO SCHOOL OF MEDICINE (NOSM)

<i>Program Location</i>	Lakehead University in Thunder Bay and Laurentian University in Sudbury
<i>Year Established</i>	2002
<i>Year of First Class</i>	2005
<i>Graduating Class Size</i>	36 students (Sudbury); 28 students (Thunder Bay)
<i>UGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - Models “allow widely distributed human and instructional resources to be utilized independent of time and place in community partner locations across the North (Aboriginal Community Sites, Integrated Community Experience Sites, Comprehensive Community Clerkship Sites) – Community-Based Medical Education - Six key academic principles – interprofessional, integration, community-oriented, distributed community-engaged learning, generalism, diversity - Year 1 – four weeks spent in Northern Ontario Aboriginal Community - Year 2 – two four-week assignments in small rural/remote communities - Year 3 – entire academic year spent off campus host community (Comprehensive Community Clerkship) - Year 4 – specialty rotations/electives in regional hospitals in Sudbury and Thunder Bay
<i>PGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - “New program status” recently granted to NOSM Family Medicine Residents of the Canadian Shield program (FM RoCS) – 30 residents per year in a two-year program - Training to prepare for work in rural/remote communities
<i>CME (rural/northern components)</i>	- CME Office promotes professional development and continuing education through events and courses including departmental activities/rounds, journal clubs, Program-Planning Committee, webcasts, etc.
<i>Mission Statement/Vision</i>	- To contribute to improving the health of people and communities in Northern Ontario
<i>Program Governance/</i>	- Registered as a not-for-profit corporation

<i>Management Structures</i>	<ul style="list-style-type: none"> - Maintains independent budget, administration and Board of Directors - Academic affairs connected to Lakehead University and Laurentian University - Joint Senate Committee (standing committee) provides academic authority to both institutions through their own Senates - Board of Directors composition (35 members) – nominated by two universities, NOSM, Northern Ontario community organizations (local government, Francophone, Aboriginal community groups), undergraduate MD students, post-graduate students and faculty members - Board of Directors responsible for corporate governance, fiscal management, appointment of Dean and CEO - Management of organization is the responsibility of the School’s Executive Group (includes Associate Deans) and Founding Dean reports directly to the two university Presidents who are Chair and Vice-Chair of the Board
<i>Resources/Finances</i>	<ul style="list-style-type: none"> - NOSM is 100% responsible for both direct and indirect costs - Receives 88% of total operating revenue from the Government of Ontario – Ontario Ministry of Training, Colleges and Universities funds the undergraduate component (through formula-based, multi-year accountability agreement) and Ministry of Health and Long-Term Care funds the post-graduate component (through formula-based, Multi-Year Transfer Payment Agreements) - Tuition provides 10-11% - Significant reliance on government funding - Resource premium is approximately 15-20%
<i>Outcome Metrics</i>	<ul style="list-style-type: none"> - CaRMS – 100% matched; 63% family practice; 33% general specialties; 40% residency with NOSM - Studies continue to track success - \$1.134 million funding commitment from Government of Ontario to track students and graduates of NOSM through the Centre of Rural and Northern Health Research (CRaNHR)
<i>Student Recruitment/ Selection Processes</i>	<ul style="list-style-type: none"> - MCAT is not required – GPA greater than or equal to 3.0 on a 4.0 scale - Applicants are weighted on basis of scores that are highest for applicants from Northern Ontario and other targeted demographics (i.e. Aboriginal, rural, remote, Francophone, etc.)
<i>Student Financial Incentives</i>	<ul style="list-style-type: none"> - Numerous external and NOSM bursaries and scholarships available depending on region/demographic of applicant
<i>Faculty Recruitment/ Development</i>	<ul style="list-style-type: none"> - Northwestern Ontario Medical Program (NOMP) and Northeastern Ontario Medical Education Corporation (NOMECE) provided staff to assist in faculty development activities and engagement in NOSM - Participation of senior academic administration in the two host universities added to the recruitment and retention of faculty through policy development of appointment, promotion and tenure tracks - Freedom of location for faculty due to be geographical dispersed and connected through technology (final assignments determined by geographical location and need) - Top-down hierarchical structure needed adjustment
<i>Faculty Remuneration</i>	<ul style="list-style-type: none"> - Compensation in line with two host universities (set scales with

	<p>floors/ceilings)</p> <ul style="list-style-type: none"> - Clinical faculty rates and academic clinical and non-clinical stipends - Medical, clinical and human sciences faculty categorized by lecturer, assistant professor, associate professor and full professor - All other roles associated with faculty/staff at NOSM have a salary scale/rate of remuneration
<i>Research Capacity Building</i>	<ul style="list-style-type: none"> - Goal of NOSM – to enable Northern Ontario’s health research industry to grow - Focus on health research that directly impacts health of residents of Northern Ontario is reflective of social accountability mandate - Two research labs – Thunder Bay and Sudbury - Framework – <i>Creating a Sustainable Health Research Industry in Northern Ontario</i> – allows for stakeholders to work together
<i>Community Focus</i>	<ul style="list-style-type: none"> - Connection to partnerships within the communities through Local NOSM Groups (LNGs) - LNGs act as the steering committee for all NOSM activities in the large rural and small urban communities that host third-year students - LNG members include local clinical faculty members, hospital leaders, local government, physician recruitment committee members and post-secondary representatives in the community - Demonstrated socio-economic impact- \$67-\$82 million in new economic activity for the area, improved HR recruitment, economic development, etc.
<i>Infrastructure</i>	<ul style="list-style-type: none"> - Strong reliance on broad-band technology - Lakehead – ATAC; Medical School West; Balmoral Street Centre - Laurentian – Medical School East; Health Sciences Education Resource Centre - Highly-distributed model – teaching in community clinical settings and hospital-based experiences - Resource requirements in hospitals – student space, lounges, study/computer areas, etc. - Resource requirements for rural clerkship/community settings – video conferencing facilities, telehealth facilities, internet access, desks, computers, etc.

DALHOUSIE MEDICINE NEW BRUNSWICK

<i>Program Location</i>	University of New Brunswick – Saint John Campus and Dalhousie University in Halifax
<i>Year Established</i>	2010
<i>Year of First Class</i>	2010
<i>Graduating Class Size</i>	30 students
<i>UGME Educational Models (inclusive of</i>	- 4-year UGME program: Years 1 and 2 spent in-class in Saint John and Years 3 and 4 spent in clerkships in Saint John, Fredericton, Moncton, Woodstock

<i>rural/northern components)</i>	and Miramichi - Recently part of a curriculum renewal that saw faculty, students, staff, community stakeholders and other medical education leaders come together to review and development goals of curriculum
<i>PGME Educational Models (inclusive of rural/northern components)</i>	- 3-year integrated family physician residency program offered out of Saint John with a focus on Emergency Medicine
<i>CME (rural/northern components)</i>	- No CME programs are directly affiliated with this DME model, however Dalhousie University's Faculty of Medicine maintains an academic unit dedicated to CME
<i>Mission Statement</i>	"Dalhousie Medical Education Program New Brunswick (DMEP NB) enables growth in medical education and health research capacity through the provision of facilities, teaching faculty and administrative services to deliver the Undergraduate Faculty of Medicine curriculum and related components."
<i>Program Governance/ Management Structures</i>	<ul style="list-style-type: none"> - Tri-partite agreement between Province of New Brunswick , University of New Brunswick Saint John and Dalhousie University - Bi-lateral agreement between UNBSJ and Dalhousie University - Medical staff leadership on-site at each program location - Accountability and Oversight Committee – monitors financial accountability and long-term outcomes (representation from Dalhousie, UNBSJ, NB Government, Horizon Health Network) - Implementation Committee – key to development of program - Tri-Provincial Committee (UGME and PGME) – key role is promoting communication and collective problem solving - NB-designated positions on multiple Faculty of Medicine committees including Faculty Council, Curriculum Committee, Progress Committee and Search and Survey - Government relations a key feature of organization and administration
<i>Resources/Finances</i>	<ul style="list-style-type: none"> - 5-year funding agreement with Province of New Brunswick - Funding held and distributed by the Maritime Provinces Higher Education Commission and provided for program and infrastructure in health care facilities - \$15 million fund raising campaign to support researchers and lab space
<i>Outcome Metrics</i>	- Aiming to produce results within ten years of program establishment
<i>Student Recruitment/ Selection Processes</i>	<ul style="list-style-type: none"> - Admission requirements are the same as the Dalhousie MD program in Halifax - All applicants to DMNB must meet the residency criteria to be considered a resident of New Brunswick and therefore be considered for admission
<i>Student Financial Incentives</i>	- The Government of New Brunswick offers grants and financial incentives for established physicians and new graduates including location and business grants, resident bursaries and tuition rebates
<i>Faculty Recruitment/ Development</i>	<ul style="list-style-type: none"> - All faculty are required to have Dalhousie faculty appointments to teach in this program and evaluate students - NB Government committed to creating 27 new billing numbers so that health care delivery will not be comprised in these areas

	- Faculty Development Program – addresses the need to provide all faculty with opportunities to enhance leadership, management, professional academic, teaching and instructional skills (program development is negotiated by faculty) – numerous key competencies noted
<i>Faculty Remuneration</i>	(TBD)
<i>Research Capacity Building</i>	- Assistant Dean of Research at DMNB responsible for ensuring students acquire the appropriate research skills - Research opportunities are available at both Halifax and Saint John campuses
<i>Community Focus</i>	- Child and Family Program – students assigned to visit newborns/family for first two years of life - Volunteer Health Mentor Program – adult volunteers with chronic illnesses meet with groups of students several times over the course of the year - Volunteer Patient Program – variety of volunteer patient activities depending on demographics and topic of study - Volunteer Patients with Clinical Findings – volunteer patients with pre-existing medical conditions work with first year students - Curriculum renewal project – public stakeholder input
<i>Infrastructure</i>	- Saint John College building (UNBSJ) is the classroom site for years 1 and 2 - Anatomy, histology and microbiology are taught at Saint John Regional Hospital in multi-disciplinary lab spaces - Video-conferencing services allow seamless lecture participation between SJ campus and Halifax location - UNBSJ provides student services, library facilities

American DME Programs

	WWAMI
<i>Program Location</i>	University of Washington (founding institution), University of Wyoming, University of Alaska, Montana State University, University of Idaho
<i>Year Established</i>	1970
<i>Year of First Class</i>	1971
<i>Graduating Class Size</i>	Variable, depending on location
<i>UGME Educational Models (inclusive of rural/northern components)</i>	- Year 1 completed in students' home states at the partner universities - Year 2 completed at the University of Washington in Seattle - Years 3 and 4 completed in various locations, with students often attached to rural communities and settings - Programs specific to rural training – Rural/Underserved Opportunities Program, WWAMI Rural Integrated Training Experience
<i>PGME Educational Models (inclusive of rural/northern components)</i>	- Various residency programs that focus on primary care and rural practice - Family Medicine Residency Network – comprises 18 programs located across the WWAMI states - Internal Medicine Spokane

	- Regional Specialty Tracks based in communities in the WWAMI states
<i>CME (rural/northern components)</i>	- Based out of the University of Washington – provides education opportunities for School of Medicine Faculty, community-based physicians and health care professionals
<i>Mission Statement/Vision</i>	<ul style="list-style-type: none"> - Provide publically supported medical education - Increase the number of primary-care physicians and correct the maldistribution of physicians - Provide community-based medical education - Expand graduate medical education (residency training) and continuing medical education - Provide all of these in a cost-effective manner
<i>Program Governance/ Management Structures</i>	<ul style="list-style-type: none"> - WWAMI programs led in each participating state by Assistant Deans at Regional Sites who report to Chief Executive Officer, UW Medicine and the Dean of the School of Medicine - Assistant Deans are first points of contact for students when at a regional location outside Seattle
<i>Resources/Finances</i>	- Medical students are supported through a combination of state funds and tuition payment
<i>Outcome Metrics</i>	<ul style="list-style-type: none"> - 2005-07 survey – students at WWAMI sites rated their experiences as positive or better than their initial experience in the urban centre of Seattle – higher measure of faculty time spent with students - In the last 30 years, over 60% of students have chosen to practice in one of the five WWAMI states - In the last 20 years, 50% of students have chosen to practice in the primary care field
<i>Student Recruitment/ Selection Processes</i>	<ul style="list-style-type: none"> - Students are required to certifiably self-identify if resident of one of the WWAMI states - Admissions are selective with a focus on rural preference - 95% of students selected come from the WWAMI states
<i>Student Financial Incentives</i>	- Montana Rural Physician Program Incentive Program – state reimburses medical education debt of physicians that choose to practice in underserved areas and where there is a demonstrated need
<i>Faculty Recruitment/ Development</i>	- Faculty development conferences held to focus on topics for practice in rural/underserved communities
<i>Faculty Remuneration</i>	(N/A)
<i>Research Capacity Building</i>	- WWAMI Rural Health Research Center – engaged in a number of projects that are focused on rural and underserved communities (one of five federally-funded rural health research centers)
<i>Community Focus</i>	<ul style="list-style-type: none"> - K-12 and College outreach programs – apprenticeship and enrichment programs for students considering medical school - Area Health Education Center Networks – relieves shortages in health care personnel for rural and medically underserved areas - Programs for Healthy Communities (PHC) – strengthens health care delivery and the practice environment in WWAMI towns - WWAMI Center for Health Workforce Studies – brings together allied health professionals to examine health workforce in underserved and rural

	areas
<i>Infrastructure</i>	<ul style="list-style-type: none"> - Students spend first year at locations in their home state - Second year is spent at the University of Washington campus in Seattle in facilities that include the Harborview Medical Center, Northwest Hospital & Medical Center, Valley Medical Center, UW Medical Center, UW Neighborhood Clinics

Australian DME Programs

JAMES COOK UNIVERSITY SCHOOL OF MEDICINE	
<i>Program Location</i>	Townsville and Cairns, Australia
<i>Year Established</i>	1999
<i>Year of First Class</i>	2000
<i>Graduating Class Size</i>	64 students (small incremental growth since inception)
<i>UGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - Six year program that is highly integrated into the community - First three years are spent in Townsville with health service placements in rural communities - Year 4 is completed in either Cairns or Townsville - Students relocate in Years 5 and 6 to sites at Cairns, Mackay and Darwin - Educational strategies include training local rural background students, utilizing suitable curriculum design, providing career opportunities locally, providing post-graduate training locally - Issue related to rural, Indigenous and tropical health are woven into the curriculum from an early stage - Degree entitled Bachelor of Medicine, Bachelor of Surgery
<i>PGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - Post-Graduate Diploma of Rural and Remote Medicine – provides opportunities for rural and remote medical practitioners to strengthen their academic and clinical expertise - Other programs include Graduate Certificate in Primary Health Care (Research), Graduate Certificate in Research Methods (Medicine)
<i>CME (rural/northern components)</i>	(see above)
<i>Mission Statement/Vision</i>	- 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”
<i>Program Governance/ Management Structures</i>	<ul style="list-style-type: none"> - School divided into Work Groups – Atherton Clinical School, Clinical Skills Unit, Townsville Clinical Skills - Office of the Dean handles public enquiries, and includes the School Manager, the Senior Administration Officer (who also handles casual staff appointments), Communications and PA to Head of School and the Selection Officer, and the Dean and Head of School.
<i>Resources/Finances</i>	- Programs funded through tuition fee contribution and government support

	(federal and Queensland governments) - School of Medicine founded through a \$52.5 million investment from the federal government
<i>Outcome Metrics</i>	- To date, it is report that two thirds of graduating students have chosen to take up their practice in northern Queensland
<i>Accreditation Status/ Issues</i>	- Accredited by the Australian Medical Council – graduates are eligible for professional registration with all medical boards in Australia and New Zealand
<i>Student Recruitment/ Selection Processes</i>	- Approximately 50% of students in the first two entry cohorts of the school are from Northern Australia and approximately 40% have rural backgrounds - Selection criteria gives preference to students from rural areas (“rurality”) plus GPA and personal statement - Recruitment starts from grade school to high school
<i>Student Financial Incentives</i>	- Australian federal government pays a portion of tuition fees - Bonded Medical Place Scheme – placement in medical school requires obligation to work in certain underserved areas - Scholarships available for Indigenous peoples and students agreeing to practice in rural/underserved areas
<i>Faculty Recruitment/ Development</i>	- Attract clinical and academic faculty with focus on research
<i>Faculty Remuneration</i>	(N/A)
<i>Research Capacity Building</i>	- Townsville is the site of Australia’s first Tropical Health Research Institute – now the Anton Breinl Centre - Current areas of research include, Bio-Medical Sciences & Applications (BMSA), Biological Anthropology, Neurobiology Techniques, Rural Health Research Unit , Tropical Remote & Indigenous Health, Vascular Biology Unit
<i>Community Focus</i>	- Volunteer Simulated Patients involved in student medical training - Strong connection to communities through rural placements in Northern Australia
<i>Infrastructure</i>	- Classes taken in School of Medicine and Dentistry at Townsville - Online simulated cases are used to supplement any areas where practical experience is lacking - James Cook University provides support services (i.e. library facilities, student support services) - Other teaching sites: Atherton Clinical School, Cairns Clinical School, Douglas Campus – Townsville, Mackay Clinical School, Northern Territory Clinical School, Smithfield Campus – Cairns, Townsville Clinical School

	FLINDERS UNIVERSITY SCHOOL OF MEDICINE
<i>Program Location</i>	Adelaide and Northern Territory Communities, Australia
<i>Year Established</i>	Medical School – 1975 Northern Territory Clinical School – 1996 Northern Territory Remote Clinical School – 2005

	Northern Territory Medical Program – 2011
<i>Year of First Class</i>	Variable, depending on program
<i>Graduating Class Size</i>	Variable, depending on program
<i>UGME Educational Models (inclusive of rural/northern components)</i>	<ul style="list-style-type: none"> - Years 1 and 2 – 135 students are based at the Flinders University campus in Adelaide or in the Northern Territory. - The clinical rotations of Years 3 and 4 may be undertaken at various locations primarily in South Australia or the Northern Territory - Students complete core clinical learning in rural family practice through the Parallel Rural Community Curriculum (PRCC) – students take third year (of four year program) fully based in family practice and live in one rural community for a full year - Major themes – Doctor and Patient, Knowledge of Health and Illness, and Health Professions and Society
<i>PGME Educational Models (inclusive of rural/northern components)</i>	- Numerous post-graduate programs offered through the School of Medicine including Indigenous and Remote Health, Remote Health Management, Remote Health Practice, Public Health, Public Health Research and Evaluation, and Primary Care
<i>CME (rural/northern components)</i>	(N/A)
<i>Mission Statement/Vision</i>	- Integration and innovation in patient care, education and research
<i>Program Governance/ Management Structures</i>	<ul style="list-style-type: none"> - Executive structure – Associate Deans, Deputy Dean and School Manager each report to the Dean of the School of Medicine - School of Medicine Board of Education – considers new course proposals, changes to existing courses, course reviews, reports from course review committees, etc. - Committee advising the School Executive include the School of Medicine Executive Committee, the Academic Status Committee and the International Programs Committee
<i>Resources/Finances</i>	- Programs partially funded by governments (i.e. federal Commonwealth Government, Northern Territory Government, etc.) and partially paid by student tuition fees
<i>Outcome Metrics</i>	<ul style="list-style-type: none"> - Enhanced experience and confidence reported by students working with common conditions, procedures in rural areas - Great patient contact reported - Distributed medical education a “consequence of and a facilitator for moving from an Academic Health Science Centre to an Academic Health Science System or Network” - Seven times more likely to choose regional, rural or remote practice, twice as likely to choose Primary Care - Graduates in all major specialties and all locations of practice
<i>Accreditation Status/ Issues</i>	- Accreditation recently renewed by Australian Medical Council in 2010 (last accredited in 2004)
<i>Student Recruitment/ Selection Processes</i>	<ul style="list-style-type: none"> - 24 places funded by the Northern Territory Government for students from these areas to train at the Northern Territory Medical Program - Admissions of students with diverse backgrounds - Bonded Medical Place Scheme – placement in medical school requires

	obligation to work in certain underserved areas with/without added living support depending on the type of agreement
<i>Student Financial Incentives</i>	<ul style="list-style-type: none"> - Sources of funding offering Honours-specific Scholarships to School of Medicine Honours Students - Scholarships range in value from \$2500 to \$5000 - individual laboratories also offer scholarships which are project specific and some areas have projects that are eligible to attract industry "top-up" funding which can include stipends for Honours Students
<i>Faculty Recruitment/ Development</i>	<ul style="list-style-type: none"> - Centre for University Teaching – support quality teaching programs and provide academic support for staff - Supports university-wide and faculty-based projects to improve teaching and learning
<i>Faculty Remuneration</i>	(N/A)
<i>Research Capacity Building</i>	- Major research field include Clinical Effectiveness, Prevention, Promotion and Primary Health Care, Clinical and Molecular Medicine, Medical Science and Technology, Rural and Remote Health, and Innovation in Clinical Education
<i>Community Focus</i>	- Close connection to rural/remote communities through students placements in areas outside urban centres
<i>Infrastructure</i>	<ul style="list-style-type: none"> - Adelaide campus is partnered with Flinders Medical Centre (combines tertiary teaching hospital and medical school) - Facilities in other locations: Northern Territory Clinical School (Royal Darwin Hospital), the Northern Territory Rural Clinical School (Alice Springs, Katherine, Gove), the Centre for Remote Health (Alice Springs, Katherine), the Flinders University Rural Clinical School (Renmark, Mt Gambier, Victor Harbor, Angaston) and the Greater Green Triangle University Department of Rural Health in south-eastern South Australia and south-western Victoria (Warrnambool, Mt Gambier, Hamilton)

SECTION V

LITERATURE REVIEW AND COMMENTARY

What do we know about Distributed Medical Education that is important to Manitoba?

Review of DME Literature and summary of our environmental scan; summarizing selective aspects of the field relating to physician human resource needs, the possible educational benefits of DME and the best evidence linking effects of various DME models on recruitment/retention of physicians to/in rural and remote communities.

Introduction

The consultants were fortunate to have access to the literature review prepared by Dr. Alex Michalos as part of the initial BMES proposal. This review provides an excellent window into the large and growing literature on Distributed Medical Education. Rather than simply recapitulating this work we have appended his review to this report (Appendix 4). The following section elaborates upon and emphasizes some of the elements covered in the original review but does not aim to replace it.

Our review can be divided into four main sections:

A. Evidence related to physician resource need

- **Health related demographic profile of Canada and the provinces: role of IMG's in the resource picture.**

B. General statements on DME

- **History, role of setting and the Academic Health Center**
- **Commentary on the generic, educational status and benefits of DME, reflecting the experience of exemplar programs and models internationally**

C. DME Models

- *Narrative on Evidence from studies of specific DME programs, see Section 4 for detail.*

D. Review of Evidence

- **Factors supporting enhanced recruitment and retention of physicians in rural areas including recent studies on the emerging outcomes of DME in diverse setting**

A. Evidence related to physician resource need

- **Health related demographic profile of Canada and the provinces: role of IMG's in the resource picture.**

i) Realities of Physician Health Human Resources (HHR) in Canada

The published data on the disparities among different demographic regions of the country paint a fairly consistent picture. Over the past decade, studies of Canada's population distribution have consistently demonstrated an overall comparative shortage of physicians practicing in rural areas. Data from 2004 show that 9.4% of Canadian physicians practiced in rural communities, serving the 21.1% of the Canadian population that resided in rural areas.²

Little change is seen from data sets in 1996 (where 9.8% of physicians practiced in rural areas, with a population percentage of 22.2%)³. Many other studies confirm that, looked at as a whole, the ratio of physicians to population is highest in urban regions and lowest in rural and remote regions. However this discrepancy is much less dramatic when non FM specialist physicians⁴ are removed from the equation. The distribution of general/ family practice and other specialized physicians practicing in rural areas, according to the same 2004 report, reveals that 16 percent of Canada's family doctors, and 2.4 percent of non-FM Specialists had practices in rural areas.⁵

The limited presence of non-FM Specialists outside the largest urban areas is a fundamental characteristic of Canada's provincial and territorial health care systems, having a logical rationale in the fact that most non FM Specialists can sustain their practices (and competencies) only by drawing upon relatively large "catchment" populations. With this constraint, issues of access to non-FM specialists are best addressed through improved transportation, communication and referral practices. For this reason, the policy option of developing

² Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19; Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

³ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19.

⁴There is a problem of terminology in the common use of the term "specialist". Family Medicine is a specialty and it is demeaning to refer to them as otherwise. We refer to FM Specialists (FMS) and nonFM Specialists (nonFMS), or (sub)specialists to refer to non-primary care traditional specialties.

⁵ Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

geographically distributed education sites has been and continues to target undergraduate and postgraduate training in family medicine, with the overarching objective of promoting and developing primary care practices in small towns and villages in rural and remote areas.

Notwithstanding legitimate concerns about adequate access to primary care physicians in Canada, research by Pong et al reveals that access to most primary care physicians is spread fairly evenly across the regions and demographic segments of our country, excepting those termed by the authors as “No MIZ”, i.e., a zone with no metropolitan influence, being so far from urban conglomerations they can be considered isolated.⁶

As they summarized their research

"...place of residence has an independent effect on not having a family doctor only in No MIZ (the most isolated) areas."⁷

Put more positively, this study concludes that in general, only the most remote of populations in the country have significantly reduced access to primary care/family physicians compared to the index values for large metropolitan areas. While the public perception of limited access to primary care services in all rural areas may well be valid, the data supports the contention that disproportionate problems of access are most acutely felt in those communities most remote from urban communities.⁸

On the other hand, conceptually, improving primary care physician resource access in the most remote areas is one that is susceptible to better educational strategies. The already existing JA Hildes Northern Medical Unit and the associated Health Careers Access Program for Aboriginal students at the University of Manitoba have well established track records of training aboriginal medical students who later return to their places of origin to practice. For the most part, the populations at risk in the most remote regions are aboriginal, and their care is under the jurisdiction of the Federal Government. From a formal perspective therefore, this factor of the access equation is beyond the scope of this study. Nonetheless, this issue must not be ignored, since collaboration and coordination of programs among the Universities and all levels of government are essential and urgently needed for these vulnerable regions. Any program that is developed to improve primary care access for rural Manitoba must also account for the special needs of aboriginal communities.

ii) Predicting physician resource need

Physician resource predictions are difficult to make and there can be grave consequences from either over- or under-supply of physicians; witness the bipolar reactions in Canada between

⁶ Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

⁷ Ibid.

⁸As pointed out by Pong et al, a large proportion of the 'no MIZ' demographic is represented by remote aboriginal reservations. Recruiting and retaining physicians in these areas can be particularly challenging.

1993 (perception of oversupply) and 2002 (perception of shortage). The lag time of a minimum of 6 years from school admission to entry into practice hampers recovery from either under- or over-supply. There is an imperative to create models, to predict future resource status and to set policy based on informed conjecture.

The balance of the right number of physicians in the right places at the right times is a problem in multiple factors, some susceptible to measurement and control, some not. Inputs can be controlled, (e.g. numbers of medical students matriculating and numbers of IMG's recruited). On the other hand, outputs are largely uncontrolled and can be highly variable. "Productivity" of the physician workforce is an important part of the equation, and is treated as a constant since it is difficult to measure or manage.

iii) Unique rural/remote physician resource issues

a.) It is nonetheless important to note that rural and remote regions have special needs with respect to dependable physician resources, which are different from those of urban and suburban areas. As an example, independent of issues of burden of illness, there is a consistently greater demand on a solo physician in a rural area whose practice includes a population of 2000 individuals, compared to that of a single physician in an urban area who draws on the support of a number of neighboring physicians and other health workers in caring for a similarly sized practice. Specifically, a case can be made that the population per primary care physician ratio should, in principle, be lower in rural/remote regions than in urban areas.

b.) The issue of isolation creates demands upon physicians and their families that have dimensions far beyond simply time on call. Even the temporary absence of an isolated physician, let alone permanent departure, disrupts ongoing care, leaves access diminished or nil, and can produce a mini-crisis in a community. The emotional burden on physicians, their families, their co-workers and whole communities are real, though difficult to measure.

c.) Additionally, whatever static snapshots of the demographics of physician resource distribution may reveal, what is rarely captured is the energy that must be expended to recruit sufficient qualified physicians to rural and remote regions. If it were not for the existence of special programs, ranging from pre-admission programs for rural candidates, special recruiting quotas, education and training programs directed to encouraging practice location in rural areas, recruitment and training programs to encourage international medical graduates to locate in rural areas, as well as a variety of practice and community arrangements designed to encourage retention of practitioners in rural areas, there can be little doubt that access to primary care physicians in rural and remote regions would be much more of a problem than it is now. Maintaining optimal physician resources in rural and remote areas is an ongoing and uphill battle.

d.) Special educational requirements for rural practice – As well, the requirements of rural practice create special demands on the medical education, training and continuing educational systems. Factors recognized for their importance in promoting the retention of rural practitioners include curriculum planning tailored to the unique scopes of practice in remote,

northern and rural locations.⁹ Programs that have addressed these special factors have proven track records of educating and training physicians who not only enter practice in rural areas, but who also thrive in those environments.¹⁰

e.) Urban bias of medical education establishments – A number of cultural factors that amount to a form of bias are also active in making the practice of medicine in rural and remote appear relatively unattractive, especially from the perspective of the large urban academic health centers. These factors need to be acknowledged and overcome in maintaining an appropriate balance of physicians in non-urban areas. (These elements will be discussed further in the section on the role of place in medical education).

f.) Dependence upon IMGs in rural areas – In many of Canada’s rural and remote communities, there is a long history of dependence upon foreign sources to ensure adequate numbers of practicing physicians. Until recently, the IMG category has consisted of physicians born and trained abroad who have immigrated to Canada. In the last decade increasing numbers of Canadian citizens who have not found places in Canadian medical schools have nonetheless trained abroad and then returned to Canada to enter practice. Together, these two groups of IMG physicians represent a flexible pool of candidates, part of which has historically filled gaps in health care service delivery not served by graduates of Canadian medical schools.

Special attention must be paid to the consequences of their recruitment and retention in rural areas and in the province as a whole. Because of inevitable changes in the demographics and educational background of this pool of physicians it is difficult to predict the nature of their competence, their need for practice specific educational upgrading, or their potential for retention in rural areas. A recent comparison of graduates of dedicated rural track programs in the US with IMG's in the US revealed that the former were 10 times more likely than IMG's to be practicing in rural areas.¹¹

(In Section 6 of this report, we elaborate on the complex role that the immigration of physicians plays in the overall physician resource equation in Manitoba.)

Historically, a consistent in-flow of foreign-trained physicians has balanced the large outflow of Manitoba graduates (principally to the destinations of British Columbia, Ontario and the United States). For complex reasons, this outflow of recently graduated physicians from Manitoba is now at relatively low levels¹². At the same time, record levels of IMGs are being recruited to

⁹ Brooks, R.G., M. Walsh, R.E. Mardon, E. Lewis, and A. Clawson. (August, 2002). The roles of nurture and nature in the recruitment and retention of primary care physicians in rural areas: a review of the literature. *Academic Medicine*: Vol. 77, No. 8, pp. 790-798.

¹⁰ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. *Academic Medicine*: Vol. 83, No. 3, pp. 235-243.

¹¹ Rabinowitz, H.K., S. Petterson, J.G. Boulger, M.L. Hunsaker, J.J. Diamond, F.W. Markham, A. Bazemore, and R.L. Phillips. (2012). Medical School Rural Programs: A comparison with International Medical Graduates in addressing state-level rural family physician and primary care supply. *Academic Medicine*: Vol. 87, No. 4, pp. 488-492.

¹² This phenomenon may be attributed to a changing demographic of students due to admission criteria benefitting rural candidates, increased exposure of students to rural practice, improved rural practice conditions or a

Manitoba and are attaining licensure in Manitoba. As a result, Manitoba has become highly dependent upon medical graduates training out of the country to support both rural and urban physician resource needs. This dependence raises ethical concerns¹³ as well as adding an uncomfortable degree of uncertainty and inconsistency to what has become a substantial component of this important human resource requirement.

g.) Adding to the difficulty of recruiting physicians to rural and remote areas is the internal 'brain drain' of physicians relocating from rural to urban centers in Canada.¹⁴ Data supporting this claim, from 1986 to 2001, reveals a net decrease of 20 percent of rural practitioners. This phenomenon is part of the more general hollowing out of a wide variety of rural services in Canada. One Registrar of a largely rural Maritime medical regulatory jurisdiction described his province as a 'farm team' for the preparation of physicians for another larger Canadian jurisdiction (personal communication). This draws attention to long-standing programs that have demonstrated considerable success in improving physician retention in rural areas, such as those described by Rabinowitz et al¹⁵; albeit with insufficient data to draw final conclusions.

h.) Decreases in primary care physicians over time – A further disturbing trend that threatens the supply equation for rural physicians is the diminishing numbers of graduates of medical schools who choose either family medicine or other generalist specialties for their practice careers. As Whitcomb¹⁶ has described, a vicious cycle is easily established in which the relative paucity of the traditional practice supports in rural towns can be seriously exacerbated by the loss of only one individual practitioner. So if the pipeline of family practitioners and other generalist physicians continues to constrict, a barely adequate situation can rapidly deteriorate to an untenable one, producing the need for crisis management. Since decisions as to specialty career directions are made early in medical school, responsibility for addressing this growing deficiency rests with medical school policy makers.

iv) Consequence of diminished physician resources

It should hardly need to be pointed out that diminished accessibility to quality health care in Canada's rural and remote areas has direct implications for the health of rural populations in Manitoba. A report undertaken by the Canadian Institute for Health Information¹⁷, examined

combination of these and other factors. The looming shortage of physicians in the US portends a return to historic levels of outflow of Manitoba Graduates to the US and other Canadian Provinces.

¹³ Wilson, N.W., I.D. Couper, E. De Vries, S. Reid, T. Fish, and B.J. Marais. (June 5, 2009). Review Article: A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Rural and Remote Health*: Vol. 9, No. 1060, (Online). Available from <http://www.rrh.org.au>.

¹⁴ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19.

¹⁵ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. *Academic Medicine*: Vol. 83, No. 3, pp. 235-243

¹⁶ Whitcomb, M.E. (August, 2005). The challenge of providing doctors for rural America. *Academic Medicine*: Vol. 80, No. 8, pp. 715-716.

¹⁷ Canadian Institute for Health Information. Supply, Distribution and Migration of Canadian Physicians 2010. (2011). (Ottawa, Ontario: CIHI). <https://secure.cihi.ca/estore/>

the health status of rural versus urban Canadians. The study found that rural populations have a greater overall mortality rate, are more likely to engage in health-depleting behaviour (e.g. smoking, poor diet choices), and have greater incidences of circulatory diseases, injury, occupational injuries, and suicide than their urban counterparts.¹⁸ However, here in Manitoba as elsewhere, the picture is complex, where both rural and urban populations experience a burdensome diversity of morbidity and mortality.

B. General statements on DME

- **History, role of setting and the Academic Health Center**
- **Commentary on the generic, educational status and benefits of DME, reflecting the experience of exemplar programs and models internationally**

i) The role of "setting" in medical education

Pong et al have made an important contribution to the understanding of the role of 'place' in health care delivery.¹⁹

"Place embodies many things, including the physical environment, population, socio-economic conditions, occupational activities, culture, customs, community structure and social relationships. Thus, when we talk about the role of place of residence in health, we are in fact talking about how health is shaped by an aggregate of interacting factors encapsulated in specific geographic locations".

This point of view prompts us to expand their discussion to include the question of the role of setting in medical education. Can the relocation of medical education services to distributed sites be justified purely on an educational basis? A case can be made that independent of any need to increase physician supply, an expansion of undergraduate and post graduate education to sites in non-urban areas of the province will enhance the competence of rural practitioners, since both context and content of their education will actually address the medical needs and concerns that are unique to the geographic region in which their practice is to be located. The issue of context in medical education and its effects on process and outcome has been addressed by Wilson et al,²⁰ Bowman,²¹ Strasser,²² and Sheps^{23, 24}

product/Family.htm?locale=en&pf=PFC1680/smdb_2010_en[1].zip

¹⁸ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19; Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

¹⁹ Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

²⁰ Wilson, N.W., I.D. Couper, E. De Vries, S. Reid, T. Fish, and B.J. Marais. (June 5, 2009). Review Article: A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Rural and Remote Health*: Vol. 9, No. 1060, (Online). Available from <http://www.rrh.org.au>.

²¹ Bowman, R.C. (2008). They really do go. *Rural Remote Health*: Vol. 8, No. 3, pp. 1035.

a.) The Matter of Distance – Distance itself is a factor affecting distributed medical education. The more remote that a teaching practice is from the administrative center, or from a regional hospital with a collection of non-FM Specialists or other primary care physicians, the greater the likelihood that a student will be able to play an integral role in the delivery of care. On the other hand, the degree and quality of supervision might suffer as a result. What to some might be the attraction of a remote environment, to others might be an intimidating sense of isolation. Supervisors and administrators must be alert to the range of effects that isolation might have on medical students, from a false sense of empowerment to loneliness and withdrawal. It is assumed, perhaps glibly, that medical students in urban settings are self-reliant, perhaps as a reflection of their comfort in their usual home setting. In the alternative circumstance of rural and remote settings, no such assumptions should be made, and an added role of social attentiveness must be programmed for supervisors and colleagues, and particularly for student affairs administrators.²⁵

Regional disparities in human resources related to remote and rural medicine are not measured in numbers alone. There also exists a qualitative component that relates to issues such as the management of scopes of practice. This component reflects backwards to questions of medical education, training and certification for competent practice, and forward to successful outcomes in practice related to the ability of physicians to function competently in specified practice settings.²⁶

Pong et al refer to the differences of scope related to geography: for example, they have described the differences in the practice profiles of rural vs urban-based Family Practitioners (FP).²⁷ The former tend to have a much broader scope of practice, are more inclined to work in different types of care settings and are more likely to provide clinical services and perform procedures that would typically be done by specialists in larger urban centers. In the relative absence of specialists in rural areas, some rural family doctors expand their scope of practice to fill prevailing service gaps.

²² Strasser, Roger, and Andre-Jacques Neusy. (August 13, 2010). Context counts: training health workers in and for rural and remote areas. *Bull World Health Organ*: Vol. 88, pp. 777-782.

²³ Sheps, Cecil and Lewis, I. "Sick Citadel, The American Academic Medical Center and the Public Interest." Oelgeschager Gunn and Hain, Cambridge Mass 1983.

²⁴ A more formal discussion of the perverse effects of urban-based Academic Health Centers is found in the classic monograph of Cecil Sheps, MD. Sheps was a graduate of the University of Manitoba Faculty of Medicine who went on to become the founding father of social medicine.

²⁵ Rabinowitz H. "Caring for the Country: Family Doctors in Small Rural Towns." Springer-Verlag, New York, 2004.

²⁶ Klass, Daniel. (September-October, 2000). Re-evaluation of clinical competency. *American Journal of Physical Medicine and Rehabilitation*: Vol. 79, No. 5, pp. 481-486; Wenghofer, E.F., A.P. Williams, D. Faulkner, and D.J. Klass. (2006). Physician-Patient Encounters: The Structure of Performance in Family and General Office Practice. *Journal of Continuing Education in the Health Professions*: Vol. 26, No. 4, pp. 285-294.

²⁷ Pong, R.W., M. DesMeules, D. Heng, C. Lagace, J.R. Guernsey, A. Kazanjian, D. Manuel, J.R. Pitblado, R. Bollman, I. Koren, M.P. Dressler, F. Wang, and W. Luo. (Fall, 2011). Patterns of health services utilization in rural Canada. *Chronic Diseases and Injuries in Canada*: Vol. 31, Suppl. 1, pp. 1-36. Public Health Agency of Canada.

Programs delivering rural and remote education to medical students or residents are constrained by the burden of illness or breadth of scope of practice in any one region. Skewed population demographics (e.g. near absence of geriatric patients in typical mining or natural resource industry towns) or small practice size can create problems in "patient mix" and student breadth of experience that can only be overcome by complex compensating strategies. These issues can be hidden and difficult to document, but are often exposed by students complaining of inadequate experiences or by accreditation reviews revealing problem practices. These constraints, in themselves, are independent of the options of freestanding, satellite or rural track, but compensatory steps are most difficult in freestanding arrangements because a range of alternative practices are rarely easily available.

Without appropriate educational preparation, coping with the particular scopes of practice normally encountered in rural and remote areas in Canada, presents a challenge to physician competence.²⁸ For example, the educational factor that correlates best with improved recruitment to rural practice sites is the availability of preparatory courses in special procedures that family practitioners would be likely to encounter only in isolated practices.²⁹

The discussion of role of setting has considerable relevance to the specific questions facing this study, particularly those related to issues of governance and educational strategy required for the delivery of appropriate education for rural and remote practitioners. It is likely that the non-measurable elements of leadership and faculty commitment to the culture of rural medicine represent critical success factors for programs hoping to support the recruiting and retention of physicians.³⁰ The importance of linkage between the communities being served and the educational programs dedicated to facilitate that service is featured in many narratives of successful rural innovations.

ii) The dominant culture of Academic Health Centers

The pervasive culture of the Academic Health Center, which has matured and strengthened over 100 years of development,³¹ represents the invisible and powerful status quo in almost all medical teaching establishments. It is an important part of the hidden curriculum of medical education. Largely as a result, generations of medical students and residents come to see rural medicine as the stigmatized poor cousin of the dominant paradigm. The current standard physician supply pipeline features, perhaps as a caricature, students from urban, high income families applying, and gaining acceptance to urban medical schools, where the values of the urban society provides the general motif as well as the substance of medical content. Bowman

²⁸ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19.

²⁹ Curren, V. and J. Rourke. (May, 2004). The role of medical education in the recruitment and retention of rural physicians. *Med Teacher*: Vol. 26, No. 3, pp. 265-272. Centre for Collaborative Health Professional Education.

³⁰ Wilson, N.W., I.D. Couper, E. De Vries, S. Reid, T. Fish, and B.J. Marais. (June 5, 2009). Review Article: A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Rural and Remote Health*: Vol. 9, No. 1060, (Online). Available from <http://www.rrh.org.au>.

³¹ Sheps, Cecil and Lewis, I. "Sick Citadel, The American Academic Medical Center and the Public Interest." Oelgeschlager Gunn and Hain, Cambridge Mass 1983.

describes the problem as one of two cultures; outside (rural and remote) versus inside (urban and academic), and proceeds to demonstrate the validity of the concept by logistic regression modeling.³²

The ongoing challenge to academic medicine in general, and individual schools specifically, is to craft educational strategies and the supporting institutional structures that allow appropriate value to be given rural and remote medicine without diminishing the value of the traditional approach.

Among the many benefits to the educational processes that have developed within the context of the AHC, two are of special interest. First, teaching in the AHC has been able to take advantage of the concentration of clinical teachers that is a consequence of the institutional structure and function of these centers. Concentration to that degree does not occur in rural or remote areas, and premiums to provide equivalently effective educational environments must be expected. Second, an enduring and valuable element of clinical teaching in the AHC is the CTU, or clinical teaching unit. Basically this is a team approach to health care and education with units comprising teaching clinicians, residents and students dividing tasks and responsibilities to ensure safety, effectiveness and the maximization of learning opportunities. Though not a documented component of DME, it seems likely that this teaching strategy will migrate from the AHC to community setting.

iii) History: development of DME programs and specific remedies for medical resource discrepancies

A recent dramatic change in the Canadian educational establishment has been the clear articulation of the social accountability mandate of Canadian Medical Schools.³³ As publicly funded institutions, medical schools in Canada have as part of their mandate, the goal of representing and addressing the needs of the communities that they serve.³⁴

Some of these needs can be addressed by modifications in admissions policies of medical schools. Medical students do not reflect the overall demographic of Canada; in ethnic, rural, or socio-economic background. One study reports that only 10.8 percent of medical students are of rural background, despite the fact that Canada's rural population makes up 22 percent of the whole.³⁵ The reasons for this are complex, but admissions programs across Canada need to study the degree to which their processes might be responsible for this artifact. Providing fair access to a medical education for all of Canada's diverse demographic groups forms a part of the action program for social accountability. In itself, assuring fair access to medical school placement represents a good starting point to assure fair distribution of physicians across all demographics.

³² Bowman, R.C. (2008). They really do go. *Rural Remote Health*: Vol. 8, No. 3, pp. 1035.

³³ Social Accountability Initiatives Database. The Association of Faculties of Medicine of Canada. Available from <http://www.afmc.ca/social-articles-interest-e.php>.

³⁴ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19.

³⁵ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. *Canadian Journal of Rural Medicine*: Vol. 16, No. 1, pp. 13-19.

In addition, to the extent that Canadian medical schools can influence the career paths of their graduates through their educational programs, Distributed Medical Education (DME) programs are currently receiving the lion's share of attention and are the focus of this study.

The decade of 1970-80 witnessed a dramatic ramping up of medical school capacity in US and Canadian medical schools. In Canada, as a direct result of the recommendation of the Hall Commission Report and the implementation of the first Canada Health Act (Medicare), added capacity was to be met by two options:

- a) Increased enrolments at the already existing ten schools
- b) Addition of four new medical schools, including Sherbrook, Newfoundland, McMaster and Calgary.

The purpose of these changes was to address the predicted shortage of physician resources once health services became universally accessible. Yet at their origins these schools made little acknowledgement of the need to revise educational processes so that their graduates could meet the particular demands of urban, rural, or remote practice locations.

The first major wave of medical schools with an explicit mandate for what has come to be called distributed medical education began in the US in the 1960s and 1970s, also in response to a generally recognized need to increase medical school enrollment.³⁶ As in Canada, the need for increased physician resources was partly met by the simple expedient of expanding the class enrolment of pre-existing medical schools. In addition, new medical schools were also commissioned, but as an important point of departure, some of these schools had explicit mandates to graduate physicians for the particular needs of the communities (e.g. rural) in which they were located.

These latter innovations were the leading edge of what has become a worldwide movement to revise the institution of medical education. This movement is best described in the Lancet Commissions Document "Health professionals for a new century: transforming education to strengthen health systems in an interdependent world."³⁷

One of the key objectives of this Commission was to "improve the performance of health systems by adapting core professional competencies to specific contexts..." The commission made special reference to "THEnet", a collaboration of medical schools innovating to "attract,

³⁶ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

³⁷ Frenk, J., L. Chen, Z.A. Bhutta, J. Cohen, N. Crisp, T. Evans, H. Fineberg, P. Garcia, Y. Ke, P. Kelley, B. Kistnasamy, A. Meleis, D. Naylor, A. Pablos-Mendez, S. Reddy, S. Scrimshaw, J. Sepulveda, D. Serwadda, and H. Zurayk. (December, 2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet: Vol. 4, No. 274, pp. 1923-1958.

retain, and enhance the productivity of health professionals serving disadvantaged populations often in remote rural areas.³⁸

A central concept of DME is to remove the locus of control for medical education from the exclusivity of the academic health center toward "community based" peripheral centers, be they individual community practices, medical campuses, full blown satellites or freestanding medical schools in rural communities.

In our scan of emerging DME models, we find that the most successful of programs are based upon complex partnerships which have a clear vision and mission shared among all partners, clear lines of communication and accountability, reliance on local decision-making to solve local implementation challenges, and clear guidance for resolving differences among partners.³⁹ These distributed campuses have the unique opportunity, particularly due to their physical distance from their more urban counterparts, to focus on the integration of education to achieve enhancement of health delivery in rural areas. Many distributed models have adopted this objective, and, although vastly different in brand, three major models have played a significant role in recent advances.

C. DME Models

- ***Narrative on Evidence from studies of specific DME programs, see Section 4 for detail.***

i) Freestanding medical schools

The outstanding Canadian example of a "free standing" medical school designed to serve the special purpose of increasing the supply of rural primary care physicians is the Northern Ontario School of Medicine, with dual campuses in Thunder Bay and Sudbury, Ontario. Much has been documented about the unique features of this program.⁴⁰ Of particular note are the following:

- Early (1970's) community based pressure for the creation of this school in Northern Ontario, a region of vast dimension, but with strong sense of community and health care problems distinct from those of Central Ontario.
- Determination to encompass the whole region of Northern Ontario (approx. service population > 800,000)
- Two campuses; Sudbury (160,000) and Thunder Bay (100,000)

³⁸ Palsodottir, B., and A.J. Neusy. (2010). Transforming medical education: lessons learned from THEnet. Commission paper. Available from: <http://www.healthprofessionals21.org/doc/TransformingMedEd.pdf>.

³⁹ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

⁴⁰ Strasser, Roger, and Andre-Jacques Neusy. (August 13, 2010). Context counts: training health workers in and for rural and remote areas. Bull World Health Organ: Vol. 88, pp. 777-782; Tesson, G., Hudson, G. Strasser, R., Hunt, D., editors. The Making of the Northern Ontario School of Medicine: A Case Study in the History of Medical Education. Montreal: McGill-Queens University Press; 2009.

- Independent medical school under aegis of two degree-granting Universities (Laurentian and Lakehead)
- Rural community based training specified to encompass rural and remote expectations
- Collaborative community oriented programs
- Admissions policy, 90% N. Ontario, 45-50% rural and remote
- Pre-existing faculty development related to prior McMaster and Ottawa rural programs (NOMP and NOMEK).
- Positive initial results, good academic results, good rural retention (early days).

The "Pioneers" of the independent school model, Michigan State University in Lansing (1962) and North East Ohio Universities College of Medicine in Rootstown, (1973 NEOUCOM, now NEOMED) were at their origins "rural, community based" medical schools, founded with the specific intent to develop educational programs tailor-made for primary care physicians who would practice in rural areas. The original program at NEOMED was based upon

"a plan for medical education for this area that could address the need for primary care physicians, and one which would use existing facilities of the three universities and of the area community hospitals to the greatest extent possible."⁴¹

Other notable features of NEOMED were: its governance (an independent medical school with its "ownership" shared amongst three separate degree granting institutions); its small size, with an initial class size of only 41 students (currently 110); and its distribution of clinical education sites to small community based institutions.

As a simple index of success for this program, 51% of the current (2010-11) graduating class will remain in Ohio for their residencies. This compares to 37% retention in the neighboring comparable non-rural school, Ohio State University. A relatively high percentage of its graduates also opt for primary care specialties (52%). (In the Manitoba context, it should be noted that in recent years, over 50% of graduates of the U of M FOM have remained in Manitoba for their residency training).

What is the lower limit of medical school size?

Of course the feature of these freestanding schools of particular interest to the Province of Manitoba is the specific mandate of increasing physician resources in particular areas served by the schools. A major question that is raised is, what size of new medical school (class size) would serve the need of a given population? There is no direct answer to this question, but the key determinants are worth exploring.

The first determinant is the number of doctors needing to be trained annually for the target population of the relevant catchment area? Based on our calculations in Section 6, and the current CPSM data on additions to the Manitoba Register for urban and rural areas, a rough estimate of 20 rurally oriented graduates per year would be well in excess of projected need

⁴¹ NEOMED Website, accessed Mar 2012: www.neomed.edu/about/our-history.

for the larger Brandon area (about 250,000) assuming no overlapping pipelines.

The second determinant is more theoretical; what is the minimum feasible size of a medical school class? This is a question of economics and human resources, with two major factors. The first factor is the total start up and ongoing fixed cost to operate an independent four year medical school. This cost is relatively insensitive to number of students; comprising a variety of physical plant costs (including laboratories, library facilities, communication devices etc), premedical instruction cost and administrative cost. This fixed cost, expressed per student, diminishes rapidly as the denominator increases, and only becomes sustainable when its value is comparable to other equivalent schools, e.g. UM FOM. It would make no sense for a funder to choose to train medical students in one school at three to four times the cost per students at another school.

The third determinant is the capacity of various physician practices to take medical students into the organizational structure of their practices. There are few guidelines to help estimate this number, but since the educational model to be adopted is an apprenticeship style, a one to one relationship between teacher and student can be assumed. For a full clinical program, a class size on the order of 20 students would demand a minimum of 40 placements or practices to be available every year, all year to take on students. While not an impossible undertaking, the time and effort to achieve this level of support from the community physicians would be formidable. A major precondition for NOSM's ability to be up and running was the large pool of experienced clinical teachers that had been built up over time through the NOMEK and NOMP programs of McMaster and Ottawa Universities (personal communication, W Mcready).

Using publicly available data derived from the AAMC and AFMC, we have surveyed populations and medical school sizes in the United States and Canada, the two jurisdictions with relevant medical demographics. On average:

- Each seat at a medical school in Canada serves 2750 individuals.
- Each seat at a medical school in the US serves 3750 individuals

Assuming a catchment area around Brandon of about 250,000 (all of Brandon, Assiniboine, Central and Parkland RHA's) application of this average suggests a total school size of 90 and a maximum potential class size of 22 students per year.

We also surveyed the range of class sizes in Canada and the US.

- In the US there are about 137 medical schools ranging in class size from the smallest, 41 students, to schools with well over 250 students per class. The average class size is 134. The average class size of the lowest decile of schools is 50 students.
- In Canada the average class size of the current 17 schools is 164, and the smallest admitted class size is 64 (NOSM and MUN (NFLD/LAB)).

In terms of catchment areas, it is interesting to note that in the US, each of 137 Medical schools serves an average population of 2,500,000, while in Canada an average of 1,900,000 people are served by each of the 17 medical schools. Apparently economies of scale prevail, and the very

high per student cost to train medical students conspires against the development of small freestanding medical schools.

ii) *Satellite campuses*

The expedient of developing "satellite campuses", budding out from pre-existing medical schools has become an attractive alternative for increasing medical graduate capacity targeted to rural practice. By 2006, according to the AAMC, approximately 20 percent of medical schools in the US had developed satellite regional campuses. These campuses have been the direct result of planning for workforce development and government controlled increase in student numbers.

The evolution, beginning in 1962, of Michigan State University from a single site, freestanding medical school in Lansing, to a complex medical school with over six clinical campuses in towns with populations in the 60-190,000 range spread throughout the central and northern parts of Michigan is similar to that of other schools in the US. Until recently all students in each class of 180 completed their two preclinical years at the central campus of East Lansing and then spread out to the several community campuses accommodating students for their 3rd and 4th years of training. As of 2010, the clinical campus in Grand Rapids began to provide all 4 years of education for a cohort of students as a full-fledged Satellite Campus.

Development of satellite programs has also spread to Canada, where UBC has spawned campuses in Prince George, Victoria and Kelowna, each satellite being created in partnership with locally based Universities at each site, but all remaining within the institutional envelope of UBC. Several satellite programs also now exist in Ontario (notably McMaster with satellites at Waterloo and the Niagara region), in Quebec (Sherbrook with Chicoutimi and Moncton) and Nova Scotia (Dalhousie and Saint John NB).

In interviews with principal developers of satellite campuses in Ontario, Nova Scotia, and British Columbia we have learned that a major distinguishing challenge among the various iterations of distributed regional satellite campuses is the need for management of relationships between University and community partners, developing sound governance, and ensuring students have comparable education and support experiences across satellite and "central" campuses.⁴² In each case in BC, a separate regional University developed a partnership with the central campus at BC to support the development of "franchises" of the BC campus. Both medical preclinical and clinical studies are organized around these satellite campuses, although in some instances students receive educational programming via telecommunication from the central Vancouver campus and make occasional visits to the central campus. Nonetheless from the student perspective, the home campus is the satellite. It should be noted that the term "rural" satellite is applied with limited specificity in this model; since Victoria, Kelowna and Prince George are all urban population centers of >100,000, although they have distinctive rural catchment areas.

⁴² Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

From an economic perspective, satellite campuses have the advantage over freestanding schools, of being able to capitalize on already existing fixed costs for portions, though not all, of the preclinical education. Costs for clinical education should be no different, in theory, among all three models of DME, since the amount of fixed costs is relatively low compared to the major resource requirements of clinical teaching based on the student variable.

iii) Rural Track Programs

A third major model that shares the explicit purpose of increasing the number of physicians practicing in rural areas has come to be known as the Rural Track program.⁴³ A relatively small number of comprehensive medical schools in the United States have adopted programs which shared the following criteria or objectives;

- The primary goal was to increase the supply of rural physicians,
- The program focused on a defined cohort of medical students, and either
- A focused rural admissions process and required rural curriculum,
- Or an extended (<6 months) full time required clinical curriculum during the last 2 years of medical school.

The original schools that followed this model included the Universities of Minnesota, Jefferson (Philadelphia; the original PSAP program), Michigan State, SUNY (Upstate) and Illinois, and more recently Rural Track programs have been established at other medical schools in the US including Oregon, Colorado, Wisconsin, UC Davis, Florida State, and Tulane Universities).

Rabinowitz⁴⁴ has documented that the original programs have produced a substantial increase in the rural physician supply in their regions. On average, between 53 percent and 64 percent of the graduates are practicing in rural areas. Rural retention rates are also significantly higher than the national norm, ranging between 79 percent and 87 percent taken as a measure at seven years. In the past three decades, these tracks have graduated more than 1,600 physicians. Although the overall output of graduates from these programs is much smaller than the number of graduates from typical urban centered medical schools, (e.g. the PSAP program averages only 14 graduates a year), these physicians contribute approximately 12 percent of rural family medicine practice in Pennsylvania. Rabinowitz suggests that despite concerns about the ability to predict which applicants will actually practice in rural areas at the time of admission to medical school, the fact that multiple schools have been doing this successfully for decades provides strong evidence of its feasibility. Rabinowitz concludes that widespread replication of this type of program to other medical schools can be projected to substantially increase the current output of rural physicians and proposes that such replication would have a major impact on the maldistribution of access to physicians problems through the whole of the United States. In a separate publication he reports the extent to which expansion of rural track

⁴³ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. *Academic Medicine*: Vol. 83, No. 3, pp. 235-243.

⁴⁴ Ibid.

programs would be a much more efficient tool to increase physician supply than the deployment of IMGs has been in the USA.⁴⁵

Rural Track Pipeline

Since 1955, the University of Missouri School of Medicine set its objectives towards training physicians for rural practice in the state. This was done through the development of the Rural Track Pipeline Program (MU-RTPP), which includes a rurally-oriented pre-admission program (Rural Scholars Program), Summer Community programs for second year students, a third year, 6 month rural-clerkship program (Rural Track Clerkship Program), and rural electives offered in the fourth year of education. MUSOM's rurally minded curriculum is appropriate; the main campus of the school is located away from the major urban centers of Missouri, and the majority of students come from within the state. The program has been built in collaboration with the federally sponsored Area Health Education Center (AHEC) organization a valuable, but little known resource in the US which is committed to the development of quality rural health care. A significant innovation of this program has been the objective of creating a "self-renewing" rural physician resource; one in which students whose education and training is in one of seven rural centers in Missouri, will add to and eventually be part of, the pipeline by becoming the next generation of community based faculty for upcoming medical students. The main focus of this program is to "admit students from rural Missouri, provide them with training experiences in rural areas in an effort to increase the number of physicians practicing in rural Missouri".⁴⁶

This program also incorporates a number of innovations in educational programming designed to optimize the rural aspects of training. Of particular note is the recent incorporation of a longitudinal clerkship experience as has been described by Couper, Strasser and Worley

Overall, this RTTP records over 55% of its graduates as entering practice in a rural location, and a "significantly higher" percentage of its graduates entering primary care specialties compared to the non-RTTP students at MUSOM.⁴⁷

WWAMI is the index program for addressing physician resource needs in under-populated regions, and can be characterized as a rural track program serving 5 states in the North West USA. This program has been highly effective in promoting rural recruitment and retention in the participating states of Washington, Wyoming, Alaska, Montana and Idaho (hence

⁴⁵ Rabinowitz, H.K., S. Petterson, J.G. Boulger, M.L. Hunsaker, J.J. Diamond, F.W. Markham, A. Bazemore, and R.L. Phillips. (2012). Medical School Rural Programs: A comparison with International Medical Graduates in addressing state-level rural family physician and primary care supply. *Academic Medicine: Vol. 87, No. 4*, pp. 488-492.

⁴⁶ Quinn, Kathleen, Kevin Kane, James Stevermer, Weldon Webb, Jana Porter, Harold Williamson, and Michael Hosokawa. (November, 2011). Influencing Residency Choice and Practice Location Through a Longitudinal Rural Pipeline Program. *Academic Medicine: Vol. 86, No. 11*, pp. 1397-1406. The Association of American medical Colleges.

⁴⁷ Couper I, Worley PS and Strasser R. Rural longitudinal integrated clerkship: lessons from two programs on different continents. *Rural and Remote Health, 11:1665*. Accessed online at www.rrh.org.au

'WWAMI').⁴⁸ The latter 4 states have been felt to be too small in population to support freestanding medical schools (Idaho 1.5 mil, Montana 1.0 mil, Alaska 722 thousand, Wyoming 568 thousand, census 2011). The purpose of the program is to assure admission to medical school of residents of each of the states. Their basic science education is completed in a uniform curriculum at each of several state colleges, and then their initial clinical education takes place at the Seattle campus. A variety of clinical tracks can then be followed, with the expectation that most of the students will attend rural track programs, complete rural post-graduate rotations and practice in rural communities in their home states. This program has been successful in its mission for over 40 years.

The program at Medical University of Newfoundland represents a model of education similar to a rural track program.⁴⁹ MUN serves a highly rural and regional population of 512,000 with a decentralized medical education program, involving both undergraduate and postgraduate clinical educational placements throughout Newfoundland and Labrador, particularly in family medicine. The family medicine residency program can include 8 months or more in Labrador in the NorFam (Northern Family Medicine Education) program, an example of their building "the pipeline to practice". As outcomes, 17.2% of MUN graduates practice in rural areas, compared with 11% of those graduating from all Canadian medical schools, while 46% of family medicine graduates practice in rural areas, compared with 20.9% of those from all Canadian family medicine programs. And while 41.2% of family physicians who do their family medicine residency in Newfoundland and Labrador practice in rural communities, only 13.4% of graduates of all of Canada's family medicine residency training programs do so.

These outcomes are not atypical for most of the rural track programs; the "yield" of sustainable rural practices, while nowhere near 100%, is generally much higher than would be expected from standard medical education, even in the presence of practice incentives.

A dominant feature of the Rural Track programs, which distinguishes them from Satellite models, is the relative simplicity of academic management, since the rural aspect of the program remains under the control of a single established medical school. Development and management of relationships with communities, including institutions, patient groups, local physicians etc remain major challenges and preoccupations of the rural track programs.

In reference to the three fundamental options posed in the study parameters, this discussion makes clear that while a solid base for rural recruiting and rural based education may be present in any program, there appears to be no specific institutional structure or form that has been identified as superior, whether freestanding, satellite based or outreach based. What is important in each of the models is integrity of purpose and leadership from both, as Bowman describes it, "inside" and "outside".⁵⁰

⁴⁸ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. *Academic Medicine*: Vol. 83, No. 3, pp. 235-243.

⁴⁹ Rourke, J. (2006). Social Accountability in Theory and Practice. *Ann Fam Med: Suppl. 1*, pp. S45-S48, discussion S58-S60.

⁵⁰ Bowman, R.C. (2008). They really do go. *Rural Remote Health*: Vol. 8, No. 3, pp. 1035.

Consolidation of current distributed education programs of the University of Manitoba Faculty of Medicine would represent the detail of option 3 (rural track) of the BMES study. With recent administrative changes at UM FOM a formal rural track within the Faculty is virtually a fait accompli. As a result, a wide variety of already existing programs in the Faculty (see Section 6c) are advancing the agenda of distributed medical education. (As will be made clear in Section 7 of this report, a two pronged approach to expanding this educational direction seems promising for DME in the Province.)

D. Review of Evidence

- **Factors supporting enhanced recruitment and retention of physicians in rural areas including recent studies on the emerging outcomes of DME in diverse setting**

i) Published Evidence

Wilson et al have provided a critical review of studies of specific factors identified as important in addressing recruitment and retention of doctors to rural and remote regions around the world.⁵¹ As an indication of the generality of this challenge, they located 1261 relevant articles through to 2008 in the NLM PubMed database, of which 110 met their search criteria. They divided recruitment and retention strategies into two overriding categories;

- a) Educational selection and preparation; so called "push programs" (selection of candidates for medical school and the gamut of educational programs from pre-matriculation through to undergraduate and postgraduate training).
- b) A range of programs that are designed to draw licensed physicians into particular practices in rural or remote areas (recruitment) and encourage them to remain in place (retention); so called "pull programs".

Their overriding conclusion is that only 'well defined selection and education policies' are supported fully by the evidence, 'although incentive and support schemes may have value'.

This review and the studies upon which it is based make clear that educational policies have a clear benefit for rural recruitment and retention. What is also made clear is that no one program can be seen as sufficient to address the problems of poor recruitment and retention of licensed physicians. "Implementation of a combination of these strategies" must be incorporated to maximize success.⁵²

⁵¹ Wilson, N.W., I.D. Couper, E. De Vries, S. Reid, T. Fish, and B.J. Marais. (June 5, 2009). Review Article: A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Rural and Remote Health*: Vol. 9, No. 1060, (Online). Available from <http://www.rrh.org.au>.

⁵² Hsueh, W., T. Wilkinson, and J. Bills. (October, 2004). What evidence-based undergraduate interventions promote rural health? *New Zealand Medical Journal*: Vol. 22, No. 117, pp. U1117.

When examined in more detail, these and other authors (see also Strasser et al⁵³) point out the reliability of benefit due to the following factors:

- a) Candidates for admission having an authentic rural background;
- b) Medical students having positive and substantial clinical and educational experiences in a rural setting (during undergraduate medical education);
- c) Residents having received targeted training for rural practice at the postgraduate level.

These findings support a previous review study in which the value of the specific educational strategies of rural student recruitment and admission policies, rural-oriented medical curriculum, rural practice learning experiences, faculty values and attitudes and advanced procedural training are identified as being universally worthwhile.⁵⁴

Many medical education programs, aimed at enhancing the recruitment and retention of rural physicians have integrated these three evidence-based factors into their distributed medical education models. Although the outcomes of many of these DME models (in terms of recruitment and retention) have yet to be reported, there are strong indications that these programs are successfully altering the geographical distribution of physician practice.

ii) Specific Success Factors

As alluded to above, there has been a recent flood of literature related to the implementation of distributed forms of medical education. Some of these reports provide hard evidence of successful outcomes arising from innovative implementation strategies. But for the most part, what is published is grey literature, providing ideas that are often valuable, but not necessarily generalizable. In the course of this study many hours of interviews were conducted with key informants in the world of DME. Some of these perspectives are captured in the summary of the Workshop held in Brandon in January 2012, but others are reported here, unattributed. Many of these ideas provide particular perspectives that frame the discussion of options in Section 7. Of importance are new educational approaches to clinical education in community settings, particularly the linked ideas of longitudinal integrated clinical clerkships and community clinical teaching units, involving residents, preceptors and clinical medical students.

The following section provides a summary of several such perspectives.

a.) Attracting Rural Physicians: Admissions and the Candidate pool

⁵³ Strasser, Roger, and Andre-Jacques Neusy. (August 13, 2010). Context counts: training health workers in and for rural and remote areas. Bull World Health Organ: Vol. 88, pp. 777-782.

⁵⁴ Curren, V. and J. Rourke. (May, 2004). The role of medical education in the recruitment and retention of rural physicians. Med Teacher: Vol. 26, No. 3, pp. 265-272. Centre for Collaborative Health Professional Education.

Experience has suggested that students recruited from rural areas and given opportunities to train in such areas are more likely to return following graduation.⁵⁵ Rural physicians are 2-4 times more likely to have been brought up or to have spent a substantial amount of time in a rural community and are 2-3 times more likely to have been exposed to rural training in their undergraduate medical curriculum, postgraduate training, or both than their urban counterparts.⁵⁶

b.) Pre-admission factors

Despite speculation that rural applicants may be at a disadvantage in terms of gaining admission due to the predominately urban medical school locations, a study in Alberta of 4407 applicants to medical school over a ten year span demonstrates that the number of admitted rural and urban students was proportional to their numbers in the applicant pools.⁵⁷ The issue apparently is that the number of candidates in the applicant pool from rural areas was below expected. The decreased numbers of applicants are likely due to cultural or economic factors that deter or prevent rural students from applying. A study conducted in Ontario had similar findings. It has been suggested that an early interventional strategy, such as career counseling at the high school level to increase awareness of opportunity, should be investigated as a potential solution for underrepresented rural applicant pools. Additionally, studies have demonstrated that rural students have higher levels of debt upon entering and exiting medical school than their urban counterparts. It has been predicted that the current trend toward rising tuition fees in most provinces, will increase economic barriers for rural students and will exacerbate the already existing discrepancies between 'urban rich' vs. 'rural poor' applicant rates.⁵⁸

c.) Admission Factors

Based on the common belief that choosing rural students for admission assures a higher rate of recruiting and retention in rural practice, a variety of admissions processes have been employed in each of the models of DME described. One of the advantages of a freestanding medical school is its capacity to define and implement its own admission policies without necessarily having to create competing tracks or pathways to admission. It has been argued that in the case of rural tracks in particular and satellites to a lesser extent, the selection of subsets of applicants has the potential disadvantage of creating "stigmatized" subgroups of students and/or programs. In the case of a freestanding institution the potential disadvantage of creating separate streams may be avoided, but given the potential for diversity of claims of privileged

⁵⁵ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

⁵⁶ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. Academic Medicine: Vol. 83, No. 3, pp. 235-243; Strasser, Roger, and Andre-Jacques Neusy. (August 13, 2010). Context counts: training health workers in and for rural and remote areas. Bull World Health Organ: Vol. 88, pp. 777-782.

⁵⁷ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. Canadian Journal of Rural Medicine: Vol. 16, No. 1, pp. 13-19.

⁵⁸ Ibid.

status (e.g. true rural vs. town rural, aboriginal remote vs. urban, francophone, etc.) it is difficult to imagine creating a pure admissions process without some degree of tracking. The complexity becomes greater when local partners may wish to give preference to local recruitment and increased access to those of local background.⁵⁹ In the case of satellite campuses or geographically defined rural tracks, the simplest admissions process may be a combination of a 'rurality' index (as developed at the University of Manitoba) being applied to an overall competitive pool and then allocating rural candidates to the regional campus on a matching basis. Adjustment of the rurality index can be used to assure a final offer arrangement that is in proportion to population demographics, the minimum academic standard having been assured in all cases.

Intervention by way of selective admission for rural applicants remains a viable option for increasing the numbers of rural students. This can be as simple as screening the addresses and previous schools attended by the applicants, or can progress to include screening for other factors that may demonstrate an interest in rural life or family medicine, including family members currently living in a rural community and an expressed interest in family medicine.⁶⁰ This can be facilitated at the interview stage of admissions.

The issue of preferential admission to medical school is a perfect demonstration of the maxim, "the devil is in the details". What seems a simple path to increasing rural representation in a medical school class rapidly can become a minefield.

d.) Curriculum Interventions

The role of the medical school curriculum in influencing students to choose rural medicine lies in fostering a positive attitude toward family and rural medicine, creating opportunities for exposure to rural community practice and ensuring that these experiences are positive learning experiences.⁶¹ Interestingly enough it has been demonstrated that by adopting these strategies, interest in rural practice increases not only in rural students but in urban origin students as well.

Student feedback from rural rotations has been positive. Memorial University has put in place a mandatory rural rotation as part of their curriculum, with favourable results.⁶² Additionally, offering elective rural experiences to students, with financial assistance for accommodations and travel, could increase the numbers of students interested in exploring rural practice and the opportunity for greater exposure. Providing students with easy access to local support is imperative; for instance, advice and assistance concerning accommodations, finances, and academic support. The accreditation process considers how much time a student spends at a

⁵⁹ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

⁶⁰ Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. Canadian Journal of Rural Medicine: Vol. 16, No. 1, pp. 13-19.

⁶¹ Ibid.

⁶² Kapadia, Ronak and Brent McGrath. (2011). Review: Medical school strategies to increase recruitment of rural-oriented physicians: the Canadian experience. Canadian Journal of Rural Medicine: Vol. 16, No. 1, pp. 13-19.

regional site when determining the level of support and services the regional site must provide. For a term of six month (or longer), the regional campus must provide comparable support and services to the central campus.⁶³

e.) Utilizing Technology and Assuring standardization of curriculum

In all forms of DME, an important requirement is assuring the consistent delivery of a standardized curriculum, without stifling enthusiasm and creativity at regional sites. Students at all campuses must be assessed in the same (or comparable) way to the same standards. Employing the same assessment methods and materials across all campuses is the most effective way to meet this requirement.⁶⁴ With the utilization of technology, almost all non-practical curriculums can now be delivered from the main campus to regional campuses via video-conferencing. This can reduce the faculty and infrastructure requirements of the regional site. However, it is also recognized that not all will enjoy participating in communications technology, and therefore a mix of both distant and local delivery of curriculum is often found to be most suitable. Pertaining to all levels of involvement (student, faculty, and administration), face-to-face communication is an effective method for teambuilding across sites, and it is therefore important to nurture inter-site relationships.⁶⁵ The importance of sophisticated faculty development in these arrangements is of critical importance, as is the maintenance of open lines of communication across sites with students and teachers alike. Despite quality concerns of these programs, students have shown similar academic output performances in rural areas to that of their peers in urban centers.⁶⁶

f.) Engaging the local community

It is important to create a triangulated relationship among the local community, the health care delivery team and the educational programs. This is a complex undertaking that will be challenging to any model of distributed education selected. The more central the management of the educational enterprise, the more likely that the "grassroots" will feel disenfranchised, but this is true regardless of whether the central management comes from a freestanding medical school or a satellite or single track program. It is also crucial to address the expectations of the local community over a wide range of issues, from economic spin-offs to increased share of health services. The local community should be engaged in meetings by the institution, to establish strategic directions, to allow for the population to air concerns, and to establish a partnership of transparency and accountability.

g.) Engaging the practicing community; faculty development

⁶³ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Rabinowitz, Howard, James Diamond, Fred Markham, and Jeremy Wortman. (2009). Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication. Academic Medicine: Vol. 83, No. 3, pp. 235-243.

The DME system of education places great reliance upon practicing teachers in the field and devotes considerable resources to the development and maintenance of these clinical teachers.

As a result, the single greatest challenge to the enhancement or enlargement of rural education or training programs is the development and retention of teaching faculty. McReady has described the critical role that prior engagement in legacy education programs from McMaster and Ottawa medical schools played in the successful rollout of the Northern Ontario Medical School's rural teaching program.⁶⁷

This constraint of rural faculty development is independent of the governance or management option implemented, whether freestanding, satellite or rural track, but under all options it is the critical stumbling block. Common to all of these options is the need for the mobilization of a variety of support systems within communities. The introduction of a teaching element into a rural or remote practice is not something that can be organized like a touring circus. Establishment of durable and trusting relationships among practitioners, community leaders, health care administrators and the teaching program staff is a sine qua non of DME.

It is also important to recognize that the practice of a given rural educator becomes the sole context for a substantial period of student '*formation*',⁶⁸ All the more important that faculty development for rural education takes into account all critical elements of a rural practice (including scope of practice, use of regular consultants, dependence upon community supports and other health professionals, availability of emergency back-up, frequency of night duty, holiday schedule, spousal and family support etc.).

This factor can prove to be the critical one in the introduction of new educational programs, whether urban, rural or remote. Clinical medicine is best taught via the apprenticeship model, and mastering the combination of skills required to be both mentor and teacher, while carrying on an already challenging practice is daunting at best, and downright discouraging at worst. But the consensus of the stakeholders in distributed medical education programs is that positive relationships between the educational program and engaged physician preceptors and that these relationships are sustainable.

An important constraint to be noted is the degree to which rural or remote practitioners prove willing to become involved in substantial educational activities. Many rural practitioners choose their careers precisely because it frees them from entanglements with academic medicine. Apart from ideological barriers, rural practice is already sufficiently busy that the addition of an educational load often seems burdensome. Fear of financial disadvantage is also a real constraint.

Buy-in of local physicians and health care workers is both essential and hard-earned, especially if the partnerships have resulted from inter-institutional agreements that have not involved the

⁶⁷ McReady, William. , Previous head, NOMP, McMaster University, current Post Graduate Dean, NOSM, personal communication.

⁶⁸ the French term for education is superior in this setting since it catches the flavor of educational engagement involved in experiential learning.

physician community.⁶⁹ The establishment of the community of teaching physicians associated with the NOSM did not occur overnight. The experience of regional physicians with teaching obligations and benefits had been well entrenched as a result of many years of work from the NOMEK and NOMP programs of McMaster and Ottawa University Medical schools respectively, and it was upon this experiential base that the NOSM program could be built.⁷⁰

h.) Educational Innovation

- Preclinical Education

Preclinical education is the only component of medical training that is easily comparable to ordinary class-based didactic education. The curriculum consists of a set of courses, some lecture based, some small group or self-learning in nature. Teachers tend to be full time academics who are also engaged in research into the basic sciences of medicine. The organization of these programs is highly centralized, and accreditation standards are straightforward since program delivery can be monitored and achievement examinations assure "knowledge acquisition" with a degree of certainty. As a result, the "setting" of this component of medical education does not have the valence it takes on in clinical training, nor do accreditation standards present substantial obstacles to the "distribution" of preclinical education. The variable of most significance constraining decision-making among the options is that of cost and complexity of organization of delivery. The experience of UBC and its partners provide guidelines for the added expense associated with adopting satellites for preclinical education, and that of NOSM provides information on resource needs for preclinical education in a freestanding option.

The movement toward distributed education has spawned a wide variety of educational process innovations. Foremost among these have been technology based innovations which have made possible the completion of complex rotations in which local clinical experience can be combined with the benefits of 'centrally' delivered educational content by internet, telephony, video teleconference, etc. Most clinical rotations contain a subset of either lectures or fixed teacher based interventions, and for the most part this part of the educational program can be accomplished with a combination of face-to-face encounters for small groups and teleconferences for larger groups. Flinders University in Australia, NOSM and UBC with its satellites in Canada have all developed considerable experience with the utility of these methods and remain advocates of this use of technology.

- Clinical Education

In contrast to the preclinical period, the unit of critical interest in the spectrum of medical education is at the clinical level of education. Clinical medical education requires the interaction of patients and students in the presence, or under the direct supervision, of a practicing physician. The theoretical limit on the capacity of any region to undertake clinical education of

⁶⁹ Snadden, David, Joanna Bates, Philip Burns, Oscar Casiro, Richard Hays, Dan Hunt, and Angela Towles. (2011). Developing a medical school: Expansion of medical student capacity in new locations: AMEE Guide No. 55. Medical Teacher: Vol. 33, pp. 518-529. Informa UK Ltd.

⁷⁰ McReady, William. , Previous head, NOMP, McMaster University, current Post Graduate Dean, NOSM, personal communication.

third or fourth year medical students in the programs called clinical clerkships, is the number of practices, in the form of private or institutional units, willing and able to take on students. Similarly, in post-graduate training, the number of trainees is limited by the number of practices available and approved to accept them.

Until the recent introduction of the concept of distributed medical education, these clerkship units were exclusively located within the confines of large teaching hospitals. A chief virtue of this arrangement was the assurance that this institutional shelter provided overlapping educational and practice safeguards that protected the educational values and patient care standards required in the unique situation of a teaching practice. Students in clinical settings, and their patients were spared the risk of idiosyncrasy. In the case of DME, with few exceptions, the site of clinical clerkships is outside of large hospitals, and the risk of this educational format is the absence of these institutional safeguards. Recent studies on the risk of harm from medical error in large health care institutions casts doubt on the assumption of ubiquitous and effective safeguards.⁷¹

- LONGITUDINAL INTEGRATED CLINICAL CLERKSHIP (LICC)

As part of the move away from dependence upon the structure and function of the academic teaching hospital, some medical educators have looked beyond the traditional rotational curriculum of the clinical clerkship. They have perceived that the idea of students spending short periods (6-8 weeks) in each of the major clinical specialty disciplines is simply an artifact of the setting of the AHC. The presence of a gathering of non-FM Specialist educators facilitates the organization of a clinical curriculum around the movement of students through short exposures to the practices of internal medicine, surgery, psychiatry, pediatrics, obstetrics/gynecology and emergency and family medicine. This specialty-oriented rotational approach to medical education has served a variety of educational purposes, but its critics point out that from the perspective of primary care medicine, it fails to deliver an integrated, bottom up perspective of practice. Instead it provides a series of top down specialty-oriented views. The obligatory series of rotations occupying much of third and fourth year curricula has been described as a "cafeteria" of specialty experiences structured to provide students with a standardized experience of the hospital-centric perspective of each major specialty. But given the esoteric exposure that most tertiary hospitals now offer, this experience is less than suitable as a general educational experience, and for the most part serves only as a tasting menu for students choosing their career specialties.

The LICC breaks the mold by, first, removing students from the inappropriate (for them!) environment of the academic health center wards, and locating them in places where they learn in a longitudinal, supervised experience with the kinds of cases that are the bread and butter of generalist primary care medicine, and that, should they choose to remain in primary care medicine, they will be caring for throughout their careers.

The setting of a rural family medicine practice can not only provide a longitudinal view of an integrated practice but also provides students with the opportunity to follow up on the specialty related issues that arise in their practice. This Longitudinal Integrated Clinical

⁷¹ To Err is Human. Institute of Medicine: 1999 (accessed by Internet)

Clerkship" (LICC) is an outgrowth of the DME program at Flinders University in Australia, and is being given full field trial at NOMS in Northern Ontario⁷² and Harvard.⁷³

This novel format of education also promises to address one of the most difficult constraints of the rural primary care experience, that is the lack of educational capacity in the relatively small rural hospitals for a full specialty oriented clinical clerkship rotation.

Pitfalls associated with this new program include the need for standardization, remaining alert for the need for comprehensive specialty experience (not necessarily available equally at all sites), an enhanced need for communication among preceptors, students and managers, and a mix of issues related to the location of students in environments not previously used for educational preceptorships.

i.) Role of postgraduate education: the clinical teaching unit in community settings

Most attention has been paid to the development of undergraduate medical programs designed to encourage medical students to target their careers to rural or remote regions. But considerable evidence points to the additive effect of post graduate training, especially in primary care specialties, in encouraging recruitment and retention.⁷⁴ The importance of the apprenticeship model in medical education has been referred to previously, and the one-on-one relationship between rural practitioner and, especially, primary care family medicine trainees has been proven to be sustainable. But the value of the meta-educational benefit of preceptors who are expert practitioners supervising and mentoring residents, who themselves mentor and supervise junior learners, i.e. the medical students in second, third or fourth year of their medical school program is an innovation that is waiting to be described in the distributed setting. This educational and service structure is critical to teaching programs in large academic health centers, but has not been a recorded feature of rural distributed sites. The potential merits of such a system are obvious. Their practicality has not been worked out, but it is likely that the Longitudinal Integrated Clinical Clerkship, as described above, would prove a fertile field for the study of this innovation.

j.) Student performance in DME programs

A primary obligation of medical schools is to provide students with learning environments that are optimal for all students. There is no gold standard measurement of clinical learning so the

⁷² Couper I, Worley PS and Strasser R. Rural longitudinal integrated clerkship: lessons from two programs on different continents. *Rural and Remote Health*, 11:1665. Accessed online at www.rrh.org.au

⁷³ Ogur, B., Hirsh, D., Krupat, E., Bor, D. The Harvard Medical School – Cambridge Integrated Clerkship: An Innovation Model of Clinical Education. *Academic Medicine*, 2007; 82: 397-404; Hirsh, David, MD, Elizabeth Gauferg, MD, MPH, Barbara Ogur, MD, Pieter Cohen, MD, Edward Krupat, PhD, Malcolm Cox, MD, Stephen Pelletier, PhD, and David Bor, MD. Educational Outcomes of the Harvard Medical School – Cambridge Integrated Clerkship: A Way Forward for Medical Education. *Academic Medicine*, 2012: 87; 643-650.

⁷⁴ Wilson, N.W., I.D. Couper, E. De Vries, S. Reid, T. Fish, and B.J. Marais. (June 5, 2009). Review Article: A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. *Rural and Remote Health*: Vol. 9, No. 1060, (Online). Available from <http://www.rrh.org.au>.

accountability for this obligation is usually demonstrated by showing that students in novel learning situations perform as well as their counterparts in standard circumstances.

The universal conclusion from studies of rural programs has been that students who participated in DME or rural rotational programs perform at least as well as their urban counterparts, and often, better (see for example, Worley PS, Report of Workshop, Appendix 9). In a study performed at McMaster University, students who participated in the McMaster Community and Rural Education (Mac-CARE) program had comparable scores to students who did not participate in Mac-CARE on academic evaluations, and actually performed better in post-clerkship Objective Structured Clinical Examinations.⁷⁵

k.) Considerations of Governance, Management and Accreditation

In dealing with the complexities of implementing any of the proposed options of DME in Manitoba, the quality of management and governance of the distributed educational processes will be critical determinants of success.

In the course of our scan, we focused on these elements in examples of programs of the three options we were asked to study; freestanding, satellite, and rural track; looking for advantages or disadvantages that might guide future planning. Little comparative evidence in this domain appears in the literature, other than descriptive articles or web sites, both of which, understandably, were more self-congratulatory than critical. In our interviews, however, we were able to detect what appear to be important common constraints in the areas of management and governance.

Traditionally, governance of medical education programs has been as conservative as the programs themselves. In the critical arena of clinical education, the principal governance challenge relates to the management of clinical teachers working in hospital settings. The teachers themselves function as hybrids; quasi-academics as teachers, quasi-independent contractors as physicians practicing in hospital settings, and in the cases of department heads, quasi-executive level employees within hospital administration. The change in setting associated with DME from the teaching hospital to individual doctor's offices alters the traditional management and governance arrangements; in some cases adding and others removing layers of complexity. In the case of freestanding medical schools in rural settings, governance needs to encompass the full spectrum of relationships with participating University Administration, Regional Health Authorities, Hospital Management, community groups and either groups or individual physician offices. A model that has proven successful is that of an independent medical school featuring affiliation with more than one University; e.g. NEOMED in Ohio, and NOSM in Ontario. This model allows a high degree of freedom of action for the medical school administration especially since the budget of the school and therefore its ability to focus on its mission can be freed of encumbrance from the affiliated Universities.

⁷⁵ Bianchi, F. Stobbe, K, Eva K. Comparing academic performance of medical students in distributed learning sites: the McMaster experience. 2008, Vol. 30, No. 1 , Pages 67-71 (doi:10.1080/01421590701754144)

Governance of the Satellite model, as exemplified by the UBC, UVIC, UNBC programs relies heavily upon managing the interrelationships among the various University leaders to ensure that the overall mission of the educational program is not diluted by the competing interests either of the rest of the medical school or by the separate University interests. We note that in BC, similar to the freestanding model, the overall satellite program itself has acquired considerable budgetary independence through the creation of a tripartite "trust" that allows segregation of expenditures for the DME program to be co-managed by the consortium of medical school leaders. In other words, it appears that the DME program has acquired what might be seen as freestanding status.

In the dedicated rural track programs, the "Rural Tracks" function as units within the more traditional academic structure, with leadership of the track establishing management and governance relationships with the partners (RHA's, hospitals, individual physician and group practices, community groups, etc.) from within that structure.

In all of these models, the critical constraint appears to be the requirement to retain sufficient flexibility and freedom of action within the DME program itself to maintain autonomous program leadership that enables robust and meaningful partnerships with a broad cast of characters. Whatever the actual governance structure, the ability to segregate funding to support the growth of DME programs appears to be a critical capacity that should be protected within the structure of the governing organization(s).

- CONDITIONS OF ACCREDITATION: An Issue of time

Achievement of full accreditation by the LCME in the US, and its equivalent process, CACMS in Canada, is a requirement of all medical schools⁷⁶. The process is stringent and demanding, and was designed in a period when the numbers of medical schools in North America was quite stable.

The movement toward distributed medical education has been reflected in a considerable increase in flexibility of the accreditation standards of the LCME and CACMS. A growing number of new medical schools in the United States are being provided with partial or full accreditation for programs designed to increase rural and remote practitioners. NOSM is a good example of a freestanding school that despite a fully distributed structure, including the first example of the Longitudinal Integrated Clinical Clerkship (LICC), has achieved full accreditation. As a generalization, one of the commentaries we felt to be most credible on the "barrier" function of accreditation was that, in fact, accreditation need not be seen as a barrier at all, but rather as an opportunity for innovative new programs to demonstrate sufficient credibility of the leadership of the programs to assure students that an actual medical degree and license will be attainable at the end of the day. On the other hand, the observation that the time span from origin to approved end product is different depending upon the model option chosen. Approval for a freestanding new medical school is apt to require a considerably longer

⁷⁶ US and Canadian Medical Schools are accredited in a jointly managed program of the Liaison Committee for Medical Education (US) LCME and Council for the Accreditation of Canadian Medical Schools (CACMS). Several documents on their respective web sites provide complete descriptions of their programs and requirements.

period of time than that for either a satellite or a rural track. The rural track option likely would be approved with the least delay and difficulty.

Summary

This section has focused on an examination of the broad experience of the physician health human resource and educational aspects of distributed medical education. There are a number of conclusions that can be drawn that are relevant to the discussion of options in section 7.

- 1.) DME, carefully deployed, can be expected to affect the physician human resource equation in profound ways.
 - First, if the distributed sites themselves are carefully chosen or constructed to provide a representative and positive experience of rural and/or remote practice, the result will be an enhanced supply of physicians who will be recruited and retained in rural /remote practices.
 - Second, though this aspect has been less heralded, the immersion of medical students in a curriculum that has been designed with specific reference to the needs and particularities of rural or remote medicine will generate physicians whose competence in the setting of their actual practice will be significantly enhanced. As a result, their patients and communities will benefit, and because of the integrity of their educational experiences with their subsequent practices, their value as mentors to future generations of rural practitioners will be substantial.
 - This virtuous cycle will form the basis for a sustainable pipeline of students with rural inclinations and sensibilities becoming expert practitioners in a culture of their liking, and then passing on the benefits of their specialized professional skills to following cohorts of students.
- 2.) Evidence is compelling that the principal dimensions of distributed medical education work. Specifically, the combination of admission policies supporting candidates with authentic rural backgrounds, meaningful exposure of students to rural experiences in both undergraduate and postgraduate training and specific training in the postgraduate years in common procedures that are required in rural general practice have a positive influence on the career choices of medical graduates and their subsequent retention in rural or remote practice.

This conclusion suggests that admissions and educational programs already in place or under development at the UMFOM should be supported and extended to gain the advantages of these investments in DME as proposed in Option 3.

- 3.) In addition to promising to address long term supply needs of rural and remote communities in Manitoba, there are strong educational benefits of distributed medical education in preparing physicians with the special competence needed for quality practice in difficult circumstances.

Attention to scope of practice in its broadest sense provides the fundamental educational grounding for the application of DME for rural and remote pipelines. This conclusion supports curricular development of models of practice and scope specific 'streams' within both undergraduate and graduate programs as an integral component of this education reform.

- 4.) No single educational innovation or format of delivering medical education in a distributed fashion should be looked upon as a panacea. Combinations of steps have proven successful in a variety of situations.

As important as each component is, most critical is recognizing the importance of the context in which changes are introduced, and crafting the best combination of policies to suit the particular circumstance..."a made in Manitoba" solution.

The challenge to medical education leadership will be to demonstrate engagement with involved communities and flexibility in implementing the best features from a wide variety of educational innovations bearing the rubric of DME in a collaborative fashion.

- 5.) The current situation in Manitoba lends itself to a opportunistic approach; maximizing the utility of currently evolving programs to build a province-wide system of distributed education that will enhance primary care services and sustain a reliable and efficient pipeline for rural and remote practice.

An implementation model in which one successful step leads naturally to another is preferred. A first stage could be the enhancement of rural postgraduate programs. This step sets the stage for the enhancement of clinical clerkship training with the development of LICC's integrated into new community clinical teaching units; i.e. the building of community clinical campuses. With the establishment of these important elements, attention can then be paid to the build-up to possible Satellite Campus(es), with the addition of preclinical education to create full four year programs partnered with community based educational institutions (Options 2 and 3).

- 6.) Consideration of cost in implementing distributed medical education is critical. A DME premium may be identified, and perhaps can be accepted, but only if proportionate benefits are derived. The build out of the clinical components of the curriculum share basic cost elements independent of the basic model of education (e.g. Freestanding, Satellite or Fast Track).

However, with respect to the preclinical aspect of the curriculum, differential cost appears to be a major driver of decisions. The implementation of a premedical curriculum is the "swing" element of a distributed model, in some cases the basic sciences are delivered exclusively at the "center", in others, extensive use of telecommunication and alternative learning models allows the more didactic curriculum to be delivered at the distributed sites. Intermediate versions are also in use.

In the proposed build up, relevant costs, for example, related first to Community Clinical Campuses, then finally Satellite Campuses can be staged to assure that additional costs are grafted on to already proven bases.

- 7.) In the clinical curriculum, commitment to the values of primary care in a rural setting must be emphasized. For the optimal student experience, this requires extensive faculty development. No other single program step is more important and appropriate time and resources must be committed to it.

The proposed build up allows sufficient time and resource commitment to ensure appropriate educational input can be expected from clinical faculty who in the Manitoba setting have up to now had little exposure to the practice of distributed medical education.

- 8.) Engagement with community is a second critical component in the development of a distributed educational system. As with faculty development, this engagement must be an integral part of the program and not just a formulaic requirement.

A good start to this needed community engagement is represented by the work done as part of this report, and in the groundwork with a variety of community based organizations in Western Rural Manitoba that led up to the initiation of this study. The framework already created should be capitalized upon in the further development of DME in the province.

- 9.) As an important contextual element, focus needs to be placed on the change in culture that lies at the heart of distributed medical education. The leadership of faculty must recognize the hazards of attempting to teach “rural primary care medicine” in an urban Academic Health Center, as well as the related risks of creating a "rural track silo" within an otherwise traditional AHC. The role of setting and context in shaping the careers of students and the related incapacities of the AHC's as sole sites of medical education must be recognized by the educational establishment. There must be leadership and commitment by faculty to the authenticity and integrity of the student experience in "community campus" settings. As an important contextual element, focus needs to be placed on the change in culture that lies at the heart of distributed medical education.
- 10.) The broad conclusion from our scan of the overall needs for physician supply in the province (see also Section 6) suggests that first priority should be given to redirection of the current educational pipeline, with a greater emphasis on primary care in rural/remote and under accessed communities. The current class size of students at the UM FOM is a good starting point for this redirection. If reduced reliance on IMG inflow is determined by policy review, or if the efficiency of the rural track program proves less than predicted, then an increment of 20 students might prove necessary to meet demands. There is important role for IMGs in the overall supply of physicians particularly in rural and remote Manitoba. However, at a time when the importance of highly focused educational programs recognizing a distinct scope of practice for rural and remote medicine is being urged, excessive dependence upon a pipeline of graduates from non-accredited medical schools should be reviewed.

From the physician resource perspective, we recommend the choice of Option 3 to build up the flow of students in rural tracks in 2 stages. To compensate for a possible decrease in dependence upon IMGs

in the province, consideration should be given to an overall increase in capacity for Manitoba graduates up to 130 seats.

- 11.) From the particular perspective of medical education in Brandon, our scan suggests a major role for this community, as well as potentially for the communities of Dauphin, Morden/Winkler, Steinbach and Thompson, as an anchor site for the build up of community campuses in the rural track program (Option 3) and for the possible institution of a full Satellite campus (Option 4). Our resource analysis suggests that there is neither need nor place for a second freestanding medical school in a province the size of Manitoba.

In section 7 of this report, we apply these conclusions in the development of a proposal for the expansion of distributed medical education in the province. We believe the province should capitalize on progress in admissions policies, rural track programs for undergraduates and graduates and special programs for aboriginal and bilingual needs. Early priority should be given to an enhancement of postgraduate programs (FMEDEC) both to provide early returns for community recruitment, and also to create the basis for the expansion of undergraduate rural track programs to form community clinical campuses at multiple sites in the province. Ultimately the possibility of Satellite campuses should be thoughtfully considered based upon projections for future resource needs and educational benefits.

SECTION VI

The Manitoba Context

As evident from our scan of the national and international environment, “distributed medical education” (DME) encompasses a diversity of educational models, governance structures and funding arrangements. In this section, we re-focus on Manitoba and provide an environmental scan to enable the three DME options under review to be assessed “in the context of the provincial need”, as required by our terms of reference.

Understanding the provincial need is important since each of the three options should be viewed as a potential “solution” to the problem of recruiting and retaining physicians *in any and all* of Manitoba’s rural, northern and remote communities. While the problem is commonly expressed as one of “too few” physicians, “too rapid” turnover in their numbers, and/or “too much” dependence on foreign medical graduates, it is important that we make an attempt to better define the dimensions of the physician human resource problem in order to offer an evidence-informed assessment of the provincial need for more physicians to establish and sustain practices in these communities.

In the following sub-sections, we document and describe those features of the provincial “context” we judge most relevant to informing our subsequent assessments of the three options.

In 6a, we begin with a brief macroscopic view of the province, highlighting the major trends in physician supply over the last 30 years. We then profile the geographic distribution of physicians at the Regional Health Authority level, noting important differences in the current number of physicians relative to the regional populations that are commonly cited as evidence of physician “maldistribution”; these high-level profiles are subsequently supplemented with information much more relevant to an understanding of the physician recruitment and retention problem in rural and northern communities; specifically, we will review the findings and recommendations contained in a 2004 report prepared by Manitoba’s Office of Rural and Northern Health addressing recruitment and retention problems in the Assiniboine RHA. We will also review an important new study showing Manitoba’s experience retaining physicians in practice for various periods of time following their undergraduate and/or postgraduate medical education at the University of Manitoba. We will complete this portion of our scan by examining the prevalence of foreign medical graduates among physicians practicing in Manitoba’s rural and northern regions, supplemented with reference to physician practice issues in NOR-MAN identified by a panel of experts who reported to the Minister of Health in May 2011.

In 6b, we will review the various initiatives that have been taken by the provincial government since 2000 to improve both the overall supply of physicians and their geographic distribution. In 6c, we review the Faculty of Medicine’s past, present and proposed initiatives to improve the recruitment and retention of physicians in rural Manitoba. We conclude our discussion of the

provincial “context” in 6d, where we assemble various data to develop an evidence-informed projection of the “need” for family physicians to 2020, and related projections of the overall numbers required to meet these targets from prospective “pipelines” of Manitoban, Canadian and foreign trained physicians.

6a. Physician Resources in Manitoba: An Overview

6a.1. Over the last thirty years in Manitoba, growth in physician resources has exceeded that of the general population. Captured by the conventional metric of physicians per 100,000 population, there has been an overall increase of 24%, from 150 to 186. Table 6a.1 below distinguishes changes specific to the major physician sub-groups of family medicine (FM) and specialists (SP).⁷⁷

In each case, their numbers have grown relative to the population, especially so during the 1980’s when the FM/Pop ratio increased 19% from 77 to 92, and the SP/Pop ratio rose 15% from 73 to 84. It is also evident that the overall increase from 181 to 186 over the last decade has been wholly due to the increase in family physicians that has occurred since 2006, when that ratio rose from 92 to 98.

Table 6a.1 Number of Physicians per 100,000 Manitobans
(with Canadian figures in brackets)

Year	Family Medicine	Specialists	Total
1980	77 (76)	73 (75)	150 (151)
1990	92	84	176
2000	92	89	181
2006	92	87	179
2010	98 (103)	88 (100)	186 (203)

Source: CIHI, 2011: Table 23.1 (Family Medicine) and Table 23.2 (Specialists)

The table also contrasts Manitoba’s supply of physicians with corresponding figures for Canada. From near parity with the national averages in 1980, Manitoba’s ratios are now below average for both FM and Specialists, reflecting the fact that nation-wide growth in physicians has outpaced population growth by an even wider margin than in Manitoba.⁷⁸

⁷⁷ We use the standard terms of Family Medicine and Specialists reluctantly, recognizing that Family Medicine is every bit as much a specialty as are the “traditional” specialties of, e.g., Medicine, Surgery, Pediatrics, etc.

⁷⁸ It is notable that the provincial distribution of physician/population ratios has both changed and narrowed over the thirty years. In 1980, BC’s top-ranked ratio of 173 was 65% higher than New Brunswick’s bottom-ranked ratio of 105; by 2010, Newfoundland and Labrador had gained top spot with a ratio of 226 (closely followed by Nova Scotia and Quebec), but the gap relative to PEI’s bottom-ranked ratio of 164 had narrowed to 38%. Manitoba ranked 4th in 1980 behind BC, Quebec, and Ontario; and ranked 8th in 2010, close to tying now 7th ranked Ontario and ahead of Saskatchewan and PEI.

6a.2. Since the geographic dimension of Manitoba’s physician supply is the “context” most relevant to this study, we next examine how physicians were distributed across the province’s eleven regional health authorities in 2010. Table 6a.2 demonstrates wide variation across the regions. Winnipeg has the highest overall ratio at 247, due to the large concentration of specialists within the city, including the sub-specialists who provide tertiary and quaternary care to all Manitobans. Brandon is a close second with an overall ratio of 227, also well above the provincial average of 186. Ratios for Assiniboine, Parkland, Interlake, Central, NOR-MAN and Burntwood/Churchill are in the range 100-133, while North Eastman and South Eastman are lowest ranked at 65 and 69 respectively. Put more starkly, on a population or per capita basis, residents in the rural and northern regions are served by less than half the number of physicians available to the urban populations in *both* Winnipeg and Brandon.

Table 6a.2 Physicians per 100,000 Population by RHA, 2010

Health Region	Family Medicine	Specialists	Total
Winnipeg	104	143	247
Brandon	143	84	227
Assiniboine	99	1	100
Parkland	123	10	133
North Eastman	60	5	65
South Eastman	66	3	69
Interlake	83	17	100
Central	90	17	107
NOR-MAN	100	13	113
Burntwood/Churchill	81	21	102
Manitoba	98	88	186

Source: CIHI, 2011. Table “Manitoba Profile-Health Regions”

The distribution of specialists reflects their concentration in Winnipeg and, to a lesser extent, in Brandon (mainly in the general specialties of surgery, medicine, pediatrics, obstetrics and psychiatry). There is less, but still pronounced variation in the ratios for family physicians. *Brandon has the highest overall supply* (relative to its urban population), followed by Parkland and Winnipeg; the other rural and northern regions fall short of these numbers to varying degree, spanning a range from 60 in North Eastman to 100 in NOR-MAN. Looking closer at the rural regions, Assiniboine’s ratio of 99 may be deemed “low” compared to Parkland’s 123, but “high” compared to South Eastman and North Eastman, where the supply of family physicians (relative to population) is 33-40% lower than in Assiniboine.

We hastily caution that care must be taken not to over-interpret these tables. These ratios simply indicate how physicians are distributed within the administrative boundaries of the RHAs; they may be suggestive of “maldistribution” but, in themselves, they do not provide the information required to meaningfully gauge or otherwise appraise how access to physicians’ services is experienced by residents in each of the regions, many of whom traverse these

boundaries in the normal course of seeking and receiving care.⁷⁹ For the same reason, the regional populations used in these ratios do not provide an accurate picture of the wider “catchment” areas served by physicians in any given region.

Additional perspective on the geographic dimension is provided by clustering some of the regions into larger population units and, for each such unit, calculating its share of the general and physician populations. For example, a simple comparison of Winnipeg with all other regions in 2010 corroborates the commonly cited facts that Winnipeg hosts 73% of all physicians but only 56.7% of the general population, while the rest of the province representing 43.3% of the population hosts a disproportionately smaller 27% of all physicians.

A more informative grouping is shown in Table 6a.3 where the population and physician shares (distinguishing family physicians and specialists) are shown for Winnipeg and three other regional groupings.

Table 6a.3 Distribution of Physicians and General Population by Sub-Groups of Regional Health Authorities, 2010

Region(s)	Gen Pop	Family Physicians*	Specialists
Winnipeg	56.7%	55.1%	87.4%
Rural A	13.3%	12.2%	5.4%
Rural B	24.1%	21.6%	3.4%
North 53	6.0%	6.1%	1.5%
Total	1,230,270	1,099	1,361

Source: Manitoba Health Population Report, June 1, 2010; Physician data extracted from College of Physicians and Surgeons Register, June 2010, based on tables compiled and provided by the Council on Post-Secondary Education, December 2011. *Includes family physicians who have qualifications in another specialty, e.g. anaesthesia. Rural A includes Brandon, Assiniboine and Parkland; Rural B includes NEMan, SEMan, Interlake, and Central; North53 includes NOR-MAN, Burntwood, and Churchill.

This Table invites three observations. First, Winnipeg’s disproportionate share of all physicians (73% as noted above) is due entirely to the 87.4% of specialists who are located in the capital region; in contrast, its 55.1% share of all family physicians corresponds closely to its 56.7% population share. Second, the comparatively few specialists practicing outside Winnipeg explains the wide gap between the population and specialist shares in each of the three regional sub-groups. Third, the gap between the population and family physician shares is much less pronounced in these groupings: for Rural A, comprising the three RHAs in “western” Manitoba, the gap is 1.1% (13.3 vs. 12.2%); for Rural B, comprising the four RHAs in “central, southern

⁷⁹ Various methodologies have been used by health services researchers to better profile access to physicians’ services in rural communities with known problems of recruiting and retaining family physicians; see Horne, J. (1987). Searching for shortage: A population-based analysis of medical care utilization in ‘underdoctored’ and ‘underdoctored’ communities in rural Manitoba. In: Horne, J. (ed). Proceedings of the Third Canadian Conference on Health Economics 1986. Winnipeg: University of Manitoba.

and eastern” Manitoba, the gap is 2.5% (24.1 vs. 21.6%); and for the three regions comprising North53, the gap is only .1% (6.0 vs. 6.1%).

Again we must caution against over-interpretation of the data. Just as wide disparities in the population and physician shares are not good evidence of a “maldistribution” problem, neither do narrow gaps in these shares provide any basis for asserting “all is well”. We have presented the information because it is often mentioned in discussions of physician “shortages” outside Winnipeg, and also because it provides some additional high-level perspective on the physician resources based in the various regions. However, the “problem” of recruiting and retaining physicians in rural and northern areas requires more “real world” definition and, as well, better evidence on the “need” for family physicians outside Winnipeg’s “perimeter highway”.

As noted earlier (Section 3), we heard through our community consultations the “problem” is locally experienced not only as “too few” physicians, but also as one of “rapid turnover” creating a “carousel” of family physicians who stay for only short periods. Not captured in any data, but of concern, is the negative consequence of the unplanned departure of a physician from a region that is sparsely populated. There often is no backup physician nearby, and because of the general shortage, those that are available are already overbooked. With rapid turnover in these circumstances, there is a chronic state of concern over the possibility (and often the likelihood) that communities will lose access to physician services. As well, concerns were expressed in some communities that they have long been overly reliant on foreign-trained physicians (IMGs).

These and other concerns echo and reinforce many of the findings and recommendations contained in the report of the “Rural Physician and Health Services Review—Assiniboine Region.”⁸⁰ Since this report is highly relevant to our scan of the provincial environment, and specifically because it provides an evidence-informed discussion of the problem, it warrants our attention.

The ORNH review was initiated by the Minister of Health in September 2003. It was conducted in the Assiniboine RHA “because of concerns about attracting and keeping physicians and other health care professionals in the region, and was intended to help learn why this is happening and how it might be corrected, in both the ARHA and rural areas around the province.”⁸¹

In addition to reviewing the recruitment and retention literature, the ORNH solicited input from both community members and physicians practicing in the ARHA. Through a combination of questionnaires, focus groups, interviews, and community meetings, both groups offered their views on the problems of recruiting and retaining physicians (and other health professionals), and their ideas on how these problems might be solved.

⁸⁰ Office of Rural and Northern Health. (ORNH, April 2004). Rural Physician and Health Services Review-Assiniboine Region. <http://www.gov.mb.ca/health/documents/arha.pdf>

⁸¹ Ibid.

For physicians, a major theme related to practice conditions, including the amount of on-call time, the lack of time for continuing education and vacation, and not being able to access specialists.⁸² For their part, residents in the ARHA expressed concern about the future of health care services in their communities and some frustration with the way decisions were made and communicated at the regional level. Overall, “the physician and community reviews showed that people understand that changes in health care must be made in ways that are affordable to the ARHA...(and that) changes should be in keeping with a province-wide move towards primary health care, with an emphasis on prevention.”

Both groups offered ideas that helped in developing recommendations. In general, their suggestions related to “sharing resources among communities to keep a variety of services available in the region, making practice conditions attractive to potential health professionals to keep health professionals in the ARHA and continuing to improve community communications within the region.”⁸³

Among the numerous recommendations contained in the Review, those relating to practicing physicians and prospective recruits are most relevant to our scan. Regarding *practicing physicians*, the Review recommended:

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1. “The ARHA should work with Manitoba Health to work towards on-call schedules that are 1 (in) 5 or better. Larger practice group sizes would contribute positively to this outcome. Physicians will accept 1 (in) 4 with proper supports but 1:3 or less is generally unacceptable.
 2. The AHRA should consider cross-cover of facilities only as a short-term solution. Where it does occur it should be limited to less than 50 km distance and include no more than 3 facilities.
 3. The ARHA should continue to offer flexible methods of payment, including fee-for-service, salary and/or contract.
 4. The ARHA should continue to work with Manitoba Health and other regional health authorities to improve access to specialists for patient consultations by ARHA physicians through a variety of mediums, including in person, by Telehealth and telephone.
 5. All regional health authorities should work with Manitoba Health to review and revise the locum tenens program to ensure it is adequately staffed and meets the needs of the range of practices that exist within the regions. This will allow the ARHA to continue to encourage and support physicians as they augment their skills and knowledge through the Continuing Medical Education program (CME).

⁸² Office of Rural and Northern Health. (ORNH, April 2004). Rural Physician and Health Services Review-Assiniboine Region. <http://www.gov.mb.ca/health/documents/arha.pdf>

⁸³ Ibid.

6. Communities, with the support of the ARHA, need to help physicians and their families integrate into the communities in which they practice. This includes consideration of the background of physicians and their families and opportunities for the physicians' spouses to be employed in their chosen field."

Regarding *prospective recruits*, the Review recommended:

1. "The ARHA, Manitoba Health and communities should work together to create practice conditions that meet the stated needs and preferences of health professionals (see above recommendations related to practicing physicians).
2. The ARHA should continue to focus on an active recruitment effort aimed at Canadian trained family practice physicians. This should include an ongoing relationship with the University of Manitoba's Faculty of Medicine to host students for various student placements, clerkships and residency rotations during their training cycle.
3. The Manitoba government and the regional health authorities should work together to create a broad-based strategy for the recruitment of graduates from the University of Manitoba's Family Practice program. This strategy should include working with medical schools and the medical community to put a greater priority and value on family practice medicine to improve the view and stature of family practice, and to encourage more medical students to choose family practice.
4. The ARHA should continue to encourage the province to develop more rural training sites for other health professions to increase their exposure to rural practice and opportunities.
5. The ARHA should continue to target its recruitment efforts at individuals whose backgrounds will assist them in fitting into rural Manitoba and who will be open to living in a rural setting.
6. The ARHA should continue to encourage the province and other organizations to reduce the barriers to the recruitment of qualified International Medical Graduate family physicians, including:
 - a. The complexity, cost and effort involved in the immigration process
 - b. Improved accuracy of information regarding the characteristics of potential practice settings
 - c. Improved orientation to the province for both the physician and their family for at least six months following placement (housing, regulatory authorities, employment, schooling, recreation, financial and legal matters)

7. The ARHA should formalize their communication of opportunities for participation in their decision-making processes to health care professionals in their region.⁸⁴

Later in this report, we will have occasion to refer back to some of these recommendations, especially relating to recruitment. For now, it suffices to summarize that the review cogently defined the physician recruitment and retention problems confronting rural communities in the ARHA (and beyond), and made recommendations that have face validity and/or strong support in the scientific literature.

Another study we have reviewed presents important new information on how Manitoba fares in retaining physicians who complete some or all of their medical education at the University of Manitoba. Using the CAPER and CaRMS databases spanning two decades from 1988/89 to 2010/11, the authors identified a national total of 15,836 individuals who had a known province of residence at the time of applying to medical school in Canada, and for whom information was available on where they pursued their undergraduate and post-graduate training, and where they located their practices 2, 5, and 10 years following completion of their training.⁸⁵ Based on the Manitoba “matches”, the authors calculated the retention rates shown in Table 6a.4 below.

Table 6a.4 Retention Rates of Physicians practicing in Manitoba following undergraduate (UGME) and/or postgraduate (PGME) medical education at University of Manitoba

Retention rate after	UGME	PGME	UGME + PGME
2 years	51%	63%	73%
5 years	47%	55%	65%
10 years	44%	50%	58%

Source: Nickel et al (n.d)

As is evident, retention rates are lowest for those physicians who completed their MD degree at the U of M and went elsewhere for their postgraduate training: only 51% of these physicians practiced in Manitoba 2 years after completion of their postgraduate training; this rate falls to 47% after five years and to 44% after 10 years. (From other data we know many of these graduates left the province to complete their training and establish practices in Ontario, Alberta and BC). The *positive* effect of postgraduate training in Manitoba (regardless of where the MD was received) is also very evident: the 2, 5 and 10 year rates rise to 63%, 55% and 50% respectively. Highest of all are the corresponding rates of 73%, 65%, and 58% for those who completed *both* their undergraduate and postgraduate training at the University of Manitoba.

As also reported in the study, Manitoba’s rates in all categories are lower than those for Ontario and British Columbia, fairly close to those for Alberta, and higher than those for

⁸⁴ Office of Rural and Northern Health. (ORNH, April 2004). Rural Physician and Health Services Review-Assiniboine Region. <http://www.gov.mb.ca/health/documents/arha.pdf>

⁸⁵ Nickel, J., D. Klassen, and W. Heide (n.d.). CaRMS and CAPER Data Review—Implications for Physician Recruitment and Retention in Manitoba.

Saskatchewan. To illustrate, Manitoba's 2 year rate of 73% for those who completed both UGME and PGME training compares to 88% in BC, 84% in Ontario, 74% in Alberta, and 66% in Saskatchewan.

Two other findings in this study are also worthy of mention (and later reference). First, out-of-province students who have recently accounted for up to 10% of first year positions in the University of Manitoba's Faculty of Medicine rarely choose to stay after receiving their MD; since 1989, fully 92% (35/38) have left without ever practicing in Manitoba, a loss not compensated by the 6% (6/107) of Manitoba students who returned to the province and established practices after completing UGME in a different province or country. Second, International Medical Graduates (IMGs) who entered postgraduate training in Manitoba and elsewhere in Canada via the competitive CaRMS process were included in the study to determine their post-training practice locations. Of particular interest is the finding that the 2, 5 and 10 year retention rates for those IMGs who completed their PGME training in Manitoba are (at 53%, 48% and 42% respectively) very similar to those in Table 6a.4 for the Canadian physicians who completed only their UGME in Manitoba, but considerably lower than the rates for Canadian graduates who completed their PGME training in Manitoba.

As summarized by the authors of this study: "the data has shown that where doctors come from and where they complete their training both have an effect on where they might practice"; and "location of PGME has a better correlation with retaining doctors than UGME training alone"; and "completing both UGME and PGME in the same province has the highest correlation with retaining those doctors, and this is true for every province (included in the study)".

There are two important caveats on the findings from this study. First, as the authors caution, the 5 and 10 year retention rates are based on smaller sample sizes than the 2 year rates, due to difficulties matching and tracking physicians over the longer time periods, and the decreased numbers available in the 20 year databases to calculate the 5 and 10 year rates; thus, the 2 year rates were based on cohorts "exiting" their post-graduate training anytime from 1989-2008, while the 5 and 10 year rates spanned the "exit" years 1989-2005 and 1989-2000. The second caveat also applies to the cohorts in the 5 and 10 year rates; on average, they are the "oldest" cohorts in the database and their career paths and practice locations may well differ from more recent graduates (whose inclusion in the data will take another 5-10 years). Among the results likely affected by this latter caveat are those for IMGs since we know their profile in Manitoba's rural and northern communities has changed significantly over the last 10 years.

The dependence of these communities on IMGs is well known and well documented. In Table 6a.5 below, we summarize the salient facts and further clarify how their changing profile might affect their retention rates going forward.

Table 6a.5 Location of Undergraduate (UGME) and Postgraduate (PGME) Medical Education Completion for Rural and Northern Physicians, 2010

	Location of UGME			Location of PGME		
	U of M	Canada	IMG	Canada*	US	IMG
Rural A	28%	8%	64%	48%	6%	46%
Rural B	35%	8%	57%	58%	2%	40%
North 53	14%	6%	80%	42%	2%	56%

Source: Data extracted from College of Physicians and Surgeons Register, June 2010, based on tables compiled and provided by the Council on Post-Secondary Education, December 2011; Rural A includes Brandon, Assiniboine and Parkland; Rural B includes NEMan, SEMan, Interlake, and Central; North53 includes NOR-MAN, Burntwood, and Churchill.

Note: *Includes University of Manitoba.

The above table provides two quite distinct profiles of IMG “dependence” in each of the three rural and northern groupings. Based on location of UGME training, IMGs are by far the dominant group, with MD grads from the U of M and other Canadian medical schools *together* constituting only 36%, 43% and 20% of all physicians in Rural A, Rural B and North53 respectively. But when account is taken of the fact that many IMGs complete postgraduate training in Canada, the profile changes quite significantly, as shown under the PGME distributions. Contrasting the IMG “dependence”, alternately defined by location of UGME and PGME training, shows reductions in all three regional groupings: Rural A from 64% to 46%; Rural B from 57% to 40%; and North53 from 80% to 56%. We hasten to add that in presenting this information, our intent is not to minimize the concerns raised about IMGs in our community consultations. But we do think it important to highlight the effect exposure to PGME training in Canada has on the definition of an “IMG” and related measures of “dependency”. Moreover, since we know (from data already discussed) that retention rates are much improved when IMGs are exposed to PGME training in Manitoba, their continuing high profile in some rural and northern communities may be fairly seen as part “solution” and part “problem”.

Arguably, the most problematic feature of the IMG profile has to do with variations in “country of qualification” that have occurred in this dimension over the last decade. In particular, the number of IMGs coming to Manitoba from Africa (esp. South Africa) has fallen 66% from 61 in 2002 to 21 in 2011, while the number coming from Asia has tripled from 13 to 39 in those same years. For many years prior to 2003, physicians from South Africa were registered with the College of Physicians and Surgeons in numbers which exceeded those of any other foreign country. They did so in large part because they qualified via a preferential “fast-track” to full licensure. This entry portal was established when IMGs originated mostly from “commonwealth” countries, who trained in universities with curricula similar to those of Canadian medical schools. In the 1960s, 70s and 80s, the majority came from Britain; starting in the 1980s and continuing through to the mid-2000s, the majority came from South Africa. By the mid-2000’s, this portal had been closed in Manitoba (by a human rights challenge), and thereafter their numbers dropped very quickly, as many chose to enter via other provinces where the door remained open. Once the qualifying field was “leveled” in Manitoba, physicians

from Asia quickly became the majority group, with their numbers doubling from 2004 to 2006 and holding to an average of 39 over the five years to 2011.

Will the shift from South African to Asian IMGs have a material impact on their retention rates in rural and northern communities? While hard evidence to answer this question is not available, there is no shortage of conventional wisdom and speculation. The first category would include the retrospective wisdom (rooted in anecdotal evidence) that a large proportion of the British and South African physicians who came to Manitoba had backgrounds “well-suited” to practice in small rural communities and hence remained in the province for many years (verification of which would require a special “tracking” study). This view is now being supplemented with speculation that the Asian IMGs who have come to Manitoba in growing numbers over the last decade, especially since 2006, will leave “as soon as they can”. We have no doubt there are anecdotes to support this speculation, but were this to become the documented reality, the question will be asked “why”? One possible explanation might be that cohorts from Asia (including the Middle East) have predominantly urban backgrounds that do not “fit well” with the realities of practice and local cultures in Manitoba’s rural and northern communities. Another explanation might be that practice conditions in some of these communities are proving sufficiently problematic to cause their “early” exits.

Interestingly, this latter possibility is indirectly supported by evidence contained in a recent external review of the NOR-MAN Regional Health Authority.⁸⁶ The Review was initiated by the Minister of Health in December 2010 to investigate concerns raised by local residents, and to hear from patients, families, staff and community leaders on how to improve the NRHA’s operations. The expert panel comprising the Review Team was instructed to focus on eight areas, including “physician issues”.

After investigating these issues, the Review Team first clarified that:

“The entire Region has been staffed predominantly for many years by international medical graduates (IMGs). Despite widespread concern expressed to us about their preparation, in recent years, these physicians gain access to practice after a very competitive process allowing entry to University of Manitoba programs. Programs may be 3 months (by assessment) or 1 year in length. All physicians have passed national level exams (LMCC I) and relevant entry exams. Some practice under a special permit from the Minister. Others are completely licensed as family doctors. All have a return of service expectation of 2 years, and many have stayed beyond this requirement. All have a practice advisor assigned by the College of Physicians and Surgeons (Mb) and all are qualified in advanced cardiac life support programs.”

“These IMGs have integrated well into many communities in Manitoba. They practice within a contractual arrangement with the Regional Health Authority, Manitoba Health, and Doctors Manitoba. The terms of their practice are defined within the contract”.

⁸⁶ Toews, R., D. Forbes, J. Currie, and B. Postl. (May 20, 2011). NOR-MAN RHA (NRHA) Review. <http://www.gov.mb.ca/health/normanreview/nrha.pdf>

“Other established physicians function on a fee for service (FFS) basis. The intent has been to slowly evolve IMGs from salary to FFS practice as experience in the health care system is gained. Physicians are well paid and are roughly consistent with after-cost incomes in rural Manitoba.”⁸⁷

The Review Team was cogent in its concluding assessment of the physician issues:

“Nor-Man appeared to lack a collegial environment in which physicians, especially those new to the region, could practice and integrate into northern communities. This is further compounded by a lack of positive relationships in the workplace with other health professionals, and little inter-professional activity in support of patient care. “

One respondent perhaps was most succinct:

‘The problems with the doctors.... are other doctors.’ In our view there needs to be an extensive overhaul of the physician environment in the Region that would improve collegiality, improve patient centeredness, improve CME and quality of care, and enable the voices of all physicians within the Region.”⁸⁸

The Review Team’s six recommendations relating to the “physician issues” included:

“The College of Physicians and Surgeons should review the process of practice supervisors within small or remote regions to help ensure a nurturing environment and a focus on the quality of care.”⁸⁹

We have quoted the above Report at some length as evidence that IMGs may well find themselves working under practice conditions that are not conducive to their becoming “long-stay” family physicians in the very communities where recruitment and/or retention has been a problem. Put another way, high turnover of physicians in these communities may have as much to do with the “context of practice” as the “country composition” of the physicians being recruited.

6b. Government initiatives to improve physician supply and geographic distribution in Manitoba since 2000

In this section, we continue to elaborate the “provincial context” by reviewing the official strategies and initiatives that have been pursued since 2000 to improve both the overall supply of physicians and their geographic distribution. We have assembled this information from the official web-sites and from key informant interviews.

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Ibid.

In 2000, three major goals became central to the government's "Rural Physician Action Plan": (1) "increasing enrolment in the Faculty of Medicine to 100 by 2006; (2) encouraging recruitment and retention, especially in under-serviced areas; and (3) facilitating entry of international medical graduates (IMGs) into the workforce."⁹⁰ Since then, various initiatives related to each of these goals have been undertaken. What follows are executive summaries of these initiatives, with a concluding reference to another relevant initiative involving "primary care renewal."⁹¹

6b.1 Expansion of UGME and PGME programs at the Faculty of Medicine (UMFOM)

The goal of increasing class size to 100 by 2006 was met "on schedule". This restored the class to what it was during the mid-70s, and expanded it well beyond the range of 71-75 which was the norm during the 1990's. More recently, the enrolment goal was raised and funding approved to expand the class size to 110 in 2008/09. Representing a 55 % increase over the 71 admitted in 1998/99, class sizes of 110 have continued to the present, and will be evident in larger graduating classes beginning this year.

Postgraduate training programs have also benefitted from increased public funding. In July 2001, approval was granted to increase first year residencies (PGY1) by 15, including nine positions dedicated to train family physicians specifically for rural practice, and six for specialty training (creating opportunities to provide rural physicians with advanced skills training). Other approvals followed, increasing total PGY1 positions from 77 in 2002 to 120 in 2010. Included in these totals was an increase in the Family Medicine program from 27 to 47 (PGY1), raising its share of all positions from 35% to 39%. Of note, the Family Medicine program currently features four "streams" allowing trainees to concentrate their training in either "urban", "rural", "bilingual", or "northern/remote" practices (more details on which will be provided in section 6c)

6b.2 Encouraging recruitment and retention, especially in under-serviced areas

Initiatives relating to this goal include various new/expanded financial incentives for undergraduates and postgraduates to establish their practices in (designated) rural and northern communities. As well, the establishment of the Office of Rural and Northern Health in 2003 and the Physician Resource Coordinating Office in 2005 relate directly to this goal.

Significant financial assistance has been provided to trainees via the Specialist Recruitment Fund (SRF) and the Medical Student Resident Financial Assistance Program (MSRFAP). The "Specialist Recruitment Grant" (SRG) was established in 2001 to recruit specialists from outside the province to fill designated vacant positions. Eligibility has since been modified to include graduates from the MSRFAP program and any Manitoba grads who opt for specialty practice in rural/northern areas. Those accepting the one-time \$15K grant are required to sign a one year ROS with their employer. Funded with \$600K per year since 2001, the SRG had disbursed

⁹⁰Manitoba Health. (June 1, 2010). Population Report. *Government of Manitoba*: Available from <http://www.gov.mb.ca/health/population/pr2010.pdf>.

⁹¹ Based on information provided by Manitoba Health, COPSE, and the UMFOM.

\$4.29 million to 286 physicians by 2009. The MSRFAP was established in 2001 to provide financial assistance, in the form of conditional grants, to students studying medicine in Manitoba or to physicians establishing a practice in the province upon graduation. Under the “educational assistance” option, annual grants of \$15K (since increased to \$25K) were made available to undergraduates and \$20,000 (since increased to \$25K) to postgraduates during their training. Under the “practice assistance” option, a physician graduating from an approved residency program was eligible to receive a grant of \$15,000 to help establish practice in an area of designated need; subsequent revisions to this option distinguish applicants practicing in urban locations (eligible for \$15K) from those in rural locations (eligible for \$25K). On completion of their training, physicians who received assistance under either option have been required to return service (ROS) in Manitoba for a period of one year for each grant they receive. As of July 2010, 1,398 grants worth a total of \$26 million have been disbursed, resulting in 382 years of service already returned and another 107 years in progress. Just recently, the MSRFAP has been revamped to include a “free medical school initiative” offering undergraduate medical students grants ranging from \$12,000 to \$25,000 per year; students can apply for grants in each year of medical school to a maximum of \$61,000 over four years in exchange for commitments to work for up to two and half years in communities deemed in need of physicians; in response, a record 251 students have already signed up.⁹²

Three more recent initiatives have further increased public funding to improve recruitment and retention in rural, northern and remote communities. In 2008/09, the UMFOM received funding approval to expand the “northern remote family medicine residency stream” to 15 positions.⁹³ Formerly known as the “Northern Remote Physician Practice Initiative”, it began in 2008 with only one resident; funding for the expanded program was projected at \$2.75 million, cumulative to 2012. Residents in this stream receive specialized education to prepare them for practice in challenging northern environments. They receive \$50,000 during their second year, conditional upon return of service for two years in a community designated by Manitoba Health; after those two years, they have guaranteed access (re-entry) to a residency position in the specialty of their choice at the U of M. A second initiative known as the “Physician Resettlement Fund” (PRF) received funding (\$500K) in 2009/10 to provide incentive grants to physicians to move to approved areas of the province. The grants vary in amount, ranging from \$2,500 for a specialist locating in Winnipeg from outside the province to \$20,000 for a family physician moving to a northern/remote community. The third initiative occurred in 2009/10 when the “short-term provider relief fund” was funded with \$500K to ensure coverage in rural/remote areas when a physician takes a brief leave of absence; the intent is to recruit Physician Assistants (2) and Nurse Practitioners (2) to provide the required coverage.

The Office of Rural and Northern Health (ORNH) and the Physician Resource Coordination Office (PRCO) are two other initiatives mandated to improve recruitment and retention of physicians and other health professionals in rural/northern areas. The ORNH, operational since April 2003, provides a variety of supports to students, recent graduates and practicing professionals. ORNH provides information on career opportunities in rural and northern communities, and assists in connecting individuals with prospective colleagues and employers in

⁹² News release dated March 9, 2012 accessed at <http://news.gov.mb.ca/news/index.html?archive=&item=13346>

⁹³ Including five to be funded by the federal government.

medicine and other health professions (nursing, pharmacy, social work, etc).

The PRCO, established in the fall of 2005 “to support a balanced, effective and efficient physician recruitment strategy” has six objectives: (1) to coordinate and manage information related to physician recruitment and retention (including all vacancies for family medicine and non-WRHA specialist vacancies); (2) to support RHAs in their direct recruitment activities; (3) to centralize existing and future physician resource initiatives...to ensure cost-effective relationships between programs; (4) to provide a ‘one stop’ information and assistance service for physicians seeking employment in Manitoba and for RHAs and private employers seeking physicians; (5) to support physician recruits and their families throughout the recruitment process; and (6) to contribute to the growth of the physician workforce in Manitoba.”

Among other functions, the PRCO maintains a web-based inventory of “vacant positions” in each of the RHAs (including Winnipeg) that can assist physicians in identifying available practice opportunities. However, the PRCO is aware its current list of “vacancies” may be incomplete for some of the large medical clinics in rural Manitoba (mainly in the Brandon, Central and South Eastman RHAs) who manage their own recruitment processes; we understand PRCO is making efforts to improve the sharing of this information. The PRCO also organizes an annual “meet and greet” event at the U of M to provide an opportunity for RHAs and other employers to connect with international medical graduates who are seeking sponsorship to further their training at UMFOM in order to qualify for licensure in Manitoba (as described more fully in the next section).

6b.3 Facilitating entry of international medical graduates (IMGs) into the workforce

Two programs specific to the third major goal of facilitating entry of international medical graduates into the workforce are: the Medical Licensure Program for International Medical Graduates (MLPIMG); and the International Medical Graduate Assessment for Conditional Licensure Program (IMGACL); Both programs are collaborations between Manitoba Health, the College of Physicians and Surgeons (CPSM) and the UMFOM; and each provides a “pathway” to licensure and practice as a family physician in rural/northern Manitoba.

Established in 2001, the MLPIMG is a one year *training* program, eligibility for which requires the IMG to have: permanent residency in Canada; 1 year of PGME training verified by the CPSM; passed the Medical Council of Canada Qualifying Exam Part I (MCCQE1); fluency in spoken and written English; one year of general practice experience; and worked as a physician in the past 7 years. Candidates selected for the program are matched to a sponsoring RHA, hospital or clinic with a mandatory one-year return of service agreement. Over the period 2002-11, 719 IMGs applied to the program and 116 were accepted; results to 2010 indicate the vast majority (95%) successfully completed the program; by 2009, 65 had achieved conditional licensure and established practices in rural/northern communities.

A relatively small group of IMGs are able to apply for conditional licensure without having to complete the one year training program. These are physicians whose medical knowledge and skills, as assessed over a 4 month period by UMFOM (involving clinical assessments, and written

and oral exams), meet the requirements for conditional licensure with the CPSM. Originally (2001-06) restricted to 12 applicants, this “pathway” was expanded to 25 applicants in the 2006/07 program year. Known since then as the IMGACL, it is the *assessment* program for “practice-ready” IMGs who meet the conditional licensure requirements of the CPSM. From 2007-10, 72 candidates had been sponsored for admission (by RHAs, hospitals and clinics) and, of these, 66 successfully completed their assessments and established practices in rural/northern communities.⁹⁴

6b.4 Primary Care Renewal Initiative

Since the mid-2000’s, Manitoba Health has been pursuing the development of a new organizational model to facilitate improvements in the delivery of primary care through a renewal initiative officially termed the Physician Integrated Network or “PIN”. PIN focuses on fee-for-service (FFS) physician groups that agree to implement changes: (1) “to improve access to primary care; (2) to improve primary care providers’ access to and use of information; (3) to improve the work life for all primary care providers; and (4) to demonstrate high quality primary care with a specific focus on chronic disease management”. Three core features of the PIN are: an electronic medical record; a physician payment model blending fee-for-service with “quality-based incentive funding” (QBIF), a Manitoba version of “pay for performance;”⁹⁵ and inter-professional and collaborative care teams (including physician assistants, nurses, dietitians, etc) to assist family physicians in the care and follow-up of patients. Demonstration sites have been recruited in two phases: Phase I began in 2006 with three sites and one control site; Phase 2 began in September 2008, expanding the number of sites to thirteen. The 13 sites currently involve a total of 161 physicians, geographically distributed (sites/physicians) as follows: Winnipeg 6/65; Brandon 1/12; Steinbach 1/18; Ste. Anne 1/9; Virden 1/7; Altona 1/4; Morden 1/17; and Winkler 1/29.

While it is too early to judge how successful this “renewal” initiative will be in producing the desired changes, an evaluation of Phase I in 2009 demonstrated some progress in meeting the four objectives;⁹⁶ fuller appraisal of outcomes will require evidence from the larger number of demonstration sites and physicians comprising Phase 2.

In requiring a grouping of at least five physicians⁹⁷ under “one roof”, the PIN model has obvious potential in rural and northern communities where practice conditions (call schedules, etc.) have been problematic for many physicians. Through this critical massing of physicians and other non-physician professionals, the PIN should facilitate more agreeable working conditions and hence more sustainable rural and remote practices. As well, the PIN should have the

⁹⁴ For more details on the IMG Program see University of Manitoba (2010).

⁹⁵ For evidence of how payment modality can affect practice profiles of rural physicians see Wall, R., J. Horne, B. Postl, and N. Roos. (1994). Primary care physician payment modality and medical care utilization: preliminary findings from rural Manitoba. In Boan, J. (ed). Proceedings of the Fifth Canadian Conference of Health Economics. Regina: Canadian Plains Research Centre, University of Regina, pp. 206-219.

⁹⁶ PRA Inc. (2009). Evaluation of the Physician Integrated Network [PIN]: Phase I, Summary Report. <http://www.gov.mb.ca/health/phc/pin/docs/phaseIevaluationreport.pdf>

⁹⁷ Note, this is the same number recommended by the ARHA Review (ORNH, April 2004).

capacity to function as both “hub and spoke”, providing improved access to primary care for multiple small communities in the surrounding area.⁹⁸

Meanwhile, we understand Manitoba Health is now pursuing discussions with several RHAs and fee-for-service physician groups to evolve the PIN model into some prototypical “primary care networks” (PCNs) featuring further service enhancements and better functional linkages with regional staff in home care and continuing care.

To conclude this section, we note that the new four-year agreement (retroactive to April 1/11) with Doctors Manitoba contains provisions “that will help recruit and retain more physicians in communities across the province and support the government’s plan to ensure all Manitobans have access to a family doctor by 2015; among its key components are: “a 66% increase to the Physician Retention Fund designed to retain doctors currently practicing in Manitoba; remuneration incentives to recruit and retain physicians in remote locations (and various specialty practices); and a commitment to work together on implementing primary care homes and networks”.”⁹⁹

6c. The University of Manitoba’s past and present efforts to improve recruitment and retention of physicians in rural and northern Manitoba

In this section, we review the Faculty of Medicine’s (UMFOM) efforts to support and improve recruitment and retention of physicians in rural and northern Manitoba.

Distributed Medical Education has been a formal major priority at the UMFOM since 2008. At that time, what had been a collection of disparate distributive programs began to be drawn together under the leadership of a Director of Distributed Medical Education and the institution of the DME working group for the Optimization of Health Science Education in Manitoba (OHSE).

The Faculty’s commitment to rural and remote medicine is captured in the following statement from its Community Forum of 2008:

⁹⁸ The “hub and spoke” practice model can provide many small communities with a more stable long-term source of primary care than the alternatives of either no local physician or a “carousel” of solo practitioners for whom the conditions of practice (including “1 in 1” call) are unacceptable. The “spoking” of services from a “hub” group practice would prototypically involve physicians serving the small communities on a regular weekly schedule of on-site clinics. During his tenure as Chairman of Manitoba’s Standing Committee on Medical Manpower in the 1980s, Dr. George Johnson was a strong advocate of the “hub and spoke” model, while fully understanding the difficulty of convincing small communities that the tradition of the “country doctor” in solo practice was out-dated and unsustainable. So counselled on many occasions by Dr. Johnson, Horne underscored the importance of “cooperative communities” agreeing to share scarce physician resources in a paper presented at the Conference on a New Agenda for Rural Manitoba in Neepawa, March 16, 1989, and later in Horne, J. (1989). *Healthcare in rural Manitoba: resources and related issues of access. Healthcare Management Forum: Vol. 2, No. 2, pp. 6-11.*

⁹⁹ “Doctors Ratify New Four Year Agreement with Manitoba Government”, Health and Healthcare News, Longwoods.com, Oct 18, 2011.

"Enhancing our ability to admit and educate throughout the province; recruiting, retaining, supporting and collaborating more with physicians outside the metropolitan Winnipeg area; and building our research potential were major themes emerging from the forum, and continue to be priorities for the Faculty today."

In this context, a new Associate Dean, Distributed Medical Education was appointed, whose responsibilities were incorporated in January 2011 into the role of the new Associate Head, Distributed Medical Education, in the Department of Family Medicine. The Associate Head also serves as Medical Director, Office of Rural and Northern Health for the Province of Manitoba. He is currently collaborating with the rural Regional Health Authorities, Clinical Teaching Units (Parkland/Dauphin, Brandon, Morden/Winker, and Steinbach), and all other rural preceptors to implement distributed undergraduate and postgraduate medical education throughout Manitoba, including the Northern and Remote Family Medicine Residency Stream program.

To address the disparities in education and service access related to the most remote regions, especially including aboriginal communities, the Faculty appointed an Associate Dean, First Nations, Métis and Inuit Health, who chairs the newly established First Nations, Métis & Inuit Health Student Affairs, Admissions & Curriculum Working Group. The Working Group responsibilities include: identifying strategies to increase admissions respecting First Nations, Métis & Inuit students within the Faculty; developing and implementing monitoring mechanisms respecting the Faculty's practice on the admissions of students; and identifying strategies that provide academic, professional and social supports for First Nations, Métis and Inuit students within the Faculty.

The University of Manitoba has a well-established commitment to trying to ensure that students of Aboriginal heritage succeed in post-secondary education. Within the University, there is a strong Aboriginal support program for students who identify as First Nations, Métis, and Inuit. The Access Programs of Extended Education are located at Aboriginal House on the Fort Garry Campus; the Health Careers Access Program (HCAP) is specifically for students entering health professions; and the Centre for Aboriginal Health Education (CAHE) provides a broad array of supports for all students at the Bannatyne Campus. The Faculty of Medicine's admission policies continue to support an Aboriginal stream within the application processes. For the incoming class of 2014, eight of the 110 students self-declared their Aboriginal heritage; in total, Aboriginal students currently comprise 5.6% (24/427) of the Faculty's total undergraduate enrolment; this represents a slight increase over previous years, moving toward a goal where their numbers become more representative of the Aboriginal peoples who (according to the 2001 census) comprise 13.6% of Manitoba's population.

The specific initiatives taken as part of the DME process fall into the following categories:

- i. Changes in the admissions process;
- ii. Enhanced students' exposures to rural and northern Manitoba in the UGME curriculum; and
- iii. Enhanced residents' exposures to rural and northern Manitoba in the PGME Family

Medicine Program (incl. recruitment/development of clinical faculty from rural practices).

These three initiatives are aligned with evidence from the DME literature with respect to increased recruitment and retention for rural areas. (We also reference the latest Accreditation Report re rural issues). Taken together, and especially with the accompanying administrative changes, these programs would qualify as a formal rural track according to the criteria of Rabinowitz et al.¹⁰⁰

i. Changes in the Admission Process

Since the 1950's, admission to the Faculty of Medicine was largely based on academic achievement. The outcome was an under-representation of students from rural and northern Manitoba. Over the period 1998-2008, students from "rural" communities represented only about 20% of first year admissions, compared to the approximately 43 % of Manitobans who reside in those communities.

In March 2008, significant changes were made to the admission policies, including the introduction of a "Rurality Index" designed to improve access to positions for candidates with authentic rural attributes (i.e., rural "roots"; rural work experience; rural volunteer or leadership experience). Application of the Index to historical admissions data indicated that the number of acceptances with rural attributes in those earlier classes would have increased by 29-33%.

The Index was implemented in 2009 for the Med I class graduating in 2013. Of the 110 students admitted, forty-nine had rural attributes, representing 44.5% of the class (with rural high school graduates representing 30% of the class, a significant increase over the 20% figure from previous years). Based on the same admission process (in 2009/10 and 2010/11), "rural" representation in the Classes of 2014 and 2015 is 49% and 36% respectively.

Based on the literature reviewed in Section 3, the increased "rurality" of MDs graduating from the UMFOM should be reflected in higher numbers opting for practice in rural Manitoba communities, though the earliest (CPSM) registrations of those qualified as family physicians will not occur until mid-2015.

ii. Exposures to rural and northern Manitoba in the UGME curriculum

The UMFOM's ongoing initiatives to encourage medical students to consider practicing in rural and northern Manitoba include:

¹⁰⁰ Rabinowitz, Howard, James Diamond, Fred Markham, and Christina Hazelwood. (January 20, 1999). A Program to Increase the Number of Family Physicians in Rural and Underserved Areas: Impact After 22 Years. *Journal of the American Medical Association*: Vol. 281, No. 2, pp. 255-260. American Medical Association.

- Rural Week
- the SWEAT Program
- the J. A. Hildes Northern Medical Unit (NMU), including the NMU Summer Program
- UGME clerkship rotations/electives in Family Medicine

Rural Week:

At the end of first year, medical students spend one week with a family physician in rural, northern and remote (including First Nations and Inuit) communities. In May 2011, forty rural communities took part.

SWEAT Program (The Summer Work Experience and Training Program):

A 10 week paid summer work experience for year 1 and 2 students to expose them to a rural or northern family practice. Numbers vary depending on available funding.

JH Hildes Northern Medical Unit:

The NMU has operated in Canada's north since 1970 and is the leading practice and education program for northern and remote community medicine. It currently operates in 23 communities, including the Elgin Clinic in Winnipeg's Urban Core. There are slots for 6 medical students to gain experience in these sites

The NMU Summer Program:

This Program has a long history of providing medical students experience in primary care in a First Nations or Inuit community. The program is open to first and second year medical students each year 6-10 students participate in the 10 week summer program.

UGME Clerkship Rotations in Family Medicine:

The centerpiece of the UGME rural and remote program is the clinical clerkship experiences for Med 3 and 4 students. This experience includes a 5 week rotation (95% of which are rural) and rural elective rotations for up to 45 third year clerks. Under the aegis of the DME working group for OHSE, a clinical teaching unit (CTU) structure is being developed across the province to enhance these clinical rotation experiences. The units are designed to constitute equivalent educational value as CTU's in academic health centres, including a preceptor, resident, medical student and other members of the inter-professional team. The working group has defined necessary infrastructure, suitable faculty, and administrative functions to standardize the educational elements and optimize the student experience.

iii. Enhanced residents' exposures to rural and northern/remote Manitoba in the PGME Family Medicine Program (incl. recruitment/development of clinical faculty from rural practices).

Since 2001, the Family Medicine postgraduate training program has increased 75% to 47 RI positions; more positions are under consideration. Currently, twenty-four of these positions are dedicated to the Rural (9) and Northern/Remote (15) training "streams". For the Rural Stream, the Faculty has proposed new/expanded CTUs called Family Medicine Enhanced Distribution Education Centres (FMEDECs) in Brandon, Morden/Winkler and Steinbach; these units are prototyped on the CTU in Dauphin, where the model has functioned successfully at

the postgraduate level for over two decades. The CTUs will engage the trainees in learning and will enhance their family medicine educational experience. Some non-FM Specialty residency programs have shifted from the two large tertiary hospitals in Winnipeg to community hospitals in Winnipeg, rural and northern Manitoba, and to various ambulatory sites. This shift has been driven in part by the desire of the residency programs to provide their trainees with a perspective that is different from that of specialists working primarily in a tertiary hospital setting. This trend will likely continue, and will be done in a manner that carefully considers the needs of medical students as well as residents.

The Northern/Remote Stream was established in April 2008 and expanded in 2010 (with federal funding of five positions, taking the total to 15 RI positions); there is a 2 year return of service agreement attached to this program, with infrastructure I.T. support to encourage retention. The ultimate goal is to induce more family physicians to establish longer-term practices in northern/remote communities.

6d. Our evidence-informed projection of “needs” for family physicians to 2020, and related projections of the overall numbers required to meet these targets from prospective “pipelines” of Manitoban, Canadian and Foreign trained physicians

In this section, we first define and document the “need” for more family physicians based on the policy goal that every Manitoban will have access to a family doctor by 2015. We then develop a methodology to project the overall number of physicians that will be annually required to not only achieve this goal, but also to replace those physicians who will cease practicing in Manitoba due to death, retirement, or relocation to another province or country; the resulting schedule of projected annual “requirements” spans the period 2012-2020. In a concluding analysis, this evidence-informed “needs-based” projection of physician requirements is “connected” to prospective pipelines of physicians from the University of Manitoba, other Canadian universities and foreign medical schools, with due allowance for known and probable changes in the numbers annually “exiting” each of these pipelines to 2020. These analyses will complete our elaboration of the “Manitoba context” and provide the necessary foundation for our assessment of the three BMES options for distributed medical education (DME) in Section 7.

6d.1 Defining and documenting “need” for family physicians

While there is always room for debate and disagreement about how to define the need for physicians, we have chosen to adopt a definition based on the policy goal that all Manitobans will have a family doctor by 2015. In addition to its official status, this definition has the advantage that it can be operationalized at the regional level through a database managed by Manitoba Health. In particular, the database provides estimates of the number of individuals in each region who did not have a “regular doctor” in 2010 based on sample surveys using the Canadian Community Health Survey (CCHS) instrument. Among those so identified, it further distinguishes those who “tried looking” for a doctor from those who did not. The results are shown in Table 6d.1 below.

Table 6d.I – Estimated population without a “regular medical doctor” (RMD),
by Regional Health Authority (RHA), 2010

RHA	Estimated population with no RMD	% total population with no RMD
Winnipeg	171,450	12.6%
Brandon	6,941	13.2%
Assiniboine	11,228	16.4%
Parkland	4,183	10.0%
Central	14,754	13.7%
Interlake	12,480	15.8%
North Eastman	4,490	10.7%
South Eastman	11,215	16.4%
NOR-MAN	6,010	24.5%
Burntwood/Churchill	24,568	50.1%
Manitoba	171,450 (106,191)*	13.9% (8.6%)*

Source: Manitoba Health

Note: figures in brackets for Manitoba are estimated number and % of provincial population with no regular medical doctor *who tried looking for one*.

Province-wide, it is estimated that 171,450 individuals representing 13.9 % of the population were without a regular doctor in 2010, figures which decrease to 106,191 and 8.6% when those who did *not* “try looking” for a regular doctor are excluded. Roughly half of these individuals reside in the Winnipeg region, the other half residing in the nine regions “outside” Winnipeg.¹⁰¹ Among the latter, there is wide variation, ranging from a low of 10.0% in Parkland to 50.1% in Burntwood/Churchill. With “need” so defined, it is clear that efforts to recruit and retain more family physicians will be required in *all* regions, with those “north of 53” being especially challenged to meet the “needs” of the 30,000 individuals who do not now have a regular doctor.

Having defined and documented the “need”, we next estimate the number of family physicians that will be required to meet the need. *In our judgment, this requires choosing a “population per family physician” ratio(s) that is within the range defined by those contemporary models of primary care delivery that hold promise of quality improvements for patients (in both experience and outcomes) and better practice conditions (on-call and vacation schedules, etc) for family physicians and other primary care providers.* As is well known, such models have been the focus of “primary care renewal” in all provinces and territories for over a decade (stimulated by federal funding in several Health Accords, as mutually agreed by the federal, provincial and territorial governments over the period 2000-2004). Furthermore, these models are generally understood to feature:

- a. Physicians grouped in sufficient number to provide patients with ready access to comprehensive, continuing primary care;

¹⁰¹ Fifty-fifty is the mid-point of the 51/49 and 49/51 percentage distributions for Winnipeg/Outside Winnipeg based on the respective totals of 171,450 and 106,191

- b. A practice environment allowing all group members to maintain an acceptable “work-life” balance; and
- c. Other health professionals working with the physicians in a “team” model facilitating the shared care and follow-up of patients, especially those with multiple chronic conditions.

While these models represent a significant departure from the status quo delivery system in many (urban, rural and northern) communities, they are fundamental to the physician health human resource (PHHR) planning that is on-going in most jurisdictions, including Manitoba.

As previously discussed, the centre-piece of Manitoba’s approach to primary care renewal is the Physician Integrated Network (PIN). Here we briefly note that in grouping a minimum of five fee-for-service family physicians and a variable number of other health professionals (all sharing a single electronic medical record), the PIN has features in common with some of the “renewed” primary care organizations that have been established in other provinces, most notably Ontario’s Family Health Groups (FHGs). To the key question, “how many patients per physician?”, the most recent data from Ontario indicates that FHGs serve an average of 1,553 patients comprising 1,287 who are formally rostered and another 267 who are “virtually” rostered patients, i.e., saw the physician for the majority of their primary care but were not formally rostered; of added note, 72.3% of FHG physicians had a total practice size of 1000 or more.¹⁰²

Informed by the Ontario evidence (and interviews with key informants, including Dr. Alan Katz at Manitoba’s Centre for Health Policy), we have conducted exploratory analyses using patient: doctor ratios ranging from 1000:1 to 1500:1. In our judgment, ratios in this range can be defended as “feasible” for two reasons: (1) they align well with the Ontario FHG experience; and (2) they align equally well with Manitoba’s on-going initiatives to renew primary care practices via PINs.¹⁰³ *All things considered, we have chosen to use a ratio of 1200:1, the near mid-point of this range to calculate the number of family physicians that will be required to look after the approximately 171,000 Manitobans who had no regular doctor in 2010.* Further allowing this is not exact science, we round off that calculation at 150 physicians; pro-rated, this translates into a requirement for a net increase of 30 family physicians per year for five years, calibrated on a base defined by those included in the registry of fully licensed physicians reported by the College of Physicians and Surgeons of Manitoba (CPSM) at April 30, 2011. Based on the broad 50/50 geographic division of those in “need” (noted above), this also translates into a five year requirement for 75 (15 per year pro-rated) family physicians in each of Winnipeg and the nine regions outside Winnipeg.

There remains the question “is there a ‘need’ for more (sub) specialists?” The short answer is we don’t know. What we do know is that in Winnipeg there are twice as many (sub)specialists

¹⁰² Personal communication with Dr. Brian Hutchison, McMaster University; see Dahrouge et al. [2012] for more related evidence.

¹⁰³ Supplemented with “advance” access to primary care through employment of physician assistants and other health professionals, and the establishment of mobile clinics and “quick-care” clinics led by nurse practitioners. (Manitoba “News Release” dated Nov 17, 2010).

as family physicians, and that outside Winnipeg this profile is dramatically reversed with family physicians outnumbering specialists by a ratio of 3.4:1.¹⁰⁴

Unfortunately, we are unable to determine whether the current number of licensed specialists and their geographic distribution meets the current “need”, since there has been no comprehensive survey of all specialty practices that could serve as an “evidence-informed” supplement to our calculated requirement for 150 more family physicians. However, several of our key informants made reference to a report issued in February 2009 by the Manitoba Centre for Health Policy (MCHP) entitled “Physician Resource Projection Models”. MCHP developed an “equivalent service measure” (ESM) to model and project requirements for services provided by general practitioners, general surgeons, orthopedic surgeons and pediatricians. For a variety of reasons, conversion of these service projections into required numbers of physicians proved problematic, with only two of the four specialty areas yielding to any calculation of the likely ranges involved. While we agree with MCHP that the ESP holds considerable promise as a service projection methodology, it does not provide us with the information we require to gauge the overall number of general and sub-specialists “needed” by 2020.

In the circumstances, we have developed two scenarios which include arbitrary projections of the number of “needed” specialists. Scenario A assumes a 2:1 ratio and adds 75 specialists to the 150 family physicians; scenario B assumes a 3.75:1 ratio, adding 40 specialists to the same 150 family physicians. Equally arbitrary are the broad geographic allocations of these specialists: the 75 specialists in Scenario A are split 60/15 between Winnipeg and the regions outside Winnipeg; the 40 specialists in Scenario B are split 30/10. Summary results for these two scenarios are shown in Table 6d.2 below.

¹⁰⁴ Based on June 2010 data from CPSM, as extracted and compiled by COPSE; in these calculations, physicians who have completed PGME in *both* Family Medicine and another specialty practice are *included* among family physicians; alternatively, if they are included with the other specialists, they together outnumber family physicians by a ratio of 2.4:1 in Winnipeg, while family physicians outnumber specialists outside Winnipeg by a ratio of 2.2:1.

Table 6d.2 Number of Licensed Physicians, Winnipeg and Outside Winnipeg, Actual 2011 and Projections 2016, 2020

Scenarios of Projected Need	Year Ending April 30*	Winnipeg		Outside Winnipeg		Manitoba
		Winnipeg	Percentage	Winnipeg	Percentage	
Scenario A +150 GPs, +75 SPs by 30/04/2016	2011	1888	75.2%	614	24.2%	2502
	2016	2023	74.2%	704	25.8%	2727
	2020	2121	74.2%	739	25.8%	2860
Scenario B +150 GPs, +40 SPs by 30/04/2016	2011	1888	75.2%	614	24.2%	2502
	2016	1993	74.0%	699	26.0%	2692
	2020	2090	74.0%	734	26.0%	2824

*as defined by the College of Physicians and Surgeons of Manitoba (CPSM)

This table invites several clarifying comments. First, to meet defined “needs”, the province-wide number of registered fully licensed physicians in 2016 must increase from 2,502 in base year 2011 to 2,727 in scenario A, and to 2,692 in scenario B.

Second, the increase of 225 physicians in Scenario A consists of 150 family physicians and 75 (sub)specialists, with the totals for Winnipeg and Outside Winnipeg increasing by 135 (75 GPs and 60 SPs) and 90 (75 GPs and 15 SPs) respectively; for Scenario B, the overall increase of 190 physicians (150 GPs and 40 SPs) increases the Winnipeg total by 105 physicians (75 GPs and 30 SPs), and the Outside Winnipeg total by 85 physicians (75 GPs and 10 SPs).

Third, having achieved the needed numbers of physicians by 2016 (to ensure every Manitoban has a regular doctor), the projected requirements from 2016 to 2020 are incremented in both scenarios at the projected annual growth rates in the general population of 1.1% to 2018 and 1.3% thereafter.¹⁰⁵

Fourth, by 2016 and beyond, the geographic distribution has slightly shifted with Winnipeg’s share decreasing from 75.2% to 74.2% in Scenario A and to 74% in Scenario B; corresponding shares for the regions outside Winnipeg are 24.2%, 25.8% and 26.0%.

Finally, this table (detailed more fully in Appendix 11) provides the schedule of “needs” that must be met by the annual flows in and out of the CPSM register of both new and previously licensed physicians. We progress to these important calculations in the next section.

¹⁰⁵ As currently projected by the Manitoba Bureau of Statistics.

6d.2 Our Proposed Health Human Resource (HHR) model to project the overall number of physicians required from 2012 to 2020

As implied above, the basis for our model is the register of fully licensed physicians, as annually reported at CPSM’s year-end April 30. Data elements essential to our projection model are: (1) annual deletions from the register due to deaths, retirements, suspensions, transfers to residency licenses, and relocations to other provinces or countries; (2) annual additions to the register of both new *and* previously licensed physicians (from inside and outside Manitoba), classified by “country of qualification” for the MD degree or equivalent; and (3) the net gain or loss in registrants at April 30 of each year, defined by the difference between total additions and total deletions over the previous twelve months. We use the deletions data to estimate the equivalent of an annual “attrition” rate, i.e., the number of physicians who in any given year must be replaced in order to avoid any net loss in total numbers. To this we add the required net gain to achieve the “needed” number of physicians in scenarios A and B; the sum of these two numbers yields the required number of additions, comprising both new and previously registered physicians. Summary results of these projections for Scenarios A and B are shown below in Table 6d.3.

Table 6d.3 Projected Deletions, Required Net Gains, and Required Additions to CPSM Registry of Fully Licensed Physicians: 2012, 2016 and 2020

Projected “Needs”	Year Ending April 30	Projected Deletions (1)	Required Net Gain (2)	Required Additions (1) + (2)
Scenario A 150 GPs and 75 SPs by 30/04/2016	2012	310	45	355
	2016	333	45	378
	2020	350	37	387
Scenario B 150 GPs and 75 SPs by 30/04/2016	2012	310	38	348
	2016	329	38	367
	2020	346	37	383

*Annual deletion rate = 12.4% , based on average 11.6% over years 2007-2011 plus allowance for increase in projected retirements to 78/yr from 2012 to 2020.

To clarify, years 2012 and 2016 bracket the five year period when gains of equal annual magnitude are required: 45 per year in Scenario A and 38 per year in Scenario B. From 2016 through 2020, required net gains are incremented in line with projected population growth (per Table 6d.2). Note, for both scenarios, required additions increase over the projection period due largely to the application of the 12.4% deletion rate to the ever growing number of registered physicians each year.

Before progressing to translate these “required additions” into “required new registrants” and their pipeline sources, it is instructive to pause and place our projections into both geographic and historical perspective, again using the metric of MDs per 100K population. As shown in

Table 6d.4, the Manitoba ratios for 2020 of 214 (A) and 211 (B) each represent a “steady-state” supply of physicians, preserving the ratios first achieved in 2016 by increasing their total numbers in strict proportion to projected increases in the general population to 2020. They also represent a continuous improvement in physician resourcing dating from 2001 (and earlier). Note that *virtually all of this improvement is sourced outside Winnipeg* where the 2011 ratio of 113 increases by 8-9%; in Winnipeg, there is very little or no change due to the disproportionately slow growth of (sub) specialists built into both scenarios, and the 50/50 allocation of family physicians gained over the period 2012-16 (which deliberately “under-represented” Winnipeg’s general population, but not its half-share of the 171K Manitobans who were without a regular doctor in 2010).

Table 6d.4 Number of Physicians per 100,000 Population: Winnipeg, Outside Winnipeg and Manitoba, actual 2001, 2006, 2011 and projected 2020.

Year	Winnipeg	Outside Winnipeg	Manitoba
2001	252	103	185
2006	263	108	193
2011	285	113	207
2020A	288	123	214
2020B	284	122	211

Notes: 2020A= Scenario A ; 2020B= Scenario B

Manitoba Census Pop (millions): 1.120 (2001); 1.148 (2006); 1.208 (2011).

Projected 2020 = 1.339 million; Outside Wpg=602K (45%); Wpg=736K (55%); geographic distribution assumes no change from 2011 Census. Projected growth rates per Manitoba Bureau of Statistics: 1.1% per yr 2011 to 2018, and 1.3% per yr 2018 to 2020.

Section 6d.3 Connecting our evidence-informed “needs-based” projection of physician requirements to prospective pipelines of physicians from the University of Manitoba, other Canadian universities and foreign medical schools

Returning to our projection methodology, we make the transition from “required additions” to “required new registrants” using the relationship between these two series, evidenced for the years 2007-11 in the CPSM database. Averaged annually over this latest five year period, new registrants represented 51% of total additions to the register of fully licensed physicians. It is this parameter which yields the projected requirement for new registrants (RNR) presented in Table 6d.5 below (See Appendix 12 for full details)

Table 6d.5 – Required New Registrants Matched to Prospective Pipelines of MDs from the University of Manitoba (M), other Canadian (C) and Foreign Medical Schools (IMG), 2012-2020

Scenarios of Projected Need	Year Ending April 30	Required New Registrants (RNR)	Prospective Pipelines	
			Base 1 (M/C/IMG)	Base 2 (M/C/IMG)
Scenario A: 150 GPs and 40 SPs by 30/04/2016	2012	181	53/40/88	48/36/97
	2016	193	65/40/88	60/36/97
	2020*	197	73/40/84	68/36/93
	2020**	197	81/40/76	76/36/85
Scenario B: 150 GPs and 40 SPs by 30/04/2016	2012	177	53/40/84	48/36/93
	2016	187	65/40/82	60/36/91
	2020*	195	73/40/82	68/36/91
	2020**	195	81/40/74	76/36/83

Notes:

- Base 1: M base (2011) = 50 (average of peak years 2008,09,11);
C base (2011) = 40 (average of peak years 2008,10,11);
IMG = RNR minus (M + C)
Base 2: M base (2011) = 45 (average of 2007-11);
C base (2011) = 36 (average of 2007-11);
IMG = RNR minus (M+C)
- Deletion rate of 12.4% based on average for 2007-11, increased to allow for larger number of deaths and retirements over next 10 years, i.e., from 56 to 78 physicians per year, or an increase of 40% (projection based on number of licensed physicians aged 56+ in 2010);
- Required registrations based on ratio of new registrants to total additions, averaged over the period 2007-11 at 51%;
- Projections from 2017-20 are based on general population growth projected at 1.1% per yr 2016-18 and 1.3% per yr 2018-20.
- Pipeline sources of new registrants based on projected increase in new registrants completing UGME and/or PGME at UMFOM. For family medicine PGME requiring 2 years (R1-R2), the duration from Med 1 to CPSM registration is 7 years; for specialty PGME programs averaging 5 years (R1-R5), the duration from Med 1 to CPSM registration is 10 years. (See Appendix 13 for detailed schedule of changes in projected M pipe flows resulting from actual or potential changes in UGME class size and composition; increases in PGME R1 positions; and changes in distribution of R1 positions by program [FM/SP] and allocation to UM grads).
- 2020* increases FM R1 positions +8 (July 2013 from 45 to 53);
2020** increases FM R1 positions +20 (+8 July 2013 and + 12 by 2017)

As is evident, RNRs range from 177-197 over the projection period (bracketing the 189 recorded in 2011). For any given year, the difference in RNRs between Scenarios A and B ranges from 2 (2020) to 6 (2016), considerably less than the specialty differential (35) between the scenarios, due to the dominance of annual replacement requirements (total deletions) over required net gains in the calculation of required additions and RNRs. Put another way, the RNRs are relatively *insensitive* to our alternate assumptions about the “need” for (sub) specialists.

More importantly, the Table summarizes the information which provides a *contextual foundation* for our assessment of the three options in the next section. Specifically, it shows how in the final stage application of our projection methodology, the RNRs are “matched” to supplies of physicians projected to flow from pipelines of MDs from the University of Manitoba (UM), other Canadian (C), and foreign medical schools (IMG).

Since the content of these three pipelines is not as self-evident as might appear, we provide clarifying definitions as follows:

The M pipeline includes Manitobans:

1. Who completed both their MD and postgraduate training (PGME) at the UM;
2. Who completed their MD at UM, and their PGME out-of-province, either at a Canadian or foreign medical school.

The C pipeline includes:

1. Manitobans who completed their MD at a Canadian medical school (other than UM) and their PGME at UM;
2. Manitobans who completed both their MD and PGME out-of-province;
3. MD grads from other Canadian medical schools who completed their PGME at UM;
4. MD grads from other Canadian medical schools who completed their PGME at other Canadian or foreign medical schools.

The IMG pipeline includes:

1. Physicians who completed both their MD and PGME at a foreign (including US) medical school; and who qualified for licensure in MB based on that training and previous practice experience, some of whom may have been previously registered in another province.
2. Physicians who completed their MD at a foreign medical school and their PGME at a Canadian school (other than UM), and who were previously registered and practiced in another province (defined by CPSM as a new registrant);
3. Physicians who completed their MD at a foreign medical school and their PGME at UM having entered via the competitive CaRMS match; this group includes Manitobans and

other Canadians who studied abroad, known hereafter as MSAs and CSAs respectively.¹⁰⁶

4. Physicians who completed their MD and PGME at a foreign medical school who qualified for licensure in Manitoba having completed either the IMGACL 4 month assessment program or the MLPIMG 12 training program at the U of M under the sponsorship of a regional health authority (RHA), hospital or clinic, with an obligatory 2 year return of service.

As noted in the Table, the schedule of projections is calculated for two alternative base year numbers of new registrants with MDs from the University of Manitoba. We should further clarify that both of these numbers (B1=50 and B2= 45) are 10-20% lower than the 56 who in fact registered with the College in the year ending April 30, 2011. Since that latter figure represents an historic high (exceeding any recorded in the last 22 years) which may or may not be sustained, we have opted for (conservatively) lower base numbers derived from *averages* of registrants over the last five years (45) and, alternatively, the three most recent peak years (50).¹⁰⁷ For any given year in the projection schedule, there is a resulting difference of 5 physicians in the M pipeline between the two base years.

Regarding the C pipeline of MDs from other Canadian medical schools, we have employed the same two averaging methodologies to derive the Base 1 and Base 2 values of 40 and 36 respectively. These numbers may be compared to the 42 Canadian graduates who were newly registered in (CPSM year) 2011. Using the lower base year values and, conservatively *assuming no change* in those numbers to 2020, yields the schedule of C values shown in the Table.

Regarding the IMG pipeline, the numbers shown for Scenarios A and B in any projection year (on each of Bases 1 and 2) are derived residually by subtracting the combined total of new registrants for the M + C pipelines from the RNR for that year. For example, in 2012, the required number of IMGs in Scenario A is 88 for Base 1 (181-53-40) and 97 for Base 2 (181-48-36). Of note, these two values bracket the actual figure of 91 recorded in (CPSM year) 2011. As so derived, the IMG pipeline serves as the “balancing” source of new registrants in any year, arithmetically compensating for any and all differences between the year to year increases in RNRs and the M pipeline.¹⁰⁸

¹⁰⁶ In September 2010, the University of Manitoba and the Winnipeg Regional Health Authority appointed a “physician repatriation coordinator” within their Joint Operating Division to establish and maintain a registry of MSAs and CSAs; current data from this registry have been made available to this study.

¹⁰⁷ Our projection model readily allows insertion of other “evidence-informed” base year values, requiring a simple 1:1 recalculation of all projected M values with no change in the schedule of projected *increments* shown in the Table.

¹⁰⁸ For a retrospective, less arithmetic analysis of IMG physicians in Manitoba see Postl, B., R. Wall, J. Horne, and K. Brown. (1994). Use of foreign medical graduates (FMG) in meeting rural physician needs. In: Petursdottir, G., S.B. Sogurosson, M. Karlsson, and J. Axelsson (eds). Proceedings of the 9th International Congress on Circumpolar Health, June 20-25, 1993. Reykjavik: Arctic Medical Research 53(Supplement 2), pp.121-124.

In more substantive terms, the projections reflect our best assessments of known and potential impacts resulting from past and prospective changes in policies affecting UGME and PGME at the University of Manitoba. These changes and their impacts are:

1. The increases in the Med I class size prior to 2012, leading to the current 110 positions; the effects of these increases on those completing PGME in Family Medicine and the Specialties (at the U of M or elsewhere) and their earliest dates of registration with CPSM (M pipe) span the years 2012-2015 for Family Medicine (average 2 year program) and 2015-18 for the (sub) specialties (average 5 year program).
2. The conversion, effective with the Med I class of 2012/13, of 10 positions formerly filled by out-of-province students to Manitoban students; on the solid, historical evidence that most (94%) of the out-of-province students have left Manitoba on graduation, this change in admission policy is equivalent to a 10% increase in the number of Manitobans in all future grad classes, beginning 2016; this will indirectly transmit to the M pipe in 2019 for those completing PGME Family Medicine; however, for those completing specialty training, the positive registration effects will not occur until 2022 (i.e., two years beyond our projection period).
3. The higher proportion of students with “rural attributes”, increasing from 26% to 40% beginning with the Med I class of 2009/10; representing an approximate increment of 18 rural students, the effects on the M pipe will be transmitted to the CPSM register over the period 2016-2019, and then only *indirectly* as a result of higher numbers of grads prospectively matching to PGME RI positions at U of M in 2013 and years following.
4. The decision, effective July 2012, to increase the proportion of RI positions matched to UM grads from the current average of 50% across all PGME programs (including Family Medicine) to 70%; on the evidence that retention rates are highest (as previously cited in section 6a) among those completing both UGME and PGME at UM, the positive effects of this policy change will be registered in 2015 for those completing the two year Family Medicine program and in 2018 for those completing the (average) 5 year specialty programs.
5. The prospective approval, assumedly effective July 2013, of Family Medicine’s plan for Enhanced Distribution Education Centres (FMEDEC) involving eight new RI positions, geographically distributed to Brandon (4), Boundary Trails (2) and Steinbach (2); this will increase Family Medicine’s RI share from 37.5% (45/120) to 41.4% (53/128); the positive effect of this expanded “rural track” (from the present 9 positions in Dauphin/Parkland) on registrations would occur in 2015, and will be further enhanced by the above noted increase in UM RI matches to 70%; interactively, these two changes are projected to add 15 U of M RIs in Family Medicine (i.e., 37/53 vs. 22/45 in 2011) and, assuming 80% retention, 12 additions to the M pipe by 2016. *This scenario (and other relevant adjustments detailed in Appendix 12) is projected with the designation 2020* in Table 6d.5.*

6. The prospective approval, assumedly effective July 2013, of the Faculty's previously submitted plan to establish 3 RI general specialty positions at the Brandon Clinic; this would be facilitated by the approval of 2 new RI positions (increasing total RIs to 130) and the designation to Brandon of 1 existing RI specialty position, with the net effect that specialty programs would have a 59% share (77/130) of RI positions in 2013; with U of M grads matched to 70% (54/77) of these positions, the interactive effect of these two changes will occur in 2018 (as noted in 4 above) and 2019
7. The decision, optional as early as July 2013, to progress a plan to allocate RI positions in equal 50% shares to family medicine and the specialty programs; this would be a significant adjustment, further increasing family medicine's total by 12 positions from 53 to 65, and decreasing the specialty programs from 77 (2013) to 65; In our judgment, this would: (i) better align with the current (and historic) 50% representation of family physicians in the population of licensed physicians in Manitoba; (ii) better align with our "evidence-informed" projection of the relatively greater "need" for family physicians; (iii) elevate U of M from its current 37.5% position into a group of three Canadian medical schools whose current allocation of RI positions to Family Medicine exceeds the national average of 42% (namely, Queen's and Sherbrooke at 49% and NOSM at 72%); and (iv) effectively operationalize the strategy recommended in 2004 by the ARHA Review "to put a greater priority and value on family practice medicine to improve the view and stature of family practice, and to encourage more medical students to choose family practice". *This scenario (and other relevant adjustments detailed in Appendix 13) is projected with the designation 2020** in Table 6d.5. To further clarify, 2020** captures most of the registration effects of this policy change, assuming the 12 RI positions are reallocated at the rate of 3 per year beginning July 2014 and ending July 2017.*¹⁰⁹
8. The decision, effective July 2013, to reallocate a larger proportion of RI positions to Manitobans who left Canada to obtain their MD degrees from foreign (including US) medical schools; known as MSAs in the IMG pipe, they would compete for the 30% (39/130) of RI positions not matched to UM grads, and would be preferentially matched to these positions over other IMGs (including Canadian students from other provinces, i.e., CSAs); prospectively, this could *triple* the number of MSAs in PGME training at U of M from current numbers of 6-8 per year (of whom 75+% are in Family Medicine) to 18-24, with consequent changes (assuming 80+% retention) of 15-20 in the "Manitoba student component" of the IMG pipe occurring as early as 2015.

Returning to Table 6d.5, we can now take fuller measure of the various registration impacts that flow from the above eight changes in policies affecting UGME and PGME at the University of Manitoba. Under both Scenarios A and B, the projections for 2020 warrant special attention since they allow sufficient time for the major impacts to be revealed in both the M and IMG pipelines. Observations most relevant to our assessments of the three DME options in Section 7 are:

¹⁰⁹ The remainder of the registration effects will occur in 2023 after the RI reductions in specialty programs work their way through the ranks of the RI-R5 residents; in that steady-state year, the distribution of all PGME positions will be 130 Family Medicine and 325 Specialty programs, 10 fewer than the current 90 and 375 respectively.

- i. The number of new registrants who complete UGME and/or PGME at the University of Manitoba is projected to increase by a minimum of 23 and a maximum of 31 depending on which new policy “package” is implemented, i.e., the 2020* package with the PGME Family Medicine expansion limited to the FMEDEC proposal of 8 new R1 positions, or the more expansive 2020** package inclusive of the 20 new R1 positions (FMEDEC + 12) which Family Medicine would receive as its 50% share of the 130 R1 positions;
- ii. For the 2020* policy package, annual flows from the M pipe rise to 73 and 68 from their respective base numbers of 50 and 45; for the 2020** policy package, the corresponding M pipe flows increase to 81 and 76;
- iii. Under these M pipe projections, the U of M’s contribution to the (195-197) RNRs required in 2020 ranges from a minimum of 34.5% (68/197: 2020*, Scenario A, Base 2) to a maximum of 41.5% (81/195: 2020**, Scenario B, Base 1); these figures compare favourably with the “apples to apples” base year contributions of 25.9% and 29.8% respectively and, as well, to the 25.5% contribution recorded by CPSM for the 10 registration years 2002-11;
- iv. Since the C pipe flows are held constant at base year values of 36 and 40, the IMG pipe flows required in 2020 to balance the RNRs range from a minimum of 74 (2020**, Scenario B, Base 1) to a maximum of 93 (2020*, Scenario A, Base 2); at these respective levels, IMGs are projected to contribute 37.9% and 47.2% of the required RNRs; these figures represent significant *declines* in the IMG pipe contribution from the corresponding base year shares of 49.3% and 53.3% and, as well, from the 52.2% share recorded by CPSM for the 10 registration years 2002-11;
- v. In 2020, the combined contribution to RNRs from Manitoba MDs (M pipe) and Canadian MDs (C pipe), ranges from a minimum of 53.3% (2020*, Scenario A, Base 2) to a maximum of 62.1% (2020**, Scenario B, Base 1); these figures represent significant increases in the M+C pipeline contribution from the corresponding base year shares of 46.6% and 53.4% and, as well, from the 47.8% share recorded by CPSM for the 10 registration years 2002-11;
- vi. In 2020, with the M+C pipe totals augmented by 15-20 MSAs (20-24 admitted per policy option #8 above, with 80+% retention), *the projected combined contribution to RNRs of Manitoba “trained” Canadian physicians ranges from 60.4% to 72.3% (ranging even higher from 73.1% to 85.1%, if 25 IMGs assessed/trained via the IMGACL and MLPIMG programs are also included as Manitoba “trained”).*

Section 6 Summary:

This completes the specification and discussion of our projection model. In doing so, our objective has been to provide the Steering Committee with a comprehensive, intuitive and transparent rendering of the complex interfaces between physician HHR planning and the medical education enterprise. *We make no claim that our model and its various empirical expressions constitute anything close to exact science. However, we do claim it provides an “evidence-informed” basis for serious discussion and debate among key stakeholders about the “need” for physician resources in Manitoba, and how these needs might be prospectively sourced among physicians trained at the University of Manitoba, other Canadian universities, and foreign medical schools.*

This also concludes our scan of the Manitoba environment. We have reviewed the historical trends in physician resourcing and the current geographic distribution of physicians across the province’s urban, rural and northern regions. We took note of significant high-level improvements in access to physicians, but cautioned that “all is not well” since, on one key indicator, there remain many Manitobans in all regions who do not have a “regular” doctor. We also took stock of the wide-ranging initiatives that have been deployed by government over the last twelve years to improve the province-wide recruitment and retention of physicians, noting that most of these initiatives comprise on-going HHR strategies within the broader healthcare policy “file”. We also inventoried the past, present and proposed initiatives by the University of Manitoba’s medical school to fulfill a *de facto* social contract featuring more equitable access to undergraduate and postgraduate training programs, especially among students with “rural attributes”, and a broader-based, more culturally appropriate approach to meeting the needs for physicians in rural, northern and aboriginal communities. *In our view, these initiatives collectively define not just a “system in motion”, but one where the “moving parts” appear headed in a common, coherent and purposeful direction.* In any event, that all of these initiatives have been publicly financed means Manitoba taxpayers will, in due course, be entitled to hard evidence of “value for money”.

So summarized, we now have the necessary “contextual foundation” to objectively assess the three specified options for enhancing distributed medical education, and to comply with the Steering Committee’s specific directive to consider “a Brandon solution in the context of the provincial need”. We do so in the following section.

SECTION VII

RECOMMENDED OPTIONS

7a. Introduction: Review of Mandate

As consultants to the Steering Committee, we have been engaged “to conduct a feasibility study concerning medical education for primary care physicians to practice in rural and northern communities in Manitoba”; and “to review and evaluate medical education in Brandon in a comprehensive manner including;

- The potential for a freestanding medical school in Brandon (hereafter *Freestanding Option*);
- The potential for a satellite program expansion of the University of Manitoba in partnership with Brandon University (hereafter *Satellite Option*);
- The potential of continuing or expanding existing U of M models of rotational and educational experiences (hereafter *Rural Track Option*)”.
- We have taken note of the caveat that consideration of these options take into account the broad context of the full spectrum of medical education training needs across the province, with the primary target of the study being the medical educational requirements for primary care physicians in rural and northern communities in Manitoba.

7b. Defining Conditions for DME in Manitoba

a) The problem

The underlying premise for each of the three originally proposed options is that changes to the status quo of medical education are necessary, the expected outcomes of which are to increase access to and quality of primary care medical services in the province as a whole, with special attention to equitable distribution of these services for all demographic segments of the province. The essential questions are:

- i. What is the nature and extent of physician human resource need in Manitoba?
- ii. What is the best way to change the educational system for doctors to meet this challenge? What structural and functional changes will produce the desired outcomes? And what combination of realistic DME options and facts on the ground create the framework or otherwise constrain potential solutions?

Sections 4, 5 and 6 have focused on an examination of the broad experience of the human resource and educational aspects of distributed medical education, as well as the current educational and physician resource situations in Manitoba. There are a number of conclusions to be drawn that are relevant to the discussion of options in section 7 and that lead to the recommendations made in this section. For convenience, we list these conclusions and their implications here.

b) The HHR constraint: What is the actual need for physician resources in the Province

- i. Since both the driving force and *sine qua non* for an increase in medical educational capacity in the province is a physician shortage, there must be a *demonstrated need for more doctors*. In the case of the BMES, a perceived need for more rural and remote physicians to address discrepancies in access to primary care in rural and remote versus urban Manitoba has provided the motivation for the study.
- ii. Our study of the physician human resource situation in Manitoba paints a nuanced picture. *Access to primary care services may be generally diminished, but these decreases are uniformly distributed between urban and rural regions*
- iii. The two glaring exceptions to this generalization (both of which are somewhat outside of the scope our study) are:
 - non Family Medicine Specialists (non-FM-S) are clustered nearly exclusively in the two most urban regions of the province (Brandon and Winnipeg)
 - primary care access is disproportionately reduced only in the most remote of rural areas of the province, largely aboriginal communities.

The distribution of non-FM-S relates fundamentally to the nature of their practice and the geographic realities of the province, since they must draw on large numbers of patients. The keys to removing disparities in non-FM-S access are improved logistics of service distribution through advances in transportation and technology.

On the other hand, limited access to primary care physicians in remote rural areas may be addressed by better educational strategies. The JA Hildes Northern Medical Unit and the Health Careers Access Program for Aboriginal students at the University of Manitoba have well established track records for improving remote recruitment and retention. Collaboration and coordination of programs between the Universities and all levels of government are essential and urgently needed for these vulnerable regions.

c) Critical features of the current medical HR situation define particular needs for rural physician supply

A fundamental reality of rural practice is an increased turnover of doctors, having three main negative consequences:

- Loss of a provider is considerably more damaging in rural settings than in urban settings where there are built in redundancies in service capacity. In rural communities considerable resources are expended to overcome the uncertainties of physician supply. The status quo is the result of a panoply of programs designed to recruit and retain doctors.
- Current physician training inadequately prepares most graduates for the special challenges of rural medicine. The content of practical medical education is mainly defined by the patients who show up on the wards of major teaching hospitals in urban areas; a skewed sample. There is a significant learning curve to overcome these deficiencies, and a "competency gap" often results from the turnover of physicians.
- This problem is exacerbated because of the frequency with which the replacement physician is an IMG who must overcome both rural and cultural knowledge gaps. Manitoba is currently very dependent upon medical graduates training out of the country. This dependence raises both the practical concerns as above, as well as ethical concerns (see e.g. Wilson et al, 6)¹¹⁰.

We believe that the combination of these three elements point to a current underproduction of primary care physicians in Manitoba to meet the needs of rural populations and speak to the consideration, at the least, of a redirection of current physician resources, and at the most, a modest increase in home grown supply.

Our analysis of the dimension and nature of this underproduction suggests that the current input of approximately 110 students at the University of Manitoba does not need a major increase, but rather a redistribution of the current numbers. Our HHR model (Section 6) calculates the added inflow of primary care physicians needed to sustain optimal MD to population ratios into the future. This added inflow of primary care physicians from rural track production, we believe, can meet primary care needs.

d) A reasonable set of policy judgments can be based on the following HR constraints

- Shortfalls of rural recruiting and retention can have such serious consequences that a policy of modest overproduction of this resource should be strongly considered for implementation
- On balance, our guidance ranges between the judgment that the current cohort of 110 medical students per year is satisfactory, to the idea that 110 places is at the low end of the acceptable range, with an upper level of no greater than 130 places. *A commitment to*

¹¹⁰ The concept of "physician resource self-sufficiency" has been discussed at the Federal-Provincial-Territorial level. There is irony in the provinces' devoting large resources to assuring a high level of competence in CMG's (6 to 10 years of accredited training programs), then encouraging entry to practice for IMG's the quality of whose medical education is essentially unknown. Despite efforts to assess the competence of these candidates and to upgrade their skills in 6 -12 month IMG programs, it is unlikely that these measures suffice to bring all candidates up to the admittedly high Canadian level. That many of these candidates for licensure are sent to service in the most difficult of practice settings (rural and remote) is further cause for concern.

any of the options of distributed medical education should fit within a total provincial student cohort of no less than 110 and no more than 130 students.

- Because the unusually large current dependency upon IMGs for physician supply may produce unreliable and inconsistent outcomes, and add the disadvantage of ethical controversy, consideration should be given to reducing this source to a level more in keeping with historical precedents.
- A potential reduction in the inflow of IMGs would reinforce the benefits of current educational strategies to increase retention of Manitoba graduates and would strengthen the argument in favor of increasing the U of M yearly cohort to 130.

e) Educational and HHR Constraints; Summary

The previous sections of this report (Sections 4, 5 and 6) have provided detail on our scans of a wide variety of distributed educational innovations that can steer the career trajectories of medical students and trainees toward rural and remote medical practice. In this section, we compile the most significant educational policies and relate them to the realities of medical education in Manitoba's urban, rural and remote regions. We hope in this way to provide a logical context for our recommendations.

- i. DME, carefully deployed, can be expected to affect the physician human resource equation in profound ways.
 - First, if the distributed sites themselves are carefully chosen or constructed to provide a representative and positive experience of rural and/or remote practice, the result will be an enhanced supply of physicians who will be recruited and retained in rural /remote practices.
 - Second, though this aspect has been less heralded, the immersion of medical students in a curriculum which has been designed with specific reference to the needs and particularities of rural or remote medicine will generate physicians whose competence in the setting of their actual practice will be significantly enhanced. As a result, their patients and communities will benefit, and because of the integrity of their educational experiences with their subsequent practices, their value as mentors to future generations of rural practitioners will be substantial.
 - This virtuous cycle will form the basis for a sustainable pipeline of students with rural inclinations and sensibilities becoming expert practitioners in a culture of their liking, and then passing on the benefits of their specialized professional skills to following cohorts of students.
- ii. No single educational innovation or format of delivering medical education in a distributed fashion should be looked upon as a panacea. Combinations of steps have proven successful in a variety of situations.

As important as each component is, most critical is recognizing the importance of the context in which changes are introduced, and crafting the best combination of policies to suit the particular circumstance; 'a made in Manitoba' solution.

The challenge to medical education leadership will be to demonstrate engagement with involved communities and flexibility in implementing the best features from a wide variety of educational innovations bearing the rubric of DME in a collaborative fashion. The importance of integrating the continuum of medical education (undergraduate, postgraduate and continuing) needs to be remembered.

- iii. Evidence is compelling that the principal dimensions of distributed medical education work. Specifically, the combination of admission policies supporting candidates with authentic rural backgrounds, meaningful exposure of students to rural experiences in both undergraduate and postgraduate training and specific training in the postgraduate years in common procedures that are required in rural general practice have a positive influence on the career choices of medical graduates and their subsequent retention in rural or remote practice.

These conclusions suggest that admissions and educational programs already in place or under development at the UMFOM should be supported and extended to gain the advantages of these investments in DME as proposed in the Rural Track Option.

- iv. In addition to promising to address long term supply needs of rural and remote communities in Manitoba, there are strong educational benefits of distributed medical education in preparing physicians with the special competence needed for quality practice in difficult circumstances.

Attention to scope of practice in its broadest sense provides the fundamental educational grounding for the application of DME for rural and remote pipelines. This conclusion supports curricular development of models of practice and scope-specific "streams" within both undergraduate and graduate programs as an integral component of this education reform.

- v. The current situation in Manitoba lends itself to an opportunistic approach maximizing the utility of currently evolving programs to build a province-wide system of distributed education that will enhance primary care services and sustain a reliable and efficient pipeline for rural and remote practice.

An implementation model in which one successful step leads naturally to another is preferred. A first stage should be the enhancement of rural postgraduate programs. This step sets the stage for the enhancement of clinical clerkship training with the development of LICC's integrated into new community clinical teaching units; i.e. the building of community clinical campuses. With the establishment of these important elements, attention can then be paid to the build-up to possible Satellite Campus(es), with the addition of preclinical education to create full four year programs partnered with community based educational institutions (Satellite and Rural Track Options).

- vi. Consideration of cost in implementing distributed medical education is critical. A 'DME' premium may be identified, and perhaps can be accepted, but only if proportionate benefits are derived. The build out of the clinical components of the curriculum share basic cost elements independent of the basic model of education (e.g. Freestanding, Satellite or Fast Track).

However, with respect to the preclinical aspect of the curriculum, differential cost appears to be a major driver of decisions. The implementation of a premedical curriculum is the "swing" element of a distributed model, in some cases the basic sciences are delivered exclusively at the "center", in others, extensive use of telecommunication and alternative learning models allows the more didactic curriculum to be delivered at the distributed sites. Intermediate versions are also in use.

In the proposed build up, relevant costs, for example, related first to Community Clinical Campuses, then finally Satellite Campuses will be staged to assure that additional costs can be grafted on to already proven bases.

- vii. In the clinical curriculum, commitment to the values of primary care in a rural setting must be emphasized. For the optimal student experience, this requires extensive faculty development. No other single program step is more important and appropriate time and resources must be committed to it.

The proposed build up allows sufficient time and resource commitment to ensure appropriate educational input can be expected from clinical faculty who in the Manitoba setting have had, up to now, little exposure to the practice of distributed medical education.

- viii. Engagement with community is a second critical component in the development of a distributed educational system. As with faculty development, this engagement must be an integral part of the program and not just a formulaic requirement.
- ix. As an important contextual element, focus needs to be placed on the change in culture that lies at the heart of distributed medical education. The leadership of faculty must recognize the hazards of attempting to teach "rural primary care medicine" in an urban Academic Health Center, as well as the related risks of creating a "rural track silo" within an otherwise traditional AHC. The role of setting and context in shaping the careers of students and the related incapacities of the AHC's as sole sites of medical education must be recognized by the educational establishment. There is a need for leadership and commitment by faculty to the authenticity and integrity of the student experience in "community campus" settings. This change in culture lies at the heart of distributed medical education.
- x. The broad conclusion from our scan of the overall needs for physician supply in the province (see also Section 6) suggests that first priority should be given to redirection of the current educational pipeline, with a greater emphasis on primary care in rural/remote and under accessed communities. The current class size of students at the UMFOM is a good starting point for this redirection. If reduced reliance on IMG inflow is determined by policy review, or if the efficiency of the rural track program proves less than predicted, then an increment of 20 students might prove necessary to meet demands. There is important role for IMGs in the overall supply of physicians particularly in rural and remote Manitoba. However, at a time when the importance of highly focused educational programs recognizing a distinct scope of practice for rural

and remote medicine is being urged, excessive dependence upon a pipeline of graduates from non-accredited medical schools should be reviewed.

From the physician resource perspective, we recommend the choice of the Rural Track option to build up the flow of students in rural tracks in 2 stages. To compensate for a possible decrease in dependence upon IMGs in the province, consideration should be given to an overall increase in capacity for Manitoba graduates to 130 seats.

- xi. From the particular perspective of medical education in Brandon, our scan suggests a major role for this community, and potentially for the communities of Dauphin, Morden/Winkler, Steinbach and Thompson, as anchor sites for the build-up of community campuses in the Rural Track program and for the possible institution of full Satellite campus(es). Our resource analysis suggests that there is neither need nor place for a second freestanding medical school in a province the size of Manitoba.

In the remainder of this section we apply these conclusions in the development of a proposal for the expansion of distributed medical education in the province. We believe the province should capitalize on progress in admissions policies, rural track programs for undergraduates and graduates and special programs for aboriginal and bilingual needs. Early priority should be given to an enhancement of postgraduate programs both to provide early returns for community recruitment, and also to create the basis for the expansion of undergraduate rural track programs to form community clinical campuses at multiple sites in the province. Ultimately the possibility of Satellite campuses would be thoughtfully considered based upon projections for future resource needs and educational benefits.

7c. Recommendations: Assuring adequacy of Primary Care Physician Resources in Manitoba

Based upon our analysis of primary care needs for the province, the current status of educational programs already planned or underway and drawing upon our review of the physician resource and educational benefits that can be derived from the expansion of distributed medical education in Manitoba, we have constructed a best options scenario to implement a made-in-Manitoba version of DME to serve the interests of the Province.

The following points encompass our recommendations:

A. The UMFOM should remain committed to an admission policy that is sensitive and responsive to the overall physician resource needs of the province. Evidence of this commitment should include:

- i. The UMFOM should plan for an increase in the proportion of its medical students whose background, undergraduate experience and postgraduate training signals their career direction toward rural, remote and otherwise underserved primary care.

- ii. The total number of medical school entry positions should remain in the range of 110 per year, but this figure needs to be reviewed systematically at regular intervals. A tighter feedback loop between medical school output and provincial need should be constructed. (see recommendation x)
- iii. Admissions to medical school should continue to employ a rurality index, as well as considering other means to ensure that students with valid interest in rural/remote or otherwise underserved practice have fair access to medical school places.
- iv. The province, regional health authorities, University leadership and the College of Physicians and Surgeons should examine the long-term ethical and practical consequences of dependence upon IMG's (both Canadian and foreign born). We recommend a gradual diminution of this dependence.
- v. To compensate for any resultant decreased dependence upon a supply of IMG's we recommend a parallel staged increase in class size of the UMFOM be planned.

B. Commitment is needed from both Province and the Medical Community for sustained structural and operating support for programs dedicated to ensuring equity in rural, remote and underserved populations for whom access to physician services is under constant threat. We recommend the phased pursuit of Option 3, the Rural Track and Option 2, the Satellite route as the most effective direction for this commitment.

- vi. Rural Track Option, Stage 1. The Province (COPSE and Manitoba Health) should support, current UMFOM efforts to build-up programs for postgraduate training in Family Medicine via the proposed Family Medicine Enhanced Distribution Education Centres (FMEDEC) at medical clinics in Brandon, Boundary Hills, and Steinbach.
- vii. Rural Track Option, Stage 2. Planning should proceed for the implementation of rural Clinical Teaching Units, with joint educational participation of clinical preceptors, residents in rural or remote tracks and clinical clerks. These CTU's will provide a substantial new vehicle for the clinical education of Year 3 and 4 Clinical Clerks. The sites for these clinical programs should be viewed as developmental "community clinical campuses" and should be trial sites for Longitudinal Integrated Clinical Clerkship (LICC) development. Their integration with ongoing inter-professional health care reforms such as the operation of PIN units should be studied.
- viii. Rural Track and Satellite Options. The leadership of the UMFOM, Regional Health Authorities, Doctors Manitoba, Medical Clinics, and where appropriate, Brandon University, University College of the North and University of Winnipeg should collaborate through the Optimizing Health Sciences Education for Manitoba (OHSE) to encourage the development of the appropriate governance

model, structure and function for the development of integrated community clinical campuses. The expected outcome would be to create consortial arrangements to support a widespread distributed educational program for clinical medicine and inter-professional health care delivery.

- ix. **Satellite Option.** Should an increase in intake of medical students be deemed necessary, at a certain point, this increase will exceed the physical capacity of the UM Bannatyne campus to accommodate preclinical students. Planning should begin in anticipation of this tipping point to build up preclinical training capacity at Satellite Campuses, e.g. Brandon and/or Thompson in collaboration with Brandon University, University of Winnipeg and University of the North. (Satellite, Option I)

These recommendations embrace the principal features represented by options 2 and 3 of the COPSE charge to the Steering Committee; that is the build out of current U of M rural track programs in two stages, initially for graduate training, followed by clinical undergraduate programs combined with the provision for the future development of a Satellite Option, in which full undergraduate and post graduate training could be offered at one or more sites, should that option prove necessary.

- x. In completing this study, we encountered considerable difficulty in constructing a sufficiently accurate and reliable picture of the turnover of the provincial physician complement to be able to project the balance of production and future need. We recommend the development of a permanent longitudinal database for tracking UMFOM applicants, graduates (undergraduate and postgraduate) and practice history. This database should be housed in the CPSM but contractual arrangements should be made with the Manitoba Center for Health Policy for its maintenance. It should provide annual reports to provide guidance for future decisions on such matters as entering class size, primary care or specialty needs, regional shortages of physician services, as well as for monitoring the effectiveness of programs such as those recommended by this study. These reports will provide the needed feedback loops to modulate the inflows and educational levers for physician resources.

C. Comment on Option I: the Freestanding Medical School

We have carefully examined the advantages and disadvantages of the option for a freestanding medical school (see also Sections 5 and 8). Our summary judgment is that in the current provincial circumstance there is little to commend this idea.

The main justification for the development of a freestanding school would be a demonstrable need for a large infusion of medical graduates that could not reasonably be accommodated in the already existing provincial medical educational resource, i.e. UMFOM. Our study did not reveal such a need. At the upper limit, we believe provincial need to be no greater than 30 more primary care physicians per year for the next five years or until all Manitobans have a

regular family physician, with the required annual numbers beyond that “milestone” geared to increases in Manitoba’s population. Our projection is that this need can be achieved by an effective DME program that steers current graduates (undergraduates and graduates) of the UMFOM into primary care careers where these services are most needed.

The economics of medical schools in North America are such that the minimum feasible class size for a free standing school appears to be about 50 students; for example the lowest decile of medical schools in North America by size has a mean of 50 students per year with none having less than 40 students. In Canada, the average school class size is 160 and the smallest two schools have annual intakes of 64 students.

Also from a service area perspective, it is notable that in both Canada and the US, the average served population for each medical school is around 2,000,000 souls. There is a broad spread around that average, but in this context it is interesting that of the four state satellite campuses in the WWAMI consortium, with a state population range from 500,000 (Wyoming) to 1,500,000 (Idaho), none has chosen to develop their own freestanding school.

The critical factor is likely to be that the fixed cost of building up and maintaining the infrastructure and personnel required to operate a freestanding fully accredited medical school is sufficiently high that the per student cost remains in an unacceptable range until a minimum count of about 50 students is reached.

A rationale for a new freestanding medical school could still exist if it promised to produce educational outcomes that are not achievable from existing institutions. For example, in the case of DME, if the UMFOM were incapable or unwilling to develop needed distributed programs, the case for an alternative school would be strengthened. The fact that the UMFOM has already invested heavily in DME and is engaged in a number of DME programs that clearly align with our recommendations for a staged implementation of the Rural Track and Satellite Options suggests that the current program is both willing and capable of innovation for distributed medical education programs. A decision to invest in an alternative program in the presence of an already significant and productive investment in the Province could not be easily explained or defended.

7d. Cost projections for the Rural Track 1, Rural Track 2 and Satellite Options

Having identified and defined our three recommended options, we now proceed to our assessments of the one-time, capital and on-going operating costs required to satisfy their respective accreditation requirements, based on implementation strategies and timetables that we also deem feasible. For each option, we describe the assumptions and methodologies used to develop the cost projections, and further clarify how these projections may be easily modified to accommodate other assumptions and/or new information that becomes available over time. Each option is discussed in turn.

7d.I Rural Track I Option

For costing of Rural Track I, our key assumption is that three new FMEDEC (Family Medicine Enhanced Distribution Education Centre) sites will be established in Brandon, Boundary Trails and Steinbach, complementing the existing family practice teaching unit in Dauphin/Parkland. The major costs of this expansion will be the on-going operating costs associated with the additional residency positions in family medicine (plus the 3 general specialty positions in Brandon). As in Section 6d, we project the expansion of these positions over the 5 years 2013-2017, with eight RI FMEDEC and two RI specialty positions taking effect July 2013, and another six FMEDEC and one specialty position accruing over the 4 years 2014 to 2017.

To cost these expansions, we follow the conventional new/expanded program methodology of identifying resource requirements above current baselines. For PGME, it is common practice to distinguish the incremental *direct* costs of residents' salaries and benefits from the incremental *indirect* costs of supporting their training through payments to program administrators, clinical faculty, support staff, clinic/office expenses, travel, accommodation, etc. While the direct costs are easily calculated from trainee numbers and the (collectively bargained) PARIM salary/benefit schedules, we follow the accepted practice of simply noting their *exclusion* from costing templates for the incremental indirect costs. Costing of the latter is much more challenging because it requires significant information gathering and serious attention to detail in all the "nooks and crannies" peculiar to the various sub-categories of indirect costs. Fortunately, we are beneficiary to data on these costs from analyses conducted by the Faculty of Medicine in support of the FMEDEC proposal for Brandon and the composite "rural stream" expansion for Boundary Trails and Steinbach. These proposals provide detailed information on the "incremental indirect costs per resident" which we have carefully reviewed for inclusion in our cost projections.

From our reviews of the available documentation, it is evident there are two major categories of indirect costs which must be taken into account in order to fully capture the resource impacts of any PGME program expansion: (1) academic costs *internal* to the Family Medicine program and any other PGME programs affected by its expansion; and (2) resource costs *external* to the program (and Faculty) required by privately-operated medical clinics to function as "teaching" sites. Academic costs are initially detailed at very granular levels (based on specific rotations) and then routinely sub-categorized into: medical remuneration (payments to preceptors and program administrators); support staff salaries; other support expenses; and travel. Public funding to support private medical clinics as PGME teaching sites vary depending on the staffing model, including a version used in our projections featuring additional nursing and allied health staff as members of a formally organized CTU (Clinical Teaching Unit) similar to the one at Kildonan Medical Centre in Winnipeg.

In addition to these two categories of indirect costs, there is a third potential area where incremental operating costs may arise, namely, in the finances of the regional and community hospitals who assume new roles in medical education. These indirect costs, arising mainly from changes in the volume and mix of inpatient and outpatient care, would be reflected in various metrics, including "average length of stay", "case-mix resource intensity" (RIWs), and "cost per weighted case"; these widely accepted indicators of clinical and operational efficiency are now

tracked in provincial and national (CIHI) databases, and are commonly used by Ministries of Health to inform and/or adjust the funding of individual facilities. *Since these indirect costs are not included in the Faculty of Medicine’s documentation of “incremental academic operating costs”, and because time and resource constraints precluded our own investigation, we must note the exclusion of these costs from our pro forma costing of all three options, fully appreciative of the fact these costs are a major reason why “teaching hospitals” involve a significant “resource premium” over their non-teaching counterparts.*¹¹¹

To progress a “bottom-line” calculation of these two indirect cost categories, we have drawn on data compiled in the Family Medicine PGME proposals for Brandon, Boundary Trails and Steinbach. For the academic category, we calculate the metric at \$95,000 per resident (inclusive of preceptors’ pay in specialty rotations for R1 and R2 trainees spanning 24 and 28 weeks respectively); for the private clinics, we estimate the “teaching” metric at \$60,000 per resident (based on incremental clinic staffing of 4.5 EFTs).

As will be further clarified below, we have used these metrics to calculate the incremental indirect operating costs for Rural Track I. For the academic component we project costs specific to the “new” FMEDEC positions and, as well, to the (12 R1) positions modeled for reallocation to Rural Track I from the specialty programs. For the clinic component, we project costs for “teaching clinics” in Brandon, Boundary Trails and Steinbach applying the above metric (\$60K/resident) to the number of R1 trainees at each site.

Operating cost projections for the academic component of Rural Track I are included in the Table 7d.1 below.

¹¹¹The Canadian literature on the costs of medical education in teaching hospitals dates from early studies conducted by the former Association of Canadian Medical Colleges (now known as the AFMC), beginning in the mid-sixties with a series of case studies using “step-down” accounting techniques, and followed by a large sample, multi-variate statistical analysis; Horne, J., K. Hay, D. Fish, and H. Kieferle. (1970). *Medical Education in Canadian Teaching Hospitals: A Statistical Cost Analysis*. Ottawa: Association of Canadian Medical Colleges (ACMC).

Table 7d.1 Academic Costs: PGME Rural Track I

- (a) July 2013: +8R1* FMEDEC and +2R1*SP Brandon;
 (b) July 2014-2017: +12 R1 FM (incl.+6*FMEDEC)+1 SP Brandon
 via reallocations (sub)Specialty Programs (pro-rated 3/year);
 (c) Projected Positions and Costs at July 2015 and July 2020
 (d) * indicates inclusion in Rural Track I
 (e) Academic cost per resident = \$95,000 (incremental indirect)

	Incremental Indirect Academic Costs per Resident		
	New Positions	Reallocations	Total
JULY 2015			
Rural FM	\$1.520 million* (8R1+8R2=16)		\$1.520 million* (8R1+8R2=16)
Other FM		\$.285 million (3R1)	\$.285 million (3R1)
Rural SP (Brandon)	\$.380 million* (2R1+2R2=4)	\$.095 million* (1R1)	\$.475 million* (3R1+2R2=5)
Total	\$1.900 million* (10R1+10R2=20)	\$.380 million* (4R1)	\$2.280 million (14R1+10R2=24) \$1.995 mln*
JULY 2020			
Rural FM	\$1.520 million* (8R1+8R2=16)	\$1.140 million* (6R1+6R2=12)	\$2.660 million* (14R1+14R2=28)
Other FM		\$1.140 million (6R1+6R2=12)	\$1.140 million (6R1+6R2=12)
Rural SP	\$.950 million* (2/R1-R5=10)	\$.475 million* (1/R1-R5=5)	\$1.425 million* (3/R1-R5=15)
Total	\$2.470 million	\$2.755 million	\$5.225 million
RURAL TRACK I	\$2.470 million (10R1+10R2+2/R3-R5 =26)	\$1.615 million (13R1+13R2+1/R3/R5 =29)	\$4.085 million* (23R1+23R2+3/R3-R5 =55)

This table requires the following methodological clarifications:

1. Cost projections (and related trainee numbers) are shown for July 2015 and July 2020 to capture both the initial and final phases of the Rural Track I Option;

2. In both time periods, projected costs included in Rural Track I are those identified by asterisks within the all-inclusive costing of Family Medicine’s PGME program expansion, resulting from the 50/50 allocation of RI positions scheduled *pro forma* over the period July 2014-July 2017;
3. Related to 2 above, “Other FM” captures the projected costs of expanded trainee numbers in Family Medicine’s Urban, Northern/Remote and Bilingual “streams”;
4. Incremental indirect costs (exclusive of residents’ salaries and benefits) for Rural Track I, Other FM and Rural SP(Brandon) are apportioned between “new” and “reallocated” RI positions;
5. All costs are in 2011 dollars *unadjusted* for future inflation.

As indicated in the Table, Rural Track I:

1. Requires operating costs projected to total \$1.995 million in July 2015 and \$4.085 million in July 2020, *when all new and reallocated positions are included*;
2. Requires in July 2015, \$1.900 million in new positions and \$.095 million in reallocated positions; in July 2020, corresponding figures are \$2.470 million and \$1.615 million;
3. Requires in July 2020, a minimum of \$2.470 million in new funding, and possibly more, but only if *compelling* barriers (of some kind) prevent the PGME specialty programs from “extracting” the full \$1.140 million required from their existing baseline budgets to finance the reallocation of 6R1 and 6R2 positions to Family Medicine’s FMEDEC “rural stream”; (of additional related note, the financing of Family Medicine’s full expansion to 65 RI positions, including the 6 shown in 2020 as “Other FM” could also encounter the same barriers to reallocation, and hence a requirement for some new funding in the \$1.140 million reported in italics).

Regarding the reallocation scenarios contained in the Table for Family Medicine’s full PGME expansion involving 14 RIs in Rural Track I and 6 RIs in the three other (Urban, Northern/Remote and Bilingual) “streams”, it is here worth noting that the steady-state number of residency positions in all trainee years across all programs will total 455 (65x2 Family Medicine + 65x5 Specialty); compared to the current total of 465 (45x2 Family Medicine and 75x5 Specialty), it is evident that implementation of the 50/50 sharing of RI positions should reduce the total by 10 positions (all R3/R4/R5s), yielding potential savings of \$950,000 in indirect costs. Realization of these savings would mean the “50/50” regime would qualify as a “cost-negative” strategy; but failure to extract and reallocate some or all of the released resources could erode the savings and default the strategy to “cost- neutral” or even “cost- positive” status.

Rural Track I: Clinical Teaching Practices

Using the metric of \$60,000 per RI resident, incremental indirect costs for the three “teaching” clinics in Rural Track I are projected as follows.

Incremental indirect costs for the three “teaching” clinics in Rural Track I		
	July 2015	July 2020
Brandon	RI=7; \$420,000	RI=9; \$540,000
Boundary Trails	RI=2; \$120,000	RI=4; \$240,000
Steinbach	RI=2; \$120,000	RI=4; \$240,000
TOTAL	RI=11; \$660,000	RI=17; \$1,020,000

- Rural Track I: One-time Costs

One-time costs for Rural Track I relate to office set-ups for new staff (whose salaries and benefits are accounted for in the academic costs) and connections to Manitoba Telehealth. From the available documentation, we estimate these costs at \$42,500 for each of the three FMEDEC sites in Brandon, Boundary Trails and Steinbach, or a total of \$127,500.

- Rural Track I: Capital Costs

In addition to the operating and one-time costs categorized above, Rural Track I will require some capital funds to provide new and/or renovated space for residents in RHA facilities in Brandon, Boundary Trails and Steinbach. Prototypically, such space includes: call room(s), a code protected entry to an area housing personal lockers, small class room/conference room, and offices for administrative faculty/staff. While details would need to be confirmed through site-specific assessments (beyond the scope of this study), we have learned through key informant interviews that space now occupied by Family Medicine’s “rural stream” within the Parkland RHA facility in Dauphin is near “ideal”; and, as such, can serve as a template for our costing of the space likely to be required in the other three regions. To be deemed “ideal”, we are advised the Parkland “footprint” would need to be modestly increased to approximately 2,500 SF (to improve functionalities of the current rural program with 18 RI/R2 (rotating) residents, a part-time program director and office staff)

To translate this space into a *pro forma* capital budget, we apply current estimates of construction costs, based on data for recent (2010-11) contracts in the education and health sectors supplied to us by COPSE. Because these contracts vary in scope, scale and complexity, their unit costs span the range \$350 - \$500+ per square foot. However, since construction of space comparable to that now occupied by Family Medicine in the Parkland facility is unlikely to qualify as “complicated and/or complex”, it seems reasonable to assume these projects could be completed at a unit cost not exceeding \$350/SF.

By applying these metrics to required space estimated at 2,500 SF at each of the 3 new FMEDEC sites, our pro forma capital budget for Rural Track I is \$2.625 million @ \$350 per SF.

Summary of projected costs in 2020 for Rural Track I

1. Incremental Indirect Operating Costs:

<u>Academic</u>	<u>New positions</u>	<u>Reallocated Positions</u>
Family Medicine	\$1,520,000	\$1,140,000
General Specialties	\$950,000	\$475,000
Sub-total	\$2,470,000	\$1,615,000
Teaching clinics	\$1,020,000	n/a
TOTAL	\$3,490,000	\$1,615,000

2. One-time Costs: \$127,500

3. Capital Costs: \$2.625 million

7d.2 Rural Track 2 Option

For costing of Rural Track 2, the key assumption is that the three FMEDEC sites to be established *pro forma* in Brandon, Boundary Trails and Steinbach will have capacity to accept third year undergraduates into longitudinal integrated clerkships (LICs) once there are sufficient numbers of postgraduate trainees to provide the requisite one-to-one on-site supervision. Based on our projected schedule for Rural Track 1, the numbers of R1 and R2 trainees at these three sites will reach 26 by 2016/17 and 28 in 2017/18 (at steady-state). Assuming the LIC becomes an advertised third year option for students entering Med I in 2014/15, there would be capacity for up to 26 clerks in 2016/17.

However, for costing purposes, we opt to model Rural Track 2 with an initial maximum of 20 students (with the caveat that substitution of higher or lower numbers in the cost model should other considerations and/or assumptions warrant).

In progressing the costing of Rural Track 2 for 20 third year students in LICs, we should first clarify that:

1. The current third year curriculum spans 48 weeks, comprising 6 week rotations in each of 8 disciplines;
2. The Faculty of Medicine has funding in place to remunerate clinical faculty/attending physicians for their 3rd year clerkship responsibilities; for the 20 clerks in Rural Track 2, this implies that the 960 weeks (i.e., 20 students x 48 weeks) of supervision that will be provided by clinical faculty (regardless of their geographic location) can be funded within the Faculty's existing operating budget;
3. While the LIC should not require any increase in overall medical remuneration, it may require some redistribution depending on the structure of the 48 week LIC;
4. Related to 3 above, since the LIC per se may not provide sufficient exposure to the 8 disciplines, the 20 clerks may be required to relocate to Winnipeg for the time necessary to ensure all learning objectives are met;

5. Since no additional medical remuneration will be required, the incremental operating costs of Rural Track 2 are confined to the two categories of student travel and accommodation; in our projections, we provide a full accounting of these costs to ensure transparency, pending a future policy decision regarding the program (public) vs. student (private) responsibility for financing; (travel costs depend on the number of rotations in Winnipeg and will increase or decrease as structure of LIC is eventually defined/refined);
6. Related to 5 above, our accommodation metric for 2016/17 is \$750 per month; our travel metric for 2016/17 is \$200 per round trip between Winnipeg and the three FMEDEC sites (both metrics in current 2011/12 dollars);
7. Clerks located in rural practice sites during their longitudinal rotations might require occasional structured training that would normally take place in Winnipeg. We estimate the functional requirements to be on the order of 6KSF; our pro forma costing of this space is based on data for 2011 construction contracts in the health and education sectors supplied to us by COPSE.

With the above clarifications and assumptions, we project the operating and capital costs of Rural Track 2 in 2016/17 as:

Incremental Operating Costs:

- Student accommodation: 20 x 11 mos. x \$750 = \$165,000/yr
- Student travel: 15 weeks in 3 Winnipeg-based specialty rotations: 3 round trips x \$200 x 20 = \$12,000/yr
- Total = \$177,000/yr

Capital costs:

- Space in RHA facility (6K SF)
 - @350/SF = \$2.1 million
 - @550/SF = \$3.3 million

7d.3 Satellite Option

Our costing of the Satellite option is based on the following key assumptions:

1. The option requires an expansion in the undergraduate class size from the current 110 to 130, i.e., a satellite four year medical education campus with an entering class of 20 students and total (steady-state) enrollment of 80; the option is exercised only after it is determined that the current entering class of 110 students does not meet provincial “needs” based on an official, more comprehensive review of physician HHR requirements than was possible within the time and resource constraints of this study;
2. The satellite program would provide the same curriculum as currently accredited at the University of Manitoba;
3. The satellite program would deliver the curriculum’s didactic component via a 50/50 combination of Brandon and Winnipeg faculty, the latter utilizing AVT broad-band technology with 2-way interactive capabilities;

4. The satellite program's third year curriculum would feature longitudinal integrated clerkships (LICs) in three FMEDEC sites at Brandon, Boundary Trails and Steinbach (and others as may be eventually added), to be reduced in duration from the maximum of 48 weeks by whatever time must be spent in specialty rotations in Winnipeg to ensure the clerks have sufficient disciplinary exposures to meet all learning objectives (as in Rural Track 2);
5. Further to 5 above, the allocation of time between the LICs and Winnipeg-based specialty rotations is cost-neutral in respect of preceptor pay (since all 48 weeks are remunerated at the same rate), but does involve incremental costs of travel and accommodation (as in Rural Track 2);
6. The satellite program's fourth year curriculum would involve the same 21 weeks of clerkship electives (in a minimum of three different disciplines) as now, but with expanded geographic options, including Brandon and possibly other sites outside Winnipeg where specialists holding clinical faculty appointments may be eventually located.

On these assumptions and other more specific considerations, we have completed a detailed analysis of the incremental operating costs specific to an expansion of the entering class from 110 to 130, including a careful sensitization of these costs to the requirements of the satellite option and, as well, a supplementary "baseline" cost analysis of an equivalent expansion at the main Winnipeg campus for purely comparative purposes. Summary results of these two cost analyses are presented in Table 7d.2 below:

Table 7d.2 Comparative Academic Costs of UGME Satellite Option at Brandon University vs. equivalent expansion at Winnipeg Campus

	Steady-State Total Enrollment = 80 students	
	Winnipeg Campus	Brandon University
<i>Academic Salaries</i>		
Decanal	nil	\$450,000
Med I/II (ex-didactic)	\$994,924	\$994,924
Med I/II didactic	n/a	\$419,744
Med III/IV	\$5,315,040	\$5,505,040
Academic Staff Benefits	\$176,599	\$330,979
Support Staff Salaries	\$137,500	\$607,500
Support Staff Benefits	\$25,781	\$113,906
Student Travel	\$40,000	\$72,000
Student Accommodation	nil	\$76,140
Faculty & Staff Travel/Accom.	nil	\$107,500
Operating expenses	\$1,687,080	\$2,345,580
TOTAL ACADEMIC COSTS	\$8,376,924	\$11,023,313
COST/STUDENT/YEAR	\$104,712	\$137,791

We must first observe this table perfectly examples what a well-known Canadian health economist (who shall remain unnamed) described as “bikini” data, at once “revealing and concealing”. Most “revealing” is the \$2.65 million difference in total academic operating costs between the two sites, a result which raises the obvious question “how can the satellite option be so much more costly?” To this question, the shortest answer is “it’s all in the concealed details”. And while we were briefly tempted to consign all those details to an appendix, we judge most of them too important to be anywhere but here in the following comments where we explain and critically appraise the embedded methods and metrics.

Methods and Metrics

Since each line item in the above tabular summary has its own methodological rationale and related metrics, we discuss each in turn.

a) *Academic salaries:*

- These costs are tabulated in four sub-categories based on *pro forma* staffing documents and cost templates provided, at our request, by the Faculty of Medicine.

The Decanal category is specific to the Brandon satellite campus and includes part-time positions for an Associate Dean (.5 FTE), three part-time Assistant Deans, Counselors/Student mentors and a full-time curriculum development and evaluation consultant with expertise in rural program content and logistics. There is no provision for additional decanal staffing at the Winnipeg campus.

The “Med I/II” salary costs are shown in two line categories: the first includes salary costs for all faculty “contact hours” in the first and second year curricula *except* for the didactic (lecture) component; the second line shows the salary costs for this didactic component. To clarify further, the data provided to us for all “contact hours” in the first two years are detailed in sub-categories for lectures, small group (problem-based learning) sessions, large group sessions, laboratory sessions, tutorials, clinical skills development, etc. In each category except lectures, the data allow calculation of the incremental contact hours required for a *generic* expansion of the entering class from 110 to 130. Lectures are excluded for two reasons: (1) the methodology yields no incremental lecture hours due to an implicit assumption they do not change when 20 additional students are added to the class (and seated in the same lecture theatres as the others), an assumption that cannot apply to the satellite option unless all lectures were to be delivered in real-time via AVT technology; and (2) no data are available for the current number of contact hours since they have not been explicitly “mapped” and converted into full-time faculty equivalents (FTEs). In these circumstances, we have made the assumption that half the lectures will be delivered via AVT and the other half by on-site faculty; we have further assumed (based on discussions with key informants) that, in the absence of AVT, the satellite would require approximately 8 EFT faculty members to deliver the entire lecture component of the curriculum. (We hasten to add that our costing template is fully flexible and can easily accommodate other EFT values should superior information become available).

Using these data, the incremental contact hours required for the steady-state enrolment of 40 Med I and Med II students is 3,816 hours (1,908 per year). Conversion of these hours into required numbers of FTE faculty is based on annual contact hours per FTE of 1,540 including preparation time of 2 hrs per 1 hour lecture, i.e., a total of 3 hrs per lecture hour; hence, each FTE can provide a total of $1540/3 = 513$ contact hours. Using the latter metric, academic staffing required by the incremental contact hours = $3,816/513 = 7.44$ EFTs.

The metric used to convert these EFTs into salary dollars is based on the current collective agreement with the University of Manitoba Faculty Association (UMFA); we are advised that the salary level appropriate for our purposes is the 2011/12 full professor average of \$104, 936 (but should this average differ from the appropriate rank average at BU, the academic salary total for the satellite should be adjusted accordingly). In addition to these (\$780,724) salaries, we have followed the template by adding another \$175,000 at both sites for remuneration of additional clinical skills preceptors, as well as 2 EFT anatomists to manage the expanded cadaver program. Excluding the didactic component, academic salaries for Med I/II at both sites total \$994,924, as shown in the Table.

As mentioned above, we have costed the didactic portion of the curriculum for the satellite based on the assumption of 50% AVT delivery, and the on-site requirement for 4 EFTs. Applying the same salary metric of \$104,936 yields the \$419,744 shown in the Table.

Benefits on academic salaries are calculated for both sites based on the current U of M rate of 17.75% (easily adjusted if BU benefit rates differ).

Academic costs for the Med III/IV curriculum relate to the clinical faculty members who supervise the third and fourth year clerks. Remuneration is based on their involvement in the six week “block” rotations. From the available documentation, these time commitments involve total remuneration of \$5,315,040, applicable regardless of site. The higher figure shown in the Table for the Brandon site reflects the assumption that, in order to meet learning objectives, clerks will have to complete some specialty rotations under the supervision of clinical faculty in Winnipeg: for this scenario, we arbitrarily assume that, for third year clerks, 15 of their total 48 weeks will be so required; and for fourth year clerks, 7 of their total 21 weeks. This adds an estimated \$190,000 to the academic costs of Med III/IV at the satellite program, hence the total of \$5,505,040 (adjustable should other more informed assumptions warrant).

Due to the obvious importance of this \$5+ million line in the pro formas for both sites, we will shortly provide additional comment on the difficulties we faced trying to better understand the metrics in this category, and our related discomfort in assuming these pro forma costs should be set equal at both sites.

b) Support Staff Salaries and Benefits

While both sites have in common the requirement for 1.5 EFT administrative support positions at a salary cost of \$82,500, and 1.0 EFT support staff in Family Medicine at \$55,000, the satellite involves additional staffing including: 1.0 EFT program manager; and 7.0 support staff in the

decanal offices. These staff aggregate to salaries of \$470,000, increasing the satellite total to \$607,500, as shown in the Table. Benefits on all these salaries are calculated at the current UM rate of 18.75% (adjustable as warranted).

c) *Student Travel and Accommodation*

This category includes \$40,000 travel expense at both sites, based on all 80 (4 x 20) students receiving a \$500 travel allowance to attend the Annual IPE (inter-professional education) meeting for continuing professional development (CPD). Other travel and accommodation costs specific to the satellite program include:

- \$8,000 for each of four “Senior Sticks” to attend 10 meetings per year in Brandon;
- \$12,000 in travel and \$51,900 in accommodation expenses for third year clerks to come to Winnipeg (3 trips at \$200/round trip) for the *pro forma* 15 weeks (at \$173/week accommodation) of specialty rotations not available elsewhere;
- \$12,000 in travel and \$24,220 in accommodation expenses for fourth year clerks to come to Winnipeg (3 trips) for the *pro forma* 7 weeks of specialty rotations (selectives) not available elsewhere.

Together, these expenses account for the additional \$32,000 in travel and \$76,140 in accommodation specific to the satellite program.

d) *Faculty and Staff Travel and Accommodation*

The \$107,500 specific to the satellite program is based on \$500-750 per round trip for travel and accommodation expenses to Winnipeg by the decanal, faculty and support staff (total 23 staff each requiring 3-8 trips/year) and 40 clinical preceptors (each requiring 1 trip/yr); this should be regarded as the maximum funding required, with significant reductions possible via AVT enabled meetings. (assuming up to 70 meetings/yr).

e) *Operating Expenses*

This category is best-termed “revealing” for two reasons, one because it represents the second largest cost category in our summary Table and two, because it accounts for \$658,500 or approximately one-quarter of the total “bottom-line” variance of \$2.65 million between the two sites. On both counts, it warrants our close attention to embedded details.

In the line item documentation made available to us, operating expenses are a composite of 12 sub-categories, 9 of which have no impact on the above- noted variance because the costs are identical at \$1.687 million for both sites (comprising: Office materials and supplies @ \$100K; Preceptor and resident recruitment @ \$30K; Teaching resources and exams @ \$208K; Clinical teaching supplies @ \$248.76K; Communication costs @ \$36K; UGME technology system licenses @ \$420K; Library costs @ \$168K; Community-based learner training sessions @ \$40K; Technology set-up/OPAL curriculum management/scheduling system licenses @

\$436.32K). The 3 sub-categories in the \$658,500 variance are: Video/audio equipment @ \$150K; Laptop computers for faculty @ \$45K; and Telehealth/Education Room in Brandon @ \$463.5K. With these details, it becomes clear that most (70%) of the variance in the operating expense sub-category is accounted for by the latter technology. We readily acknowledge this technology has face validity as a legitimate satellite requirement, although we have no external benchmark on which to base further evaluation of the assigned *pro forma* cost.

Returning to the question, “how can the satellite option be so much more costly?” the answer, from a purely accounting perspective, is given by the variances in four sub-categories, as further isolated and summarized below:

Decanal salaries/benefits	\$529,875
Med I/II didactic salaries/benefits	\$494,249
Support staff salaries/benefits	\$558,125
Telehealth	\$463,500
Sub-Total Variance	\$2,045,749 (77%)
Total Variance	\$2,646,389 (100%)

Conspicuously absent from this list are the travel and accommodation costs for students, academic administrators and support staff identified in Table 7d.2. We are comfortable with this outcome because we were not wholly comfortable with the metrics used in the various calculations, especially the frequency of meetings required in Winnipeg. *We would also point out that sensitivity analyses substituting higher or lower meeting frequencies do not change the fact that “travel and accommodation” contributes very little to our understanding of why the satellite option “costs so much more”.*

Taking stock, we now have some understanding of the important cost differences between the satellite and its Winnipeg equivalent for a cohort of 20 students and total enrolment of 80. Taken at face value, the calculated satellite “premium” of \$2.646 million adds approximately \$33,000 to the per student cost of UGME at the University of Manitoba, equivalent to a per student “premium” of almost 32% over the \$104,712 reported in the Table for the Winnipeg site comparator.

Left at this, the Steering Committee might well ask its consultants “is there not some way these results might be further assessed based on what you learned from your scan of other environments featuring generically similar satellite programs?” The short answer is “yes, but”. The qualification relates to the fact that, notwithstanding numerous relevant precedents in Canada and beyond, there are no high-quality databases in place to capture the operational realities and resource requirements of these DME programs (at either the UGME or PGME levels). Data collected on a pan-Canadian basis (by the AFMC in Ottawa) provide valuable information on student numbers, their socio-demographic characteristics and various other institutional descriptors, but *nothing* that facilitates a valid measurement, profiling and benchmarking of program cost differences between Canada’s seventeen Faculties of Medicine. For those of us with experience in teaching hospital administration, this is cause for disappointment. Why? Because serious resources have been and continue to be devoted by

national and provincial agencies to measure, profile and compare the costs of individual teaching hospitals with their peer facilities when “benchmarked” on various indicators of operational and clinical efficiency. Were equivalent “peer comparisons” possible for Canadian Faculties of Medicine, we would be much better positioned to provide some external validation of the cost profiles for *both* the Winnipeg and Brandon costings of academic operational costs we have reported in Table 7d.2.

As it is, we have only the limited information provided to us by our key informants who have had experience with either reviewing, planning, implementing and/or managing some “distributed” version of UGME. So “yes” we do have some basis for further assessment of our results, albeit with the caveat we have scant documentation to supplement the interview data. The best information comes to us from UBC, Dalhousie (DMNB) and NOSM.

For UBC, the establishment of regional medical education campuses at UVIC and UNBC was made possible with initial (2004) funding from the provincial government based on a per student cost of \$64,500, on the shared understanding among senior Ministry officials and academic administrators that the early operational experience would inform future adjustments. Following an external consultant’s review in 2007, the metric was increased to approximately \$75,000. When interviewed in late 2011, our key informants advise that current actual costs are in the range of \$87,000 to \$90,000 per student (with some of those costs financed from student tuition fees of \$15,000 per year)

The 2010 charter cohort of 30 students in the Dalhousie Medicine New Brunswick (DMNB) satellite program at UNB’s Saint John campus was launched on a metric of \$65,000 per student. The DMNB program is modeled closely on the UBC regional prototypes, including implementation of a sophisticated (“high-end”) web-based video conferencing system used in lectures, small and large group sessions and some of the rural clerkships. Since our interviews in late 2011, we understand the early operational experience is proving this metric is on the low side and that additional funding will be necessary to cover the actual academic operating costs.

At NOSM, we heard at the Brandon Workshop on January 20 that current funding from the Ontario provincial government is proving inadequate to meet the operational costs of the UGME program. In an interview with NOSM’s CAO prior to that event, we learned that operational costs per undergraduate student at this “free-standing” medical school are currently in the range of \$80,000-\$90,000. Unfortunately, we have no information on the magnitude of the current shortfall in funding.

Allowing these three examples provide only limited basis for comparison, they do provide some additional perspective on the costs per student reported in Table 7d.2. Thus, at approx. \$105,000 and \$138,000 per student, costs for both these sites exceed the notional benchmarks provided by UBC, DMNB and NOSM. However, it is unfortunate we do not have any disaggregate cost data on these three external comparators to facilitate the variance analyses that would surely improve our understanding of these two crucial metrics. (We use the adjective “crucial” since we believe these metrics would easily qualify as “big dot” indicators of

management performance, using the parlance now popular in the literature on “balanced scorecards” for healthcare organizations).

We encountered similar difficulties in our attempts to better understand the single largest cost category in Table 7d.2, namely the aforementioned \$5+ million in academic costs for Med III and Med IV at both sites. We experimented with various methods and metrics to disaggregate this line item into valid “price” and “quantity” components, but all proved unproductive and/or suspiciously invalid. We confess disappointment on this score because we were initially optimistic that remuneration of clinical faculty was an “onion we could peel”, if only to better approximate these costs in the pro forma Satellite template. Alas, we were naïve and the line item remains a “black box” in which much relevant detail remains “concealed” from eyes like ours which obviously lack the requisite “fields of vision”.

Such modest understanding as we have of the “box” comes from our key informants across Canada who all agree *this is terrain where both transparency and predictability are in short supply*. So be it, but we still have to make some judgment about the validity of applying the same implicit methods and metrics to both sites in our costing template. On this issue at least, we can make some progress by applying Occam’s razor and simply assuming that some aggregate of clinical faculty remuneration is essential to “making the rotations work” in the third and fourth years in *any* LCME/CACMS accredited undergraduate curriculum.

In Winnipeg, what clearly “works” is a “model” involving geographic full-time physicians (GFTs) whose (sub)specialty practices are wholly located in the teaching hospitals overseen by the Winnipeg Regional Health Authority (WRHA). In fact, this is the model we have costed at \$5.315 million in the pro forma template for the Winnipeg site comparator in Table 7d.2.

The next question is “should this model and its embedded methods and metrics be applied to the Satellite Option?” Our choices are clearly limited, and in our templated summary of operating costs for the Satellite, we should make clear that we have again wielded Occam’s razor and plugged in the same \$5.315 million as in Winnipeg. We hasten to add this gives us little comfort, since we have no reason to assume the GFT model (and its financial equivalent) would apply in Brandon where the clerkships will be likely staffed by predominantly part-time clinical faculty recruited from community-based private practitioners. For this reason, we regard our overall costing of the Satellite Option as the first not last word on the subject. To us, prudence demands a fuller, more reality-based reckoning of the costs specific to any Satellite campus where the methods and metrics of the Winnipeg model may have little or no validity. Unfortunately, that reckoning was beyond the scope and resources of this project.

For now, and to complete our analysis of the Satellite option, we address the matters of one-time and capital costs. These are summarized in Table 7d.3 below:

Table 7d.3 Satellite Option and Winnipeg Equivalent: One-time and Capital Costs

	Winnipeg Campus	Brandon University
Start-Up Expenses	Nil	\$232,500
Capital Costs		
@ \$550/SF	\$23.1 mln (42K SF)	\$16.5-18.7 mln (30-34K SF)
@ \$800/SF	\$33.6 mln (42K SF)	\$24.0-27.2 mln (30-34K SF)

From the documentation provided, start-up expenses for the Brandon satellite include:

Office set-up	\$175,000
Computers for preceptors and support staff (23)	\$46,000
Internet drops @ \$500 each for 23 staff	\$11,500
TOTAL	\$232,500

Regarding capital costs, our estimates are based on the total physical space required to accommodate steady-state enrolment of 80 students at the Brandon satellite and, for comparison purposes, at the Winnipeg campus. For the Brandon site, we size the required space in a new facility encompassing 30,000-34,000 (building gross) square feet. These two numbers are informed by the approximately 40,000 SF Medical Sciences building constructed at the University of Victoria to accommodate a cohort of 32 first year students; we have prorated this space down to a cohort range of 24-27 students, recognizing that capacity should be sufficient to accommodate a satellite program larger than 20 students over the 40 year life of the building. For the Winnipeg site, we are advised that since the present facilities (esp. lecture theatres) cannot accommodate an additional 20 first year students, significant renovations and/or new space will be required. From the available documentation, the total space required is estimated at 42,000 SF.

To convert these physical space requirements into *pro forma* capital budgets, we use metrics based on two informational sources: (1) data from COPSE on 2010/11 construction contracts for projects in the health and education sectors in Manitoba and several other provinces showing a range of \$350-550 per SF; and (2) a 2012 quote provided to the University of Manitoba involving construction (for a project unrelated to this study) priced at \$800 per SF. On these alternative metrics, the capital costs for the Winnipeg site range from \$23.1 to \$33.6 million; and for the Brandon satellite, from \$16.5 to \$27.2 million (depending on facility size).

Allowing these are at best “ball-park” estimates, it seems fair to say that a satellite facility in Brandon might well require less overall capital funding (and long-term financing) than the Winnipeg “equivalent”; moreover, the satellite would assumedly offer the advantages of a “green field” site in not requiring either a complex “decanting” of occupied space to progress renovations (as would be required in

Winnipeg); and would pose fewer problematic “conditions” during construction than would inevitably arise on the already congested Bannatyne campus.

7d.4 Cost Summaries and Related Observations

For summary accounting purposes, we offer the following “bottom-line” costings for Rural Track 1, Rural Track 2 and Satellite Options.

Table 7d.4 Projected “Bottom-line” Costs in 2020 for
Rural Track 1, Rural Track 2 and Satellite Options
(constant 2011/12 dollars)

	Rural Track 1	Option Rural Track 2	Satellite
1. Steady-State Operating Cost	\$3,490,000	\$177,00	\$11,023,313
2. One-time Costs	\$127,500	nil	\$232,500
3. Capital Costs			
@ \$350/SF (7.5K SF)	\$2,625,000	\$2,100,000	
@ \$550/SF min (30K SF)		\$3,300,000	\$16,500,000
@ \$800/SF max (34K SF)			\$27,200,00

In preparing these cost projections (to 2020) we were fortunate in being guided by the generic templates and related information systems routinely used by the Faculty of Medicine to support submissions to Manitoba Health and COPSE for incremental funding. For us, as consultants to the Steering Committee, it was reassuring to know we were using “road-tested” accounting vehicles to navigate the myriad “twists and turns” en route to the end points profiled in this Table. However, we would be less than candid if we did not admit to being “student drivers” on a route that was as much “off road” as it was smooth cruising. Just when we felt confident depressing the accelerator, we had to “hit the brakes” to plan a more prudent course up another steep “learning” curve or to traverse some significant “speed bumps” in our quest to safely drive (and survive) the complex “routings” of medical education finance.

The major “bumps” we encountered surfaced in our attempts to fairly and objectively assess the incremental operating costs of the Satellite Option. Thus, as will be evident to the reader on inspection of the more detailed information presented in Table 7d.2, the operating costs of \$11 million per year for this important option translate (at steady-state enrolment of 80 undergraduates) to nearly \$138,000 per student per year. This key metric far exceeded our expectation based on prior review of Canadian evidence for generically similar satellites including, most notably, the UBC regional medical campuses at UVIC and UNBC currently funded at a per student cost in the range of \$87,000- \$90,000. It was this surprising outcome of the Satellite costing that prompted our investigation of the scalar equivalent expansion at the Winnipeg campus to gain better understanding of the differential when compared to the obvious “closer to home” alternative. On this calculation, the gap was substantially narrowed, but still yielded a puzzling 32% “negative” variance over the approximately \$105,000 metric

specific to the Winnipeg option involving no significant “resource premium” for geographically distributed delivery of the undergraduate curriculum.

In strictly accounting terms, we were able to trace the lion’s share of the roughly \$33,000 variance in annual per student cost to three line categories having face validity as legitimate satellite-specific requirements. However, the question lingers “why should the Satellite option cost so much more?” To this, we offer the Steering Committee two answers which *together* provide plausible explanations. First, it is entirely reasonable to expect the Satellite Option to “cost more” since, as many of our key informants cautioned, the hands-down “cheapest” way to train physicians is in a large (“vertically challenged”) urban facility co-located to a tertiary (cum quaternary) teaching hospital where the clerks can rotate in all but one (Family Medicine) of the required third year disciplines, and all of their three to four disciplinary selectives in fourth year. The problem with this traditional paradigm (as noted in Section 5) is that it is utterly ill-suited to the training of medical students with the authentic rural backgrounds and genuine motivations to establish long-term practices in rural and northern communities where their services are most urgently needed. Moreover, when the incremental costs are evaluated in relation to incremental benefits (measured, *inter alia*, by higher 2, 5, and 10 year retention rates), the Satellite might well qualify as “cost-effective” on widely accepted economic evaluation criteria.

Second, both the methods and metrics we used to cost the clinical faculty required to supervise the third and fourth year clerks registered at the Satellite campus are based on the entrenched Winnipeg “model” of geographic full-time physicians (GFTs) whose (sub)specialty practices are wholly located in the teaching hospitals overseen by the Winnipeg Regional Health Authority (WRHA). While we are advised the \$5.3 million would be required “to make the rotations work” in the Winnipeg context, we are not comfortable charging (as we did) the identical sum to the Satellite option where the predominantly part-time clinical faculty would be recruited from community-based private practitioners.

For this reason, we feel obliged to offer final counsel to the Steering Committee that our costing of the Satellite option should be regarded as the “first not last word” on the subject. To us, both fairness and prudence demand a fuller, more reality-based reckoning of the costs specific to any Satellite campus where the Winnipeg model may have little or no validity. While the methods and metrics of that “zero-base” budget template will require time and resources well beyond those that were available to this project, the Steering Committee has every reason to advise those to whom it reports that, when physician HHR analyses of need so warrant, the Satellite option deserves an appraisal that could very well demonstrate “value for money”.

For those disappointed that we have not devoted any significant time or resources to the costing of a “free-standing” medical school at Brandon University, we can advise that those costs would be only first approximated by the parameters we have used in costing the Satellite Option (including both the operational and capital costs). Assuming an official “zero-base” budget process, substantial increments could be anticipated in: academic administration; faculty and staff costs to deliver the BU accredited curriculum without AVT and other modalities involving shared resources with U of M; and full resourcing of the structures and processes required for effective management and governance of an independent medical school.

APPENDIX I

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APPENDIX 2

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Dean Care
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Brandon University

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Maxine Miller
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Bobbie Cram
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Elise Weiss
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▪ **Ontario**

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Dean (Retired) Faculty of Medicine
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Dean
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APPENDIX 3

COMPOSITION OF STEERING COMMITTEE

CHAIR

Dr. Deborah Poff – President and Vice-Chancellor – Brandon University

VICE-CHAIR

Dr. Brian Postl – Dean, Faculty of Medicine – University of Manitoba

MEMBERS

Dr. Dean Care – Dean, School of Health Studies – Brandon University

Dr. Catherine Cook – Associate Dean of Medicine (First Nations, Métis and Inuit) – University of Manitoba

Dr. Scott Grills – Vice-President, Academic and Research – Brandon University

Dr. Joanne Keselman – Vice-President (Academic) and Provost – University of Manitoba

Dr. Don Klassen – Medical Director – Manitoba's Office of Rural and Northern Health

Mr. Brian Schoonbaert – Chief Executive Officer – Brandon Regional Health Authority

Mr. Reg Toews – Member-at-Large

Dr. Elise Weiss – Vice-President, Medical Services – Assiniboine Regional Health Authority

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"> - Rural origin (rural primary/secondary school) - Career intent (rural practice) - Gender (male) 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 (Masumoto 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 9of 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..."

I. 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 km²

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 year two 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.

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

Medical School at Brandon University Feasibility Study Budget	
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	
Total	

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Appendix One

Doctors Practicing Outside of Winnipeg by Year of Registration										
Area of origin	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
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
Total	18	23	23	26	11	26	43	49	54	37

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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APPENDIX 5

BRANDON MEDICAL EDUCATION STUDY PROPOSED PARAMETERS

I. GOVERNANCE

The study will be governed by a Steering Committee.

The Steering Committee will be comprised of three Brandon University representatives (one of whom will be the President and will serve as Chair); three representatives from the University of Manitoba (one of whom will be the Dean of Medicine and who will also serve as Vice-Chair); one representative from the Brandon Regional Health Authority; one representative from the Assiniboine Regional Health Authority; one representative from the Office of Rural and Northern Health; and one member-at-large selected by the Council on Post-Secondary Education (but who will not be accountable to the Council).

As at 5 April 2011, the principal members of the Steering Committee are as follows:

Brandon University: Chair: Dr. Deborah Poff (President and Vice-Chancellor), Dr. Scott Grills (Vice-President, Academic and Research) and Dr. W. Dean Care (Dean, School of Health Studies and Graduate Studies)

University of Manitoba: Vice-Chair: Dr. Brian Postl (Dean of Medicine), Dr. Joanne Keselman (Vice-President, Academic & Provost) and Dr. Cathy Cook (Associate Dean of Medicine, First Nations, Métis, Inuit)

Brandon Regional Health Authority: Brian Schoonbaert (Chief Executive Officer)

Assiniboine Regional Health Authority: Dr. Elise Weiss (Vice-President, Medical Services)

Office Rural and Northern Health: Dr. Don Klassen (Medical Director)

Member at Large: Reg Toews

The Steering Committee will govern by consensus.

The Steering Committee will create and establish such processes and committees as it deems necessary, in order to adequately address the budget, scope and plan for the study.

II. PROCESS

The Steering Committee should be convened for purpose of developing a detailed Terms of Reference that will define: both the governing and operational structures and mechanisms for the study (ie: entities, processes and operating protocols involved in the conduct of the study); the overall scope of the study (in terms of the subject and content matter that is to be investigated during the study); and an outline of the proposed research / study plan (which shall define how the study is to be conducted and disseminated, inclusive of related costs and timeframes).

In developing the detailed Terms of Reference, the Steering Committee will refer to the parameters outlined in sections III and IV (below) for guidance. These proposed parameters have been discussed in advance with key Steering Committee members and stakeholders of the study and have been agreed upon in principle, as the overarching basis for conducting the study.

Once the Terms of Reference have been developed by the Steering Committee, they will be forwarded to COPSE for final approval. Following the approval of the TOR, it is expected that the steering committee will operate independently in its conduct of the study.

Brandon University will be the sole recipient of funding (from the Manitoba Government), as required to conduct the study. Total funding to be received from the Manitoba Government for the study shall not exceed \$350,000. This funding should be used to cover all costs associated with tendering, conducting the study, and production and dissemination of the final report. This funding will be disbursed to Brandon University by the Council on Post-Secondary Education, in keeping with the typical monetary transfer instruments and processes used by COPSE for public post-secondary institutions.

As sole recipient of funding for the study Brandon University, under the auspices of the Chair and Vice-Chair of the Steering Committee, will be responsible for administering all tendering processes for hiring the primary and secondary consultants to conduct of the study, according to Brandon University's internal policies and processes (including development and advertisement of Request for Proposals in such locations as the Steering Committee shall deem necessary). The selection of contractors will be approved by the steering committee.

The value of all contracts and costs associated with tendering processes shall be subject to total available funding resources as received by Brandon University from Government (not to exceed \$350,000). All contracts and contractual obligations will be awarded and held by Brandon University and the contractors, in compliance with all applicable legal standards and contractual content as defined by Brandon University. Funding will be disbursed on an as needed basis and COPSE will work with BU to determine an efficient approach for funds disbursement.

The study shall culminate in the development of a final report, which the Steering Committee will provide to COPSE. In addition to the final report, the Steering Committee will also provide any content, findings and recommendations, and all information and data collected through the study. COPSE will indicate to the Steering Committee, through Brandon University, when the final report, content, findings and recommendations, and any information and data collected through the study, can be disseminated publicly. However, COPSE is under no obligation to approve public release of the study, as the study will be considered as advice to Government.

Brandon University shall have sole responsibility for public dissemination of the study should COPSE approve its release. All costs associated with development and production of the final report, as well as dissemination of the report both to Government and to the public, shall be subject to total available funding resources as received by Brandon University from Government (not to exceed \$350,000).

III. RESEARCH / STUDY PLAN AND BUDGET

The following items have been reviewed by COPSE and key stakeholders. These items have been approved in principle to conduct the study, with deference to the Steering Committee to create and establish such processes and committees as it deems necessary, in order to adequately address the budget, scope and plan for the study.

Costs associated with each in-principle item are estimates only, in acknowledgement that final costs will be subject to the outcomes of tendering and contractual processes, not to exceed \$350,000.

All funds to support the study must be paid out no later than March 31st 2012. It is expected that a final report will be received by this time.

Item	Est. Cost
Consultant - ten months at 1/2 time. Qualifications as MD/PhD with significant teaching and administration experience in undergraduate medical education	
Two research assistants – ten months at 1/2 time. 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	
Miscellaneous consumables and other costs	
Total	\$ 350,000

IV. SCOPE

Brandon University has received funding to conduct a feasibility study concerning medical education for primary care physicians to practice in rural and northern communities in Manitoba. The proposed study presents an important opportunity to review and evaluate medical education in Brandon in a comprehensive manner and should include:

- the potential for a medical school in Brandon
- the potential for a satellite program expansion of the University of Manitoba in partnership with Brandon University and,
- the potential of continuing or expanding existing models of rotational and educational experiences

These options should be considered in the broader context of medical training needs of the province and will consider undergraduate, postgraduate and continuing educational components of the medical education continuum. Indeed, a Brandon solution must be in the context of the provincial need.

In keeping with the above scope, the study should address implementation strategies for any recommended options and the overall financial costs associated with each option.

This assessment should include but may not be limited to:

- a projection of the costs required to satisfy full accreditation requirements.
- one-time, capital and ongoing operating costs.
- an assessment of existing and projected assets and resources required.

- an explanation of the methodology, basis, and assumptions used to calculate the range of cost(s),

Workshop on Options for Distributed Medical Education (DME) in Manitoba

January 19th to 21st, 2012

Brandon University
Brandon, Manitoba, Canada

PROGRAM

Thursday, January 19th, 2012

7:00pm – 9:00pm Welcome Reception – food and drinks to be served

LOCATION: *Residence of Dr. Deborah Poff and Dr. Alex Michalos*
University House, 463 – 13th Street, Brandon

Friday, January 20th, 2012

LOCATION: Room 043, School of Health Studies, Brandon University
270 – 18th Street, Brandon

8:00am – 9:00am Breakfast

9:00am – 9:30am Welcome and Introductory Remarks – Steering Committee Mandate
and
Workshop Objectives

Lead Discussants:

- Dr. Deborah Poff, Steering Committee Chair
- Dr. Brian Postl, Steering Committee Vice-Chair

9:30am – 10:45am The Manitoba Setting

Lead Discussants:

- Dr. John Horne, Lead Consultant, BMES
- Dr. Daniel Klass, Lead Consultant, BMES
- Ms. Amy Wyntjes, Research Associate, BMES

10:45 – 11:00am	Break
11:00am – 12:00pm	The DME Story: An International Perspective <u>Lead Discussant:</u> <ul style="list-style-type: none"> ▪ Dr. Paul Worley, Dean, School of Medicine, Flinders University
12:00pm – 1:00pm	Lunch
1:00pm – 2:00pm	DME in Canadian and American Contexts – Plenary Discussion <u>Lead Discussants:</u> <ul style="list-style-type: none"> ▪ Mr. Steve Slade, VP Research and Analysis CAPER-ORIS, Association of Faculties of Medicine of Canada (AFMC) ▪ Dr. Joel Lanphear, Senior Associate Dean of Medical Education Programs, Central Michigan University College of Medicine
2:00pm – 3:20pm	Panel Discussion and Q/A – DME Educational Models (UGME) <u>Panelists:</u> <ul style="list-style-type: none"> ▪ Dr. Alan Neville, Associate Dean of Education, Faculty of Health Sciences, McMaster University ▪ Dr. Oscar Casiro, Regional Associate Dean, UBC Faculty of Medicine (Vancouver Island) <p>2:00pm – 2:20pm – Panelists’ Presentations (10 minutes each) 2:20pm – 3:00pm – Breakout Sessions (2 groups, chaired by Panelists) 3:00pm – 3:20pm – Report Back Session (Panelists/Audience to comment)</p>
3:20pm – 3:40pm	Break
3:40pm – 5:00pm Management	Panel Discussion and Q/A – DME Governance, Leadership and <u>Panelists:</u> <ul style="list-style-type: none"> ▪ Dr. Joanna Bates, Director, Centre for Health Education Scholarship ▪ Dr. Preston Smith, Senior Associate Dean, Faculty of Medicine, Dalhousie University <p>3:40pm – 4:00pm – Panelists’ Presentations (10 minutes each) 4:00pm – 4:40pm – Breakout Sessions (2 groups, chaired by Panelists) 4:40pm – 5:00pm – Report Back Session (Panelists/Audience to comment)</p>
5:00 – 6:30pm	Break
6:30pm – 8:00pm	Dinner

LOCATION: Remington's Seafood and Steakhouse
800 Rosser Avenue, Brandon

Saturday, January 21st, 2012

LOCATION: Room 043, School of Health Studies, Brandon University
270 – 18th Street, Brandon

7:45am – 8:30am Breakfast

8:30am – 9:50am Panel Discussion and Q/A – DME Resources

Panelists:

- Ken Adams, Chief Administrative Officer, Northern Ontario School of Medicine (via Video Conference)
- Jeff Goodyear, Director, Health Human Resources Policy Branch, Ontario Ministry of Health and Long-Term Care

8:30am – 8:50am – Panelists' Presentation (10 minutes each)

8:50am – 9:30am – Breakout Sessions (2 groups, chaired by Panelists)

9:30am – 9:50am – Report Back Session (Panelists/Audience to comment)

9:50am – 10:00am Break

10:00am – 10:20am Reflections on the Development of the Northern Ontario School of Medicine
Medicine
(NOSM)

Lead Discussant:

- Dr. Roger Strasser, Dean and Professor, Northern Ontario School of Medicine (via Video Conference)

10:20am – 11:30am Summary Observations on the BMES Options

Lead Discussant:

- Dr. Ian Bowmer, Executive Director, Medical Council of Canada (MCC)

11:30am – 11:40am Concluding Remarks and Adjournment

Lead Discussants:

- Dr. Deborah Poff, Steering Committee Chair
- Dr. Brian Postl, Steering Committee Vice-Chair

11:45am (sharp) Passenger Van departs for Winnipeg Airport

APPENDIX 7

Workshop on Options for Distributed Medical Education (DME) in Manitoba
January 19th to 21st, 2012

Participants List

- Mr. Ken Adams** – Chief Administrative Officer, Northern Ontario School of Medicine (Thunder Bay, ON) – via video conference
- Dr. Alexander (Sandy) Banks** – Retired Northern Family Physician, Consultant to Opaskwayak First Nation Health Authority (The Pas, MB)
- Dr. Joanna Bates** – Director, Centre for Health Education Scholarship, Faculty of Medicine, University of British Columbia (Vancouver, BC)
- Dr. Ian Bowmer** – Executive Director, Medical Council of Canada (Ottawa, ON)
- Dr. Jamie Boyd** – Department Head, Department of Family Medicine, University of Manitoba (Winnipeg, MB)
- Dr. Dean Care** – Dean and Professor, School of Studies and Graduate Studies, Brandon University (Brandon, MB)
- Dr. Oscar Casiro** – Regional Associate Dean, UBC Faculty of Medicine (Vancouver Island); Head, Division of Medical Sciences, University of Victoria (Victoria, BC)
- Dr. Catherine Cook** – Associate Dean, First Nations, Métis and Inuit Health, Faculty of Medicine, University of Manitoba (Winnipeg, MB)
- Ms. Shari Decter Hirst** – Mayor, City of Brandon (Brandon, MB)
- Dr. Robin Enns** – Brandon University Board Member, Faculty of Education, Brandon University (Brandon, MB)
- Mr. Jeff Goodyear** – Director, Health Human Resources Policy Branch, Ontario Ministry of Health and Long-Term Care (Toronto, ON)
- Dr. Scott Grills** – Vice President, Academic and Research, Brandon University (Brandon, MB)
- Dr. John Horne** – Lead Consultant, Brandon Medical Education Study (Victoria, BC)
- Dr. Barbara Kelleher** – Brandon Physician, Doctors Manitoba Representative (Brandon, MB)
- Dr. Daniel Klass** – Lead Consultant, Brandon Medical Education Study (Winnipeg, MB)
- Ms. Rebecca Klass** – Research Assistant, Brandon Medical Education Study (Winnipeg, MB)
- Dr. Don Klassen** – Medical Director, Manitoba's Office of Rural and Northern Health (Winkler, MB)
- Dr. Joel Lanphear** – Senior Associate Dean of Medical Education Programs, Central Michigan University College of Medicine (Mount Pleasant, MI)
- Ms. Charlotte Magee** – Administrative Officer, Office of the President, Brandon University (Brandon, MB)
- Dr. Bruce Martin** – Associate Dean, Students, Faculty of Medicine, University of Manitoba (Winnipeg, MB)
- Dr. Alex Michalos** (Brandon, MB)
- Dr. William Myers** – Chief of Medical Staff, Brandon Regional Health Authority (Brandon, MB)
- Dr. Alan Neville** – Associate Dean of Education, Faculty of Health Sciences, McMaster University (Hamilton, ON)
- Dr. Charles Penner** – Vice President, Medical and Diagnostic Services, Brandon Regional

- Health Authority (Brandon, MB)
- Dr. Deborah Poff** – President and Vice Chancellor, Brandon University (Brandon, MB)
- Dr. Brian Postl** – Dean, Faculty of Medicine, University of Manitoba (Winnipeg, MB)
- Mr. Brian Schoonbaert** – Chief Executive Officer, Brandon Regional Health Authority (Brandon, MB)
- Mr. Steve Slade** – Vice President, Research and Analysis CAPER-ORIS, Association of Faculties of Medicine of Canada (Ottawa, ON)
- Dr. Preston Smith** – Senior Associate Dean, Faculty of Medicine, Dalhousie University (Halifax, NS)
- Dr. Roger Strasser** – Dean and Professor, Northern Ontario School of Medicine (Sudbury, ON) – via video conference
- Mr. Reg Toews** – Former CEO, South Eastman Regional Health Authority; Organizational Consultant (Winnipeg, MB)
- Mr. Josh Watt** – Director, Institutional Relations, Manitoba Council on Post-Secondary Education (Winnipeg, MB)
- Dr. Elise Weiss** – Vice President, Medical Services, Assiniboine Regional Health Authority (Brandon, MB)
- Dr. Paul Worley** – Dean, School of Medicine, Flinders University (Adelaide, Australia)
- Ms. Amy Wyntjes** – Research Associate, Brandon Medical Education Study (Brandon, MB)

APPENDIX 8

MANITOBA REGIONAL HEALTH AUTHORITIES

Regional Health Authorities (RHAs) exist in Manitoba as agencies under Manitoba Health for local service delivery of health care and health care administration. Demographic breakdown of each RHA is listed below as per the Manitoba Health Population Report – June 1, 2010. The population data listed below is based on records of residents registered with Manitoba Health as of June 1st, 2010.

Available: <http://www.gov.mb.ca/health/population/pr2010.pdf>

RHA	Resident Population	Health Care Facilities	Primary Care Physician Resources	Primary Care Vacancies
Assiniboine	68,505	- 23 Health Centres	- 62 GPs	- 5 current vacancies – permanent, full-time positions
Brandon	52,550	- 1 Regional Health Centre	- 32 GPs with hospital privileges - 17 GPs without hospital privileges - 5 hospitalists	(None)
Burntwood	48,080	- 1 General Hospital - 6 Hospital/Health Centres	- 22 GPs	(None)
Central	107,668	- 2 District Hospitals - 2 Hospitals - 12 Health Centres	- 91 full-time GPs - 1 half-time GP	- 6 current vacancies – permanent, full-time positions
Churchill	921	- Northern Medical Unit	- No permanent GPs – locum coverage	(N/A)
Interlake	78,815	- 7 Community Health Centres	- 49 GPs	(None)
Nor-Man	24,570	- 3 Acute Care Hospitals	- 25 GPs	- 3 current vacancies – GP/Surgery, GP/Obst-Gyn, GP/Anaesthesia
North Eastman	41,846	- 1 District Hospital/Primary Health Care Centre - 1 Hospital - 4 Primary /District Health Care Centres	- 24 GPs	- 1 current vacancy – permanent, full-time position
Parkland	41,658	- 1 Regional Health Centre - 1 District Hospital - 5 District Health Centres/ General Hospitals	- 40 GPs (not all full-time) - ER coverage through contracts	(None)
South Eastman	68,383	- 2 Hospitals - 2 District Health Centres	- 37 GPs with hospital privileges	(None)
Winnipeg	697,274	- 2 Tertiary Hospitals - 4 Community Hospitals - 4 Health Centres	- 553 (includes family medicine clinics in hospitals)	- 1 full-time hospitalist position - 1 position (GP,

		- Multiple community-based health care facilities		Addictions Unit) - 2 full-time and 1 half-time GP positions - Emergency Room coverage vacancies
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APPENDIX 9

Workshop on Options for Distributed Medical Education (DME) in Manitoba

January 19th – 21st, 2012

Brandon University
Brandon, Manitoba, Canada

Suggested Questions for Workshop Panels and Small Group Discussions

PANEL #1: DME Educational Models (Undergraduate Medical Education)

1. For preclinical topics, do video/teleconference solutions replace the need for on-site basic science education? To what extent is an on-site basic science presence needed?
2. For clinical education, can a continuous multidisciplinary clerkship experience replace the conventional “cafeteria” of clerkship blocks?
3. Does the accreditation standard of equivalent clinical experience hinder establishment of a true rural experience?
4. To what extent can different but “equivalent” parallel tracks be acceptable? Can a rural clinical track co-exist with a typical Academic Health Sciences (AHSC) experience?

PANEL #2: DME Governance, Leadership and Management

1. What model works best for governing and managing DME? Is there experience to suggest the advantages of:
 - a. A predominant central campus with satellite campuses of varying autonomy?
 - b. Relatively autonomous satellites with “weak” central control?
 - c. Defined partnerships between otherwise autonomous institutions?
2. Can traditional medical schools based in AHSCs adapt to the values of DME?
3. What are the critical pathways for clinical faculty recruitment and development?

PANEL #3: DME Resources

1. What is the resource “premium” for DME undergraduate medical education? What are the components of this “premium”?

2. What are the emerging best practices in resourcing and/or financing DME programs?
3. To what extent are the capital and operating costs of audio-visual technologies (AVT) specific to DME “paid for” via savings in academic staffing in the basic sciences at regional/satellite campuses? Does AVT yield other “pay backs” (e.g. in multi-site program administration)?
4. What is the optimum “catchment population” and resource base for a regional DME campus, as well as a stand-alone “rural” medical school?
5. What resources are required by community hospitals/health centres to participate/qualify as “teaching” facilities within a DME program?

WORKSHOP REVIEW

A Workshop on “Options for Distributed Medical Education (DME) in Manitoba” was held at Brandon University (BU) in Brandon, MB from January 19th to January 21st 2012. An opening reception took place at the home of the BU Dean (Dr. Deborah Poff, Steering Committee Chair) on the evening of January 19th. Workshop presentations and discussions followed over the next two days.

The following is a summary of discussions and key points that occurred outside of the provided presentations. The information was gathered through note taking. Please refer to complete list of Workshop Attendees and Participants (p. x), Discussion Questions (p. x), and the Workshop Agenda (p. x). Presenters’ notes are included where possible.

January 20th 2012:

Welcome and Introductory Remarks

The morning commenced with introductory remarks provided by Dr. Poff and Dr. Brian Postl (University of Manitoba Faculty of Medicine Dean, Steering Committee Vice-Chair). The Manitoba Setting was defined and discussed by Amy Wyntjes (Research Associate, BMES), Dr. John Horne (Lead Consultant, BMES), and Dr. Daniel Klass (Lead Consultant, BMES).

The Manitoba Setting

Wyntjes provided a snapshot of the Manitoba’s demographics and physician distribution. It was identified that approximately 75.5 percent of Manitoba’s licensed practitioners practice in Winnipeg, and that Winnipeg displays a fairly typical population-to-MD ratio. Additionally Wyntjes highlighted Brandon (as well as the SE corner of the province, and Winkler, MB) as displaying the fastest population growth in the province.

Dr. Horne continued with a overview of the Manitoba setting, defining the current trend in rural practice as an “As is, Where is” delivery system: a system where physicians decide to practice, without any basis on where it is most *practical* for them to locate. Horne identified three optional solutions targeted at generating 20 family medicine practitioners (utilizing either an IMG class, a “Homegrown” class, or a mixed (50/50) class), with a 5-year “velcro” (sticking) factor, providing predicted annual costs for each model.

Dean Postl responded to the data by highlighting that the University of Manitoba northern programs are effectively already producing 10 MDs minimum annually. Dr. Don Klassen (Medical Director, Manitoba’s Office of Rural and Northern Health) provided a review of how the definition of “rurality” has changed in undergraduate admissions over the past four years. Until four years ago, the intake of rural students was as low as 13 percent. Under its new definition, the last three classes have had 40-49 percent of their students meet some/or all of the rurality criteria.

Dr. Klass concluded the introductory statements with a historical account of the delivery of medical education – highlighting the movement away from an apprenticeship-based model towards an almost entirely science-based enterprise. Klass emphasizes the contentions that have developed in the areas of social justice and social accountability education. Klass continued that the practice of medicine is a

“relational practice”, defined by the relationships between the doctor and the patient, as well as the setting or place where that practice is taking place. It was suggested that the setting has been ignored in recent years. Klass concluded that before programs will be effective, there must be a shift in the overall outlook. Medical education’s committed ties to academia should be broken, and the importance of setting must be enhanced.

Postl responded that the shift in perspective is a “two way street” – rural environments must also be made more accepting of academia and students. Dr. Alan Neville (Associate Dean of Education, Faculty of Health Sciences, McMaster University) mentioned the fact that the line between rural training and rurality isn’t “as straight” as it has been outlined, highlighting the expense of domestic training. Neville pointed towards the potential for care being provided by non-MDs in rural settings.

Dr. Preston Smith (Senior Associate Dean, Faculty of Medicine, Dalhousie University) suggested that junior learners do not experience the same sort of continuity as senior learners. By enhancing their community-based learning experience, a sense of stability could be developed. Smith also warned that there must be a push towards generalist-specialist training: if training is too focused on family medicine, the program may become stigmatized.

Dr. Joel Lanphear (Senior Associate Dean of Medical Education Programs, Central Michigan University College of Medicine) added that the engagement of school systems is crucial to provide awareness of opportunity to high school students.

Klass raised an underlying moral consideration in employing IMGs for practice, and suggested that there must be an added calculated cost in determining the expensive of training/implementing an IMG, referred to as the “moral opportunity cost”. Postl followed up by differentiating between immigration and IMG training, and direct recruitment.

The DME Story: An International Perspective

Dr. Paul Worley (Dean, School of Medicine, Flinders University)

In the post-presentation discussion, the topic of Aboriginal ties to “place” was given brief attention. When an Aboriginal community is confronted with better opportunity, education can then enter into their radars. This could potentially represent an internal brain drain from Aboriginal communities. Worley highlighted the example of the Alice Springs expansion. Eight students received their entire Medical Education in Alice Springs: previously, the people in Alice Springs had not gained any benefit from other Flinders expansions.

DME in Canadian and American Contexts – Plenary Discussion

DME IN USA

Dr. Joel Lanphear

Lanphear highlighted some interesting points throughout his presentation. He revealed that there are currently 17 new medical schools on the LCME’s agenda. Lanphear cited Indiana University as one of the original DME models in the US, as well as Michigan State.

DATA ON DME IN CANADA

Mr. Steve Slade (Vice President, Research and Analysis CAPER-ORIS, AFMC)

Slade emphasized some of the current trends in Canadian DME. Accordingly, it was cited that first year enrollment is higher than it has ever been before in Canada (with approximately 2,800 first year students). The most significant growth has taken place in satellite campuses. The number of fulltime

faculty has increased 23 percent, and part time faculty has increased by 43 percent. In particular, In Family Medicine, there has been an increase of 3,500 (part time) employees from 2004/05-2009/10. Slade presented a Canadian DME Map, which demonstrated that there are 10 “satellite campuses”, over 873 clinical teaching facilities in Canada, and 140 Family Medicine programs in the CAPER database.

Panel Discussions and Q/A: DME Education Models (UGME)

Dr. Alan Neville

Neville outlined some of the principles of the MACCARE program at McMaster University. The program deliberately places students in rural settings, with an additional emphasis on enrollment expansion, and employs integrated vertical learning, where funding is meant to “follow the learner”. Neville highlighted tight funding rules as a major challenge to the program, where by (eg.) no funding is provided for rotations that are briefer than a month. Neville suggested that funding efforts for DME in Ontario have not been a simple straight line.

Dr. Oscar Casiro

Casiro reported that there are currently 99 regional medical campuses in Canada and the US, with a minimal one-year term. The initial objective of the UBC Medical Education Model was to create “Campus BC” or, to create a “Provincial Integration Across the Educational Continuum”. The program was designed to nest distribution within a particular region, with the expectation that that region would then perpetrate that distribution. According to the results of the MCC Part I Examination in Spring 2011, the separate UBC campuses had similar performance marks. Casiro outlined several accreditation issues, recommending avoiding entirely distance learning, and suggested that a new school consider a range of technology, including video conferencing, virtual patients, simulations, and the employment of web-based learning resources. He reminded the audience that the new school would be faced with intellectual property rights as well as copyrights.

Panel Discussion and Q/A: DME Governance, Leadership, and Management (see *Discussion Questions, p. x*)

The participants were broken into two groups, and provided with directed questions to discuss (see attached).

Group One

In brief, Group One discussed the value of building a DME program incrementally, as well as the necessity of community engagement during the developmental stage. The group made clear that the strategy for increasing retention and recruitment requires a long term view, with complex adaptive systems, and that experimentation is necessary. The group highlighted that the development of a successful DME program will likely involve changing the culture of the existing medical school.

Group Two

Group Two’s discussion focused primarily on technology. It was highlighted that technology cannot dictate a curriculum, but that is must be the other way around. Videoconferencing can be affective so long as there is “ground support” for students. Students must also be able to seek assistance from clinicians. The group discussed the division of objectives between the main campus and a satellite school: the satellite school must share an overriding objective with the main campus, however it can have additional objectives. It was determined that accreditation should be more capable of evolution. The LCME, being a purely American body, needs to be adapted towards the Canadian context.

Dr. Joanna Bates

Bates provided the group with a discussion of governance in DME. She spoke of physician autonomy – as physicians are used to autonomy, a different type of governance must be engaged in a DME program. That governance should provide the opportunity for mutual learning and trust. The governance structure can change overtime, and therefore it requires flexibility and the ability to evolve. Bates discussed the triangular, overlapping relationship between physicians, the regional site, and the faculty. A shared mission must be established early, and be made clear, to avoid conflict. With a collaborative governance structure, if the DME program is designed well, it should be “we”, not “us and them”.

Dr. Preston Smith

Smith provided a review of the Dalhousie governance structure. The Dalhousie program is a complex environment, with one medical school existing in three separate provinces. They employ a tri-provincial committee across the UGME, PGME, and Health and Education branches of government. The model is Dalhousie centric – this is partly driven by the fact that UNBSJ is a branch campus itself. All faculty members are Dalhousie employees. The Nova Scotia government was not involved in the development in the program, nor were clinicians – Smith identified this as a developmental error. Smith highlighted the development of a Nova Scotia Medical Education Network to facilitate open communication with DHAs.

Dean Postl responded to Smith’s presentation by highlighting the difficulty in determining equitable physician treatments across regions, suggested that this process can be more difficult than developing affiliation agreements between institutions due to their necessary consistency. It was suggested in response that this is a major reason for physician dissonance, as there is a potential for inequitable treatment. Bates reminded the participants of Worley’s suggested “per learner” treatment of physicians – whereby physicians are paid equally for the number of learners they are responsible for.

January 21st, 2012:

DME Resources

Mr. Ken Adams (Chief Administrative Officer, Northern Ontario School of Medicine)

Jeff Goodyear

Goodyear’s presentation was followed by a broad discussion. Postl suggested that “single-doc towns” aren’t safe, emphasizing the positive benefits of a hub and spoke model. Ken Adams spoke of managing expectations. In his NOSM experience, he reflected on the overwhelming support the program received from the community, suggesting that having students and residence in the community actually helps local doctors provide better care. Adams reported that the problem raised by Postl is not reflected in Northern Ontario’s rural communities. Ian Baumer related expectation management to a balancing act – community, political, and administrative expectations must be kept in check against one another.

Bates turned the discussion towards the ability (or disability) of a community to accept the role of teaching. In her experience with UBC, it was determined that the preceptors in the community need to have a desire to teach. Additionally, the community must be made aware of the broader positive outcomes of the program. Casiro added that a readjustment of expectations, or a “reality check” is necessary.

Worley continued that government-community alignment, although not always complimentary, could have a large benefit. Academic researchers having the “live-in” experience can inform the debate as to whether single doctor, or other forms of practice, is unsafe. While there is no evidence suggesting what is the *best practice* in a small town, health service, hand-in-hand with research, has been one of the

largest contributions of DME programs. Academics actually living, working, and researching in small towns must provide evidence.

Reflections on the Development of the Northern Ontario School of Medicine (NOSM)

Dr. Roger Strasser

Strasser provided an account of the development, setbacks, and successes of NOSM. The whole of Northern Ontario is seen as NOSM's campus. The education is fully integrated, with active participation between the school and its communities. The program does not have courses in the conventional sense. The first two years are spent on campus (for the most part), where classroom learning is mostly done in small group settings. Simulation classes and clinical skill development begin in the first week of year one, with the use of Standardized Patients. In the first year, students complete a 2-4 week rotation (as an immersive experience). In second year, students partake in integrative clinical experiences. By third year, students participate in a comprehensive community clerkship, living in one of twelve rural or small urban communities. Fourth year students are given the opportunity to explore specialties in Sudbury or Thunderbay.

Strasser highlighted several signs of NOSM's success: 63 percent of graduates have chosen a pathway back to rural family medicine, with only 4 percent falling into subspecialties. NOSM students have usually performed above average in MCC examinations. Additionally, evidence has shown that the economic impact of the school has been positive both socially and financially.

Strasser suggested that a Manitoba program must be personalized, or designed based on evidence in Manitoba. He reiterated the major factors for successful recruitment and retention: rural upbringing, a positive clinical education experience in rural settings, and residency training preparing students to practice in a rural context. Strasser highlighted the importance of well-developed interconnected networks and relationships with different identities in the community (e.g. native populations, francophone people, etc.), as well as effective partnerships with HS and TeleHealth services.

Faculty development was also approached as a key component of a successful DME program. Strasser emphasized the long-term economic benefits of rurally focused training. While the short-term cost per student in DME is greater than that of an urban HSC, overall, there is significant long-term investment turnover. If the program is successful, recruitment and retention costs will decrease.

Summary Observations on the BMES Option

Dr. Ian Bowmer

Dr. Bowmer provided highlights of the workshops proceedings. He emphasized the importance of creating partnerships with involved organizations. It was acknowledged that the teaching and research quality of DME programs is relatively unaffected (and in some cases, improved). Additionally, it was noted that the social capital for the communities involved could be considerable, including employment opportunity, and the enhancement of optimism among citizens. Bowmer provided some advice, including the need to recognize "who the community is", to define the overriding objective clearly, and to create an accountable governance structure, with room for evolution. He emphasized faculty development, building on preexisting strengths of the community, and the importance of cost transparency.

APPENDIX II

Table 6d.i

Number of Licensed Physicians, Winnipeg and Outside Winnipeg, Actual 1999-2011, and Projected 2012-2020 (all years at April 30)

Year at April 30	Winnipeg	Percentage (%)	Outside Winnipeg	Percentage (%)	Totals	Net Gain/ Net Loss (-)
1999	1539	75.6	498	24.4	2037	21
2000	1554	75.5	504	24.5	2058	21
2001	1560	75.2	514	24.8	2074	16
2002	1592	75.0	530	25.0	2122	48
2003	1618	75.2	534	24.8	2152	30
2004	1626	74.7	550	25.3	2176	24
2005	1640	75.0	546	25.0	2186	10
2006	1663	75.0	555	25.0	2218	32
2007	1688	74.3	584	25.7	2272	54
2008	1722	74.1	603	25.9	2325	53
2009	1788	75.1	594	24.9	2382	57
2010	1833	75.1	609	24.9	2442*(2415)	*60(30)
2011	1888	75.5	614**	24.5	2502	87

* CPSM correction to database; 2010 excluded from average net gain calculation

** Total of 614 includes Brandon 127 and Rural 487

Scenario A: "Need" = +150 Family Medicine (FM) and +75 Specialists (SP) by 30/03/16, with annual needed gains of 30 FM and 15 SP allocated 15FM and 12SP to Winnipeg and 15FM and 3SP outside Winnipeg

Year at April 30	Winnipeg	Percentage (%)	Outside Winnipeg	Percentage (%)	Totals	Net Gain/Net Loss
			(FM/SP)		(FM/SP)	
2012	1915	75.2	632	24.8	2547(30/15)	45
2013	1942	74.9	650	25.1	2592(60/30)	45
2014	1969	74.7	668	25.3	2637(90/45)	45
2015	1996	74.4	686	25.6	2682(120/60)	45
2016	2023	74.2	704(75/15)	25.8	2727(150/75)	45
2017	^2045	74.2	^712	25.8	^2757(170/85)	30
2018	^2067	74.2	^720	25.8	^2787(190/95)	30
2019	+2094	74.2	+729	25.8	+2823(214/107)	36
2020	+2121	74.2	+739	25.8	+2860(239/119)	37

^ pop growth = 1.1% ; + pop growth = 1.3%

Scenario B: "Need" = + 150 Family Medicine (FM) and +40 Specialists (SP) by 30/03/16, with annual needed gains of 30 FM and 8 SP allocated 15FM and 6SP to Winnipeg and 15FM and 2SP outside Winnipeg

Year at April 30	Winnipeg	Percentage (%)	Outside Winnipeg	Percentage (%)	Totals	Net Gain/Net Loss
2012	1909	75.2	631	24.8	2540 (30/8)	38
2013	1930	74.9	648	25.1	2578 (60/16)	38
2014	1951	74.6	665	25.4	2616 (90/24)	38
2015	1972	74.4	682	25.6	2654 (120/32)	38
2016	1993	74.0	699	26.0	2692 (150/40)	38
2017	^2015	74.0	^707	26.0	^2722 (170/85)	30
2018	^2037	74.0	^715	26.0	^2752 (190/95)	30
2019	+2063	74.0	+724	26.0	+2787(214/107)	35
2020	+2090	74.0	+734	26.0	+2824(239/119)	37

^ pop growth = 1.1% ; + pop growth = 1.3%

APPENDIX 12

Table 6d.ii

Projected Deletions, Required Net Gains, and Required New Registrants (RNRs) to the CPSM Registry of Fully Licensed Physicians; Matched to Prospective Pipelines from the University of Manitoba (M), other Canadian (C) and Foreign Medical Schools: Scenarios A and B, 2012-2020.

Scenario A: “Need” = +150 Family Medicine (FM) and +75 Specialists (SP) by 30/03/16, with annual needed gains of 30 FM and 15 SP allocated 15FM and 12SP to Winnipeg and 15FM and 3SP outside Winnipeg

Deletions* + Net Gain = Additions (x .51) = Required New Registrants

At April 30					Base 1 M/C/IMG	Base 2 M/C/IMG
2012	310	45	355	181	53/40/88	48/36/97
2013	316	45	361	184	56/40/88	51/36/97
2014	321	45	366	187	56/40/91	51/36/100
2015	327	45	372	190	61/40/89	56/36/98
2016	333	45	378	193	65/40/88	60/36/97
2017	338	30	368	188	65/40/83	60/36/92
2018	342	30	372	190	73/40/77	68/36/86
2019	346	36	382	195	74/40/81	69/36/90
2020*	350	37	387	197	73/40/84	68/36/93
2020**	350	37	387	197	81/40/76	76/36/85

Scenario B: "Need" = + 150 Family Medicine (FM) and +40 Specialists (SP) by 30/03/16, with annual needed gains of 30 FM and 8 SP allocated 15FM and 6SP to Winnipeg and 15FM and 2SP outside Winnipeg

Deletions* + Net Gain = Additions (x .51) = Required New Registrants

At April 30					Base 1	Base 2
					M/C/IMG	M/C/IMG
2012	310	38	348	177	53/40/84	48/36/93
2013	315	38	353	180	56/40/84	51/36/93
2014	320	38	358	183	56/40/87	51/36/96
2015	324	38	362	185	61/40/84	56/36/93
2016	329	38	367	187	65/40/82	60/36/91
2017	334	30	364	186	65/40/81	60/36/90
2018	338	30	368	188	73/40/75	68/36/84
2019	341	35	376	192	74/40/78	69/36/87
2020*	346	37	383	195	73/40/82	68/36/91
2020**	346	37	383	195	81/40/74	76/36/83

Notes:

- Base 1: M base (2011) = 50 (average of peak years 2008,09,11);
 C base (2011) = 40 (average of peak years 2008,10,11);
 IMG = RNR minus (M + C)
 Base 2: M base (2011) = 45 (average of 2007-11);
 C base (2011) = 36 (average of 2007-11);
 IMG = RNR minus (M+C)
- Deletion rate of 12.4% based on average for 2007-11, increased to allow for larger number of deaths and retirements over next 10 years, i.e., from 56 to 78 physicians per year, or an increase of 40% (projection based on number of licensed physicians aged 56+ in 2010);
- Required registrations based on ratio of new registrants to total additions, averaged over the period 2007-11 at 51%;
- Projections from 2017-20 are based on general population growth projected at 1.1% per yr 2016-18 and 1.3% per yr 2018-20.
- Pipeline sources of new registrants based on projected increase in new registrants completing UGME and/or PGME at UMFOM. For family medicine PGME requiring 2 years (R1-R2), the duration from Med I to CPSM registration is 7 years; for specialty PGME programs averaging 5 years (R1-R5), the duration from Med I to CPSM registration is 10 years. See Appendix Table ___ for detailed schedule of changes in projected M pipe flows resulting from actual or potential changes in UGME class size and composition; increases in PGME R1 positions; and changes in distribution of R1 positions by program (FM/SP) and allocation to UM grads.
- 2020* increases FM R1 positions +8 (July 2013 from 45 to 53);
 2020** increases FM R1 positions +20 (+8 July 2013 and + 12 by

APPENDIX 13

Table 6d.iii

Detailed timetable of changes in M Pipe flows, 2011-2020, resulting from changes in UGME class size and composition; increases in PGME RI positions; and changes in RI distribution by program (FM/SP) and allocation to UM grads.

1. UGME: 2012 Med I convert 10 positions from out-of-province (OOP) students to Manitoba students
2012 1st grad class n = 110
2013 1st grad class with 40% rural students based on rurality scores applied to Med I 2009/10

2. PGME: April 30 2012 CPSM + 3 FM from class size increase to 94 (+7) in 2005/06 graduating 2009, as here detailed:
2009 = +7 UM grads, assume RI match 4 UM (2FM/2SP) and 3 Out-of-province (2FM/1SP); assume UM retention of 2FM (complete July 2011 and register CPSM2012) and 1SP (complete July 2014 and register CPSM2015); assume OOP retention of 1 FM (complete July 2011 and register CPSM 2012) +0 SP; Summary M pipe changes 2012: + 3 FM (with carryover gain of +1 SP to 2015)

: July 2012 increase PGME RI matches from 50% to 70% UM grads, with program distribution: UM FM RI= 32/45; UM SP RI= 53/75)

: April 30 2013 CPSM +3 FM from class size increase to 101(+7) in 2006/07 graduating 2010, as here detailed:
2010 = +7 UM grads, assume RI match 4 UM (2FM/2SP) and 3 Out-of-province (2FM/1SP); assume UM retention of 2FM (complete July 2012 and register CPSM2013) and 1SP (complete July 2015 and register CPSM2016); assume OOP retention of 1 FM (complete July 2012 and register CPSM 2013) +0 SP; Summary M pipe changes 2013: +3 FM (with carryover gain of + 1 SP to 2016)

: July 2013 RI total positions increase from 120 to 130
UM RI= 70% x 130= 91
FM RI= + 8 Rural FMEDEC (4Br/2BT/2S)
SP RI = + 2 SP Brandon
FM RI = from 45/120 to 53/130
UM FM RI from 32/45 to 37/53
UM SP RI from 53/75 to 54/77

: July 2014 to July 2017 FM share of RI positions
 increased to 50% and SP share decreased to
 50%, with scheduled changes:

FM RI = +3/yr = +12 cumulative

SP RI = -3/yr = -12 cumulative

: July 2017 FM RI total = 65/130 (50%) = +20 (ex45/120)
 UM FM RI = 46/65 (70%) = +24 (ex22/45)
 Retention rate = 83% = 20/24

SP RI total = 65/130 (50%) = -10 (ex75/120)
 UM SP RI = 46/65 (70%) = + 8 (ex38/75)
 Retention rate = 75% = 6/8

3. Schedule of Family Medicine RI Changes/Effects on M pipe

UM RI = 70% (July 2012)

Total RI =130 (July 2013)

FM RI = 50% RI (by July 2017)

YEAR	UM FM RI	+/-	UM GRADS	+/-	CPSM +/-
2010	45		22		
2011	45		22		
2012	45		32 [^]	+10	+3 (from 2009)
2013	53	+8	37	+5	+3 (from 2010)
2014	56	+3	39	+2	
2015	59	+3	41	+2	+8 (from 2012)
2016	62	+3	43	+2	+4 (from 2013)
2017	65	+3	46	+3	
2018	65	0	46	0	
2019	65	0	46	0	
2020	65	0	46	0	+8 (from 2014-17)
2011-17		+20		+24	+18
2011-20		+20		+24	+26
Steady-state 2023		+20		+24	+26

4. Schedule of Specialist RI Changes/Effects on M pipe, assuming:

UM RI = 70% (July 2012);

Total RI =130 (July 2013);

SP RI = 50% RI (by July 2017).

YEAR	UM SP RI	+/-	UM GRADS	+/-	CPSM +/- (RR=80%)
2010	75		38		
2011	75		38		
2012	75		53	+15	
2013	77	+2	54	+1	
2014	74	-3	52	-2^	
2015	71	-3	50	-2^	+1 (from 2009)
2016	68	-3	48	-2^	+1 (from 2010)
2017	65	-3	46	-2^	
2018	65	0	46	0	+12 (from 2012)
2019	65	0	46	0	+1 (from 2013)
2020	65	0	46	0	-1 (from 2014)
2021	65		46	0	
2222	65		46	0	
2023	65		46	0	-6^ (from 2015-17)
2011-17		-10		+8	+2
22011-20		-10		+8	+14
Steady-state 2023		-10		+8	

5. Summary of M pipe gains/losses, 2012-2020

	FM	SP	UM/OOP	M pipe +/-
2012	+3			+3
2013	+3			+3
2014				
2015	+8	+1(from GC2009)	-4	+5
2016	+4	+1(from GC2010)	-1	+4
2017				
2018		+12(from GC2012)	-4	+8
2019		+1(from GC2013)	-1SP/+1FM	+1
2020	+8	-1		+7
Total	+26	+14	-9	+ 31

2020: Base 1 = 50 + 31 = 81

Base 2 = 45 + 31 = 76

6. Distribution of RI positions by FM/SP by Match: M/OOP

YEAR	U of M RIs			U of M RI		U of M	U of M	OOP GRADS
	FM	SP	TOTAL	FM	SP	Total	RI OOP (FM/SP)	
2011	45	75	120	22	38	60	40 (20/20)	100
2012	45	75	120	32	53	85	25 (12/13)	110
2013	53	77	130	37	54	91	19 (9/10)	110
2014	56	74	130	39	52	91	19 (9/10)	110
2015	59	71	130	41	50	91	19 (9/10)	110
2016	62	68	130	43	48	91	19 (9/10)*	110
2017	65	65	130	46	46	92	18 (9/9)	110
2018	65	65	130	46	46	92	18 (9/9)	110
2019	65	65	130	46	46	92	18 (9/9)	110
2020	65	65	130	46	46	92	18 (9/9)	110

* UM RI OOP = 100% Manitoba students since 10 out-of-province students replaced 1:1 in Med I class 2012/grad class 2016

7. Distribution of RI Out-of-province matches and projected retention in M pipe

YEAR	RI MATCH UM OUT-OF-PROVINCE			M PIPELINE: UM OOP +/-
	FM	SP	TOT	CPSM REGISTRATION YEAR @ 50% RETENTION
2008	20	20	40	2011 FM=10; 2014 SP=10
2009	20	20	40	2012 FM=10; 2015 SP=10
2010	20	20	40	2013 FM=10; 2016 SP=10
2011	20	20	40	2014 FM=10; 2017 SP=10
2012	12	13*	25	2015 FM= -4 (.5x[20-12])
2013	9	10^	19	2016 FM= -1 (.5x[12-9])
2014	9	10#	19	2017 FM= no change FM or M
2015	9	10	19	2018 SP= -4* (.5x[20-13])
2016	9	10	19	2019 SP= -1^ (.5x[13-10])
2017	9	9	18	2019 FM= +1
2018	9	9	18	2020 FM/SP = 0/0 change
2019	9	9	18	
2020	9	9	18	
2011/17	-11	-22	-9	

2019: +1 FM to reverse -1 FM registered in 2016
 Since $66\% \times 9$ (in MB/FM/OOP) = 6 (2013)
 same as $50\% \times 12$ (in M/C/FM/OOP) = 6 (2)

PUBLIC CONSULTATION INFORMATION DOCUMENT



BRANDON UNIVERSITY

**BRANDON UNIVERSITY MEDICAL
EDUCATION STUDY**

As part of a \$350,000 financial commitment from the Manitoba provincial government, Brandon University has begun to actively undertake a feasibility study to gauge the potential for establishing a medical program on campus. This feasibility study will not only address the current problems associated with population health status and health service delivery in rural and remote areas of Western Manitoba, but will also consider the best option for a Rural Medicine Program at Brandon University. This program's mandate will ideally encompass training opportunities for students of rural backgrounds and/or of interest in primary care and research in rural communities.

THE CONTEXT

The notion of a rural and northern-focused medical training program at Brandon University has recently gained a great deal of momentum provincially. Within the last two years, the Association of Manitoba Municipalities, the Manitoba Chamber of Commerce and the Manitoba Women's Institute have each passed resolutions in support of a rural medical education program at BU to meet the needs of citizens outside urban centres. This momentum led to the approval of provincial funding for the feasibility study in April, 2011.

THE SCOPE

The proposed study presents an important opportunity to review and evaluate medical education in Brandon in a comprehensive manner. All options will be considered in the broader context of medical training needs of the province and will consider undergraduate, postgraduate and continuing education components of the medical education curriculum. These options should include:

- the potential for a stand-alone medical school in Brandon,
- the potential for a satellite program expansion of the University of Manitoba in partnership with Brandon University, and
- the potential of continuing or expanding existing models of rotational and educational experiences.

The study will address implementation strategies for any recommended options and their associated overall cost.

THE PROCESS

The process is governed by a Steering Committee composed of representatives from Brandon University, the University of Manitoba, the Brandon Regional Health Authority, the Assiniboine Regional Health Authority and the Office of Rural and Northern Health. The Committee is chaired by Dr. Deborah Poff, President of Brandon University, and vice-chaired by Dr. Brian Postl, Dean of the Faculty of Medicine at the University of Manitoba. Governing matters related to the overall scope of the project, the Steering Committee shall oversee the production of the feasibility study and provide the final report to the Council on Post-Secondary Education (COPSE) as well as any information or data collected through the study. The study shall be completed by two consultants that bring a wealth of knowledge and experience to this process, and will be presented to COPSE no later than March 31st, 2012.

WHAT IS YOUR ROLE?

We need your input on the issues affecting the health care of rural Manitobans. As part of the scope of the feasibility study, Brandon University will be hosting consultation sessions with a number of rural and remote communities. This is your opportunity to share ideas and concerns by speaking directly to the project consultants and members of the Steering Committee. In preparation for these sessions, we ask you to consider the following questions:

- What is the status of health care delivery in your community?
- How can we improve access to primary care in rural/northern Manitoba?
- What strategies do you think will keep primary care physicians in your community?
- What is your opinion on the establishment of a medical program in Brandon?
- Do you think a medical program at Brandon University will have a positive impact on the status of primary care in rural/northern Manitoba?

We look forward to this opportunity to “listen and learn” in your community in the coming weeks.

**Please visit one of our upcoming
consultation sessions in a town or city
near you to have your say in the future
of rural and remote health care in
Manitoba.**

**FOR MORE INFORMATION PLEASE
CONTACT:**

Amy L. Wyntjes BA, MPA
Research Associate, Office of the President
Brandon University

OFFICE PHONE: (204) 727-7477

EMAIL: wyntjesa@brandonu.ca

DME PROGRAM SCAN

DISTRIBUTED UNDERGRADUATE MEDICAL EDUCATION SCAN

Brandon Medical Education Feasibility Study

Distributed Medical Education Programs - CANADA

GENERAL INFORMATION

Program Name	<u>Island Medical Program</u>	<u>Northern Medical Program</u>	<u>Southern Medical Program</u>	<u>Regina Family Medicine Unit</u>	<u>Northern Ontario School of Medicine</u>	<u>McMaster Regional Campus – Waterloo Region</u>	<u>McMaster Regional Campus – Niagara Region</u>	<u>Sherbrooke - Chicoutimi</u>	<u>Sherbrooke – Moncton</u>	<u>Dalhousie Medicine New Brunswick</u>
Program Type	Distributed	Distributed	Distributed	Clinic	Stand-Alone	Satellite	Satellite	Distributed	Distributed	Distributed
Partner Institutions	University of British Columbia & University of Victoria	University of British Columbia & University of Northern British Columbia	University of British Columbia & University of Okanagan	University of Saskatchewan	Lakehead University & Laurentian University	McMaster University & University of Waterloo	McMaster University & St. Catharines General Hospital	l'Université de Sherbrooke & l'Université de Québec	l'Université de Sherbrooke & l'Université de Moncton	Dalhousie University & University of New Brunswick Saint John
University(ies) Granting MD Degree	University of British Columbia	University of British Columbia	University of British Columbia	University of Saskatchewan	Joint Lakehead/Laurentian Degree	McMaster University	McMaster University	l'Université de Sherbrooke	l'Université de Sherbrooke	Dalhousie University
Province	British Columbia	British Columbia	British Columbia	Saskatchewan	Ontario	Ontario	Ontario	Québec	New Brunswick	New Brunswick
Year Program Established	2004	2004	2011	-	2005	2007	2008	2006	2006	2010
Program Length	4	4	4	2	4	3	3	4	4	4
Class Size	Original: 32 Current: 32	Original: 24 Current: 32	Original: 32 Current: 32	Original: Current:	Sudbury Original: 32 Sudbury Current: 36 Thunder Bay Original: 24 Thunder Bay Current: 28	Original: 15 Current: 28	Original: 15 Current: 28	Original: 24 Current: 30	Original: 24 Current: 30	Original: 30 Current: 30
Post-Graduate Programs	- UBC Family Practice Residency Training Program – includes site locations across rural BC	- UBC Family Practice Residency Training Program – includes site locations across rural BC	- UBC Family Practice Residency Training Program – includes site locations across rural BC	- Prince Albert Rural Family Medicine Program – residents participate in rural clinics	Family Medicine Residents of the Canadian Shield (FM RoCS), Family Medicine Specialty Training (5 disciplines), Royal College Specialty Training (8 specialties)	- Family Medicine and Family Medicine/ Emergency Medicine streams	- Family Medicine and Family Medicine/ Emergency Medicine streams	- Family Medicine and Family Medicine/ Emergency Medicine	- Family Medicine and Family Medicine/ Emergency Medicine	- 3-year integrated family physician residency program offered out of Saint John with a focus on Emergency Medicine
Affiliated Hospitals/ Regional Health Authorities/ Communities	Vancouver Island Health Authority - Royal Jubilee Hospital; Victoria General Hospital; Nanaimo Regional General Hospital; Cowichan District Hospital;	Northern Health Authority - Prince George – Dr Donald Rix Northern Health Sciences Centre; Fort St. John General Hospital; Dawson Creek and District Hospital; Mills Memorial Hospital; Peace River, Northern	Kelowna General Hospital; Kamloops – Royal Inland Hospital; Vernon Jubilee Hospital; Penticton Regional Hospital	Regina Qu'Appelle Health Region – 17 communities	Algoma District – 8 communities; Cochrane District – 9 communities; Kenora District – 6 communities; Manitoulin District – 4 communities; Muskoka/Perry Sound District – 7 communities; Nipissing/ Temiskaming District – 9 communities; Rainy River District –	Cambridge Memorial Hospital; Groves Community Memorial Hospital (Fergus); Guelph General Hospital, Homewood Health Centre (Guelph); Grand River Hospital, St. Mary's General Hospital (Kitchener); Louise Marshall Hospital (Mount Forest); Palmerston and	St. Catharines General Hospital, Hotel Dieu Shaver Health and Rehabilitation Centre (St. Catharines); Greater Niagara General Hospital (Niagara Falls); Welland Hospital; Niagara-on-the-Lake Hospital; Douglas Memorial Hospital (Fort	Center for Health and Social Services Chicoutimi, Saguenay-Lac St. Jean, Chicoutimi, Jonquière, La Baie, Canton Tremblay, Lake Kénogami Laterrière and Shipshaw	Vitality Health Network – Northwest Zone (Ste-Anne Health Centre), Restigouche, Acadie-Bathurst and Beausejour areas FRANCOPHONE AREAS IN NEW BRUNSWICK	Fredericton Zone – 5 hospitals, 13 facilities; Miramichi Zone – 1 hospital, 9 facilities; 2 hospitals, 9 facilities, 1 education centre; 4 hospitals, 10 facilities

	Campbell River & District General Hospital; Comox - St. Joseph's General Hospital	Rockies, Cariboo-Chilcotin, Fraser Fort George, Stuart-Nechako, and Northwest Regional Hospital Districts			2 communities; Sudbury District – 5 communities; Thunder Bay District – 9 communities 32 First Nations Partnerships	District Hospital, Freeport [a site of Grand River Hospital] and St. Joseph's Health Centre (Guelph)	Erie); Port Colborne Hospital; West Lincoln Memorial Hospital (Grimsby)			
Undergraduate Tuition Fees	\$15,776.00 per year	\$15,776.00 per year	\$15,776.00 per year	\$13,649.00 per year	\$17,850.00 per year	Year 1: \$22,497.04 Year 2: \$21,663.82 Year 3: \$20,861.45	Year 1: \$22,497.04 Year 2: \$21,663.82 Year 3: \$20,861.45	\$8,396.00 per year	\$8,396.00 per year	\$13,818.00 per year
Program Head	Dr. Oscar Casiro (Regional Associate Dean)	Dr. David Snadden (Executive Associate Dean)	Dr. Allan Jones (Regional Associate Dean)	Dr. Gill White (Associate Dean)	Dr. Roger Strasser (Founding Dean)	Dr. Cathy Morris (Regional Assistant Dean)	Dr. Karl Stobbe (Regional Assistant Dean)	Dr. Mauril Gaudreault (Associate Dean)	Dr. Aurel Schofield (Director and Associate Dean)	Dr. John Steeves (Associate Dean)
Website	www.imp.uvic.ca	www.unbc.ca/nmp	www.smp.med.ubc.ca/	www.medicine.usask.ca	www.nosm.ca	www.fhs.mcmaster.ca/mdprog/regional_campuses.html	www.fhs.mcmaster.ca/mdprog/regional_campuses.html	www.usherbrooke.ca	www.usherbrooke.ca	www.newbrunswick.medicine.dal.ca

DISTRIBUTED UNDERGRADUATE MEDICAL EDUCATION SCAN

Brandon Medical Education Feasibility Study

Distributed Medical Education Programs - US & INTERNATIONAL

GENERAL INFORMATION

Program Name	<u>University of Tromsø</u>	<u>James Cook University</u>	<u>Northern Territory Medical Program</u>	<u>Northern Territory Remote Clinical School</u>	<u>Physician Shortage Area Program (PSAP)</u>	<u>WWAMI Model</u>	<u>Rural Opportunities in Medical Education (ROME)</u>	<u>North Carolina Student Rural Health Coalition</u>	<u>Rural Physician Associate Program (RPAP)</u>	<u>Rural Medicine/ Rural Health Training</u>
Program Type	Stand-Alone	Distributed	Distributed	Distributed	Program	Distributed	Satellite	Satellite	Satellite	Residency Program
Partners	N/A	N/A	Flinders University, James Cook University	Flinders University	Jefferson Medical College, Allegheny College, Bucknell University, Franklin and Marshall College, Indiana University of Pennsylvania, Pennsylvania State University, Scranton	University of Washington, University of Wyoming, University of Alaska, Montana State University, University of Idaho	The University of North Dakota – Grand Forks (home), Minot, Bismarck, Fargo campuses	University of North Carolina at Chapel Hill	University of Minnesota at Duluth and Twin Cities	West Virginia University's Eastern Division
University(ies) Granting MD Degree	University of Tromsø	James Cook University	Joint Flinders University/ Charles Darwin University Degree (pre-med) AND Flinders University Degree	Flinders University	Jefferson University	University of Washington	University of North Dakota	University of North Carolina	University of Minnesota	West Virginia University
City/Country	Tromsø, Norway	Townsville and Cairns, Australia	Adelaide, Northern Australia	Katherine, Alice Springs and Nhulunbuy, Northern Australia	Philadelphia, Pennsylvania	Based in Seattle, Washington	Based in Grand Forks, ND	Whitakers, North Carolina	Based in Twin Cities & Duluth, Minnesota	Based in Morgantown, West Virginia
Year Program Established	1968	2000	2011	1996	1974	1971	-	-	-	-
Program Length	6 years after 12 years of schooling	6 years	4 years	6+ months of years 3 and 4	4 years	4 years	24-28 weeks	9 months	One-month rotations in 3 rd and 4 th years	
Class Size	50	64	24	24	15	Variable depending on location	-	-	-	-
Post-Graduate Programs	Masters degree in Public Health	Post-Graduate Diploma of Rural and Remote Medicine; Graduate Certificate in Primary Health Care; Graduate Certificate in Research Methods;	Numerous post-graduate programs offered through the School of Medicine including Indigenous and Remote Health, Remote Health Management, Remote Health	Numerous post-graduate programs offered through the School of Medicine including Indigenous and Remote Health, Remote Health Management, Remote Health	Residency programs in Family Medicine	Various residency programs that focus on primary care and rural practice; Family Medicine Residency Network – comprised of 18 programs located across the WWAMI states; Internal Medicine Spokane; Regional	N/A	N/A	N/A	Rural Family Medicine (Harper's Ferry)

			Practice, Public Health, Public Health Research and Evaluation, and Primary Care	Practice, Public Health, Public Health Research and Evaluation, and Primary Care		Specialty Tracks based in communities in the WWAMI states				
Affiliated Hospitals/ Regional Health Authorities/ Communities	Numerous communities in Northern Norway	Atherton Clinical School; Cairns Clinical School; Douglas Campus; Townsville Mackay Clinical School; Northern Territory Clinical School; Smithfield Campus; Cairns Townsville Clinical School	Royal Darwin Hospital (Darwin); Katherine; Alice Springs; Nhulunbuy; James Cook University (Darwin)	Central Clinic & Alice Springs Hospital (Alice Springs); Wurli Wurlinjang Health Service ("Wurli"), Kintore Clinic, Katherine District Hospital (Katherine); Nhulunbuy	Pennsylvania and Delaware communities	Numerous communities in the states of Washington, Wyoming, Alaska, Montana and Idaho	Devils Lake; Dickinsons; Hettinger; Jamestown; Williston	Bloomer Hill Clinic, Whitaker, NC; North Carolina Area Health Education Centres Program; Whitehead Medical Society, Medical Alumni Association	Over 100 communities in Minnesota (students see patients in clinic, hospital, emergency room, nursing home, hospice, home and the community)	Robert C. Byrd Health Sciences Centre; Martinsburg; Harper's Ferry; Morgantown
Undergraduate Tuition/Fees	Students do not pay tuition fees in Norway	<i>Domestic Students:</i> variable <i>International Students:</i> \$36,000 per year	Variable rates, depending on residency/course selection	Variable rates, depending on residency/course selection	\$48,073 per year (2011-12 rates)	1 st Year: \$25,320.00 2 nd Year: \$25,320.00 3 rd Year: \$32,962.00 4 th Year: \$32,962.00 - Variable depending on WWAMI location	\$24,722 per year	In-state: \$13,971 per year Out-of-state: \$39,326 per year	1 st year: \$40,204 2 nd year: \$38,602 3 rd year: \$37,081 4 th year: \$25,002 Rebates applicable if in-state	In-state: \$23,503 per year Out-of-state: \$50,101 per year
Program Head	Dr. Inger Njølstad (Assistant Dean, Medical Education)	Dr. Richard Murray (Dean)	Dr. Paul Worley (Dean, School of Medicine); Mrs. Mary Peacock (Executive Officer – Darwin); Mr. Jeff Veness (Executive Officer – Alice Springs)	Dr. Paul Worley (Dean, School of Medicine);	Dr. Howard Rabinowitz (Director, PSAP)	WWAMI Assistant Deans: Dr. Richard Hillman (Wyoming); Dr. Deborah Harper & Dr. John McCarthy (Eastern & Central Washington); Dr. Tom Nighswander (Alaska); Dr. Jay Erickson (Montana); Dr. Mary Barinaga (Idaho)	Dr. Roger Schauer (ROME Director)	Dr. Michael Pignone (Faculty Advisor); Dr. Amy Denham (Faculty Advisor)	Dr. Kathleen Brooks (RPAP Director)	Dr. Arthur Ross (Dean, School of Medicine)
Website	http://uit.no/	http://www.jcu.edu.au/smd/medicine/	http://www.flinders.edu.au/medicine/sites/nt-clinical-school/nt-medical-program/	www.flinders.edu.au/medicine/sites/nt-clinical-school/	http://www.jefferson.edu/fammed/	uwmedicine.washington.edu/Education/WWAMI	http://www.med.und.edu/familymedicine/rome/	http://www.med.unc.edu/md/orgs/ncsrhc	http://www.med.umn.edu/RPAP/	www.hsc.wvu.edu/som/Rural-Medicine

WORKSHOP PRESENTATIONS

**Workshop on Options for
Distributed Medical Education
(DME) in Manitoba**

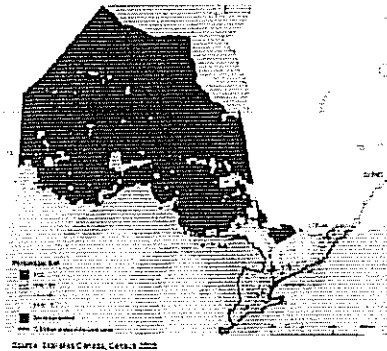
**Brandon University
Brandon, Manitoba, Canada**

Videoconference presentation: DME Resources
Presenter: Ken Adams, CAO, NOSM

Saturday, January 21, 2012

1

Ontario's Population Distribution by Dissemination Area, Census 2006



2

**Northern Ontario School of
Medicine**

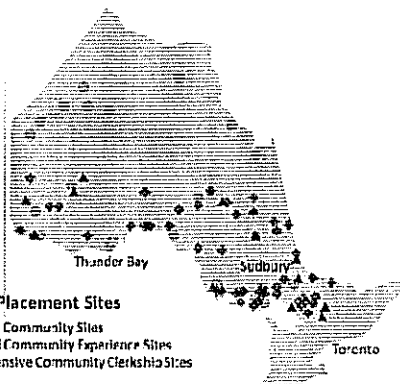
- Faculty of Medicine of Lakehead
- Faculty of Medicine of Laurentian
- Social Accountability mandate
- Commitment to innovation

3

**Distributed Community
Engaged Learning at NOSM**

An instructional model that allows widely distributed human and instructional resources to be utilized independent of time and place in community partner locations across the North.

4



All Placement Sites

- ▣ Aboriginal Community Sites
- ★ Integrated Community Experience Sites
- ▲ Comprehensive Community Clerkship Sites

Integrating education and research for a healthier North. www.nosm.on.ca

5

NOSM Financial Model

- In 2002 a Business Plan was developed by PricewaterhouseCoopers for NOSM (IMC).
- Recognizes the unique operating challenges facing a northern institution and the distributed model of delivering medical training (two (2) campuses & multiple teaching sites/rural areas).
- Unlike other medical schools which usually receive some forms of subsidy by the host university ("indirect" costs), NOSM is 100% responsible for both the direct and indirect costs (see also Appendix A).

6

NOSM Funding Model

- NOSM receives the majority of its total operating revenue from the Gov't of Ontario (approx. 88%):
 - MTCU funds the UME component (via Multi-Year Accountability Agreement – formula based).
 - MOHLTC funds the PGE component (via Multi-Year Transfer Payment Agreement – formula based).
- Tuition provides approximately 10-11%.
- Significant reliance on government funding (which is not adjusted for inflation, collective bargaining increases, etc.) places NOSM in an annual structural deficit situation.

7

Resource Premium for DME

- The resource premium for DME UME at NOSM is approximately 15-20%. Major components:
 - Student and staff travel between campuses/communities (i.e., air travel).
 - Student accommodation costs while living in communities.
 - Upfront and ongoing technology costs to link the campuses and communities
 - On-site "Community" coordination costs: (Site Administrative Coordinators & Site Liaison Clinicians; LNG's, etc.).
 - On-campus "School-Wide" coordination costs: (Board, Staff, Facilities, etc.)

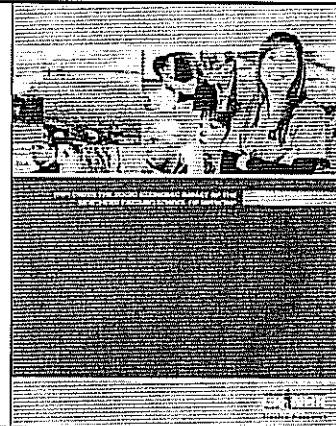
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NOSM Technology Savings!

"Rough" estimate of "potential" savings by using technology:

- 509 teaching hours in UME are potentially saved annually
- 194 sessions of 460 rely on video conferencing (42% of UME program)
- Other potential savings (Intangibles);
 - Technology facilitates communication and collaboration to support the "Whole School" approach at NOSM.

9



10

NOSM Socioeconomic Impact

- \$67-82M new economic activity
- 245 new jobs
- Economic development
- Host Universities' status raised
- Improved Health HR recruitment
- Communities feel empowered

11

Optimum Catchment Population/ Resource Base for DME Campus

- Northern Ontario is geographically vast at over 802,396 sq. km. with a relatively small population of 805,247 (Source: Statistics Canada 2010).
- NOSM's model of DME has led to active involvement of more than 70 communities.
- Lakehead (West) and Laurentian (East) campuses are approximately 1,000 km apart.
- A key determining factor for a DME campus should be the availability of a critical mass of physicians.

12

Hospitals/Community Resources to Quality as a NOSM Teaching Site

- NOSM's teaching model is highly distributed; Involves community clinical settings & hospital based experiences.
- The IBM Report – *Assessment of the Impact of NOSM Teaching on Northern Ontario Hospitals* (October 2004).
 - Direct capital implications include space required for student lockers, lounges, study/computer access, on-call & exam. rms.
- Site resource requirements for rural clerkships and community settings include:
 - Videoconferencing facilities, telehealth facilities, internet access, desk, computer.

13

NOSM Outcomes

- CaRMS - 100% matched
- 63% rural family medicine
- 33% general specialties
- 40% residency with NOSM
- "deep roots" in Northern Ontario
- >65% of NOSM residents stay

14

Partnerships & Relationships

- Communities of the North
- Universities and Colleges
- Hospitals and Health Services
- OTN, KOTM and Contact North
- Other Medical Schools

15

Benefits of NOSM

- More generalist doctors
- Enhanced healthcare access
- Responsiveness to Aboriginal, Francophone, rural, remote
- Inter-professional cooperation
- Health research
- Broader academic developments
- Economic development

16

Questions & Answers?

THANK YOU!

17

Appendix "A"

Medical School Direct vs Indirect Costs

- Direct costs, according to the Ontario medical schools' survey (2001), consist of:
 - Faculty
 - Support staff
 - Development and maintenance of web-based curriculum
 - Operating expenses: phone, computer, office supplies, etc.
 - Program costs: conference, seminars, cadavers, lab supplies, etc.
 - Purchase of services: clinical skills training, patient simulation, training, etc.
- Indirect costs, cited in conjunction of the above survey, include:
 - Library services
 - Physical plant services
 - IT services
 - Registration services
 - Student services
 - Administrative services.
- Ontario medical schools attribute 32-38% of the total cost for medical education to indirect costs while acknowledging that it may vary greatly among medical schools and jurisdictions.
- Since there is no uniform definition, "direct" costs in one jurisdiction may include costs considered "indirect" in other jurisdictions.

18

Appendix "B"
Resources - NOSM On-Campus Facilities

Building	Available SQ FT
ATAC 6 th Floor (Lakehead)-New space	18,618
Medical School West (Lakehead) – New	34,119
Balmoral Street Centre (Lakehead) – existing University space	10,000
Medical School East (Laurentian)-New	65,222
Health Sciences Education Resource Centre (Laurentian) – existing University Space	20,000
TOTALS	147,059

- Approximately \$28M provided by MTCU to build new facilities (\$12.9M at East Campus and \$15.1 at West Campus).
- NCHFC provided approximately \$5M (East Campus)
- FEDNOR contributed \$6M for the Research Labs (East & West Campuses)
- Total Capital Project Costs: \$39M

18



Plan to be in Northern Ontario on October 9-14, 2012

Mark Your Calendar!
 Community Participation in Education, Research and Service

The Wenzel World Rural Health/The Network: Towards Unity for Health joint conference will be hosted in Thunder Bay, Ontario by the Northern Ontario School of Medicine, October 9 to 14, 2012.

Conference details will be available soon at www.nosm.ca/rendez-vous

20

Governance in Distributed Medical Education

Joanna Bates
University of Manitoba/University of Brandon
workshop
January 2012

Governance: definition

Governance is the process whereby societies or organizations make decisions, determine whom they involve and how they render account.

(Institute on Governance, Canada)

Leadership.....

- Leadership is a process by which a person influences others to accomplish an objective and directs the organization in a way that makes it more cohesive and coherent.
- Leadership is a process whereby an individual influences a group of individuals to achieve a common goal.

Management...

- Is the organization and coordination of the activities of an enterprise in accordance with certain policies and in achievement of clearly defined objectives.

Distributed site

Faculty of Medicine

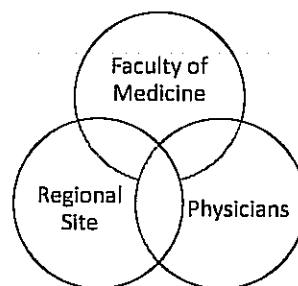
Physicians

"Good governance"...

- Understands the values of the constituents
- Articulates the mission well
- Maintains trust through communication, accountability and transparency
- Makes decisions guided by the core mission
- Proceeds and develops in a manner consistent with core values
- Defines roles clearly
- Owns jurisdictional authority to act

Classic tensions in governance

- Central cohesion or local autonomy?
- One leader or multiple leaders?
- Personality-driven leadership or structural mandate?
- Stability or flexibility?
- Standardization and routinization or innovation?
- Directive or consensual?
- Unity or differentiation?
- Equity or efficiency?



Collaborative governance

- **Collaborative governance** is a process and a form of governance in which participants (parties, agencies, stakeholders) representing different interests are collectively empowered to make a policy decision or make recommendations to a final decision-maker who will not substantially change consensus recommendations from the group

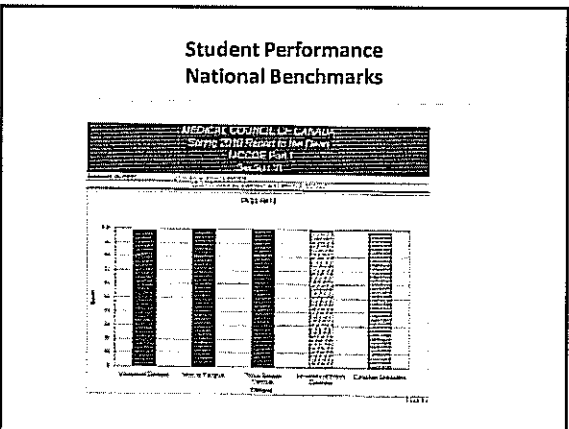
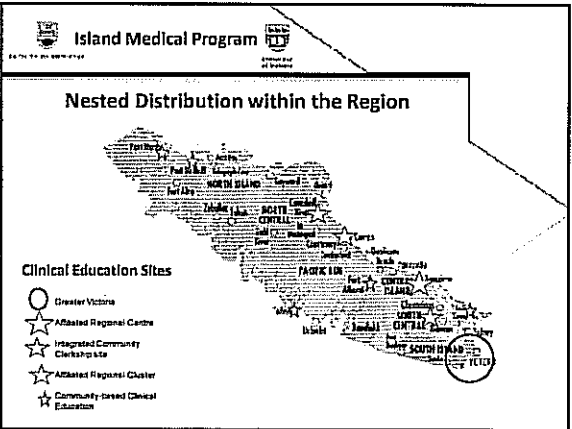
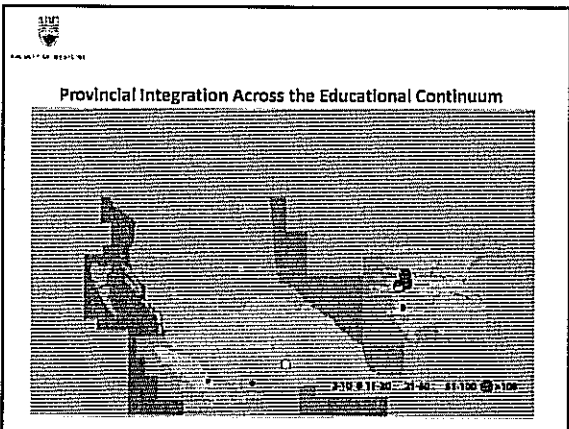
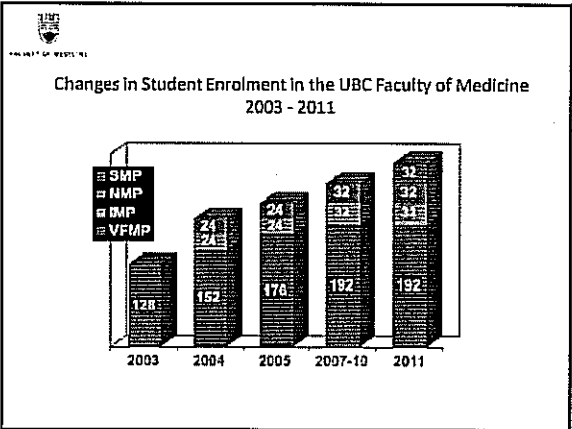
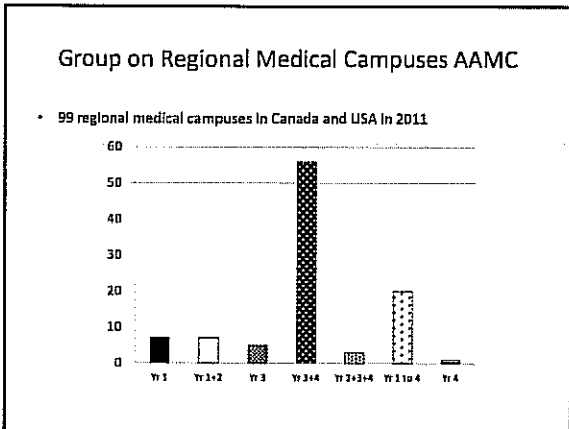
The University of British Columbia Centre for Health Education Scholarship

Shaping the theories
and activities of learning
in the health professions

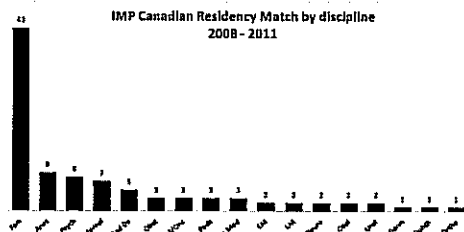


DME Educational Models

- Regional Medical Campuses in USA and Canada
- DME in British Columbia
- Accreditation Issues
- Educational Technology



Student Performance National Benchmarks



ACCREDITATION ISSUES RELATED TO DISTANCE LEARNING: THE PERSPECTIVE OF CACMS/LCME

- Medical education should occur in a community of learning and scholarship where students experience the continuum of medical education (UG/PG/CPD) and research, and where faculty are collaboratively involved in planning, implementing, and evaluating the educational program.
- Medical schools should provide opportunities for experiential learning and dynamic face-to-face interaction between students and faculty, in support of students' acquisition of knowledge, skills, and attitudes/values specified in the programs' educational objectives.

ACCREDITATION ISSUES RELATED TO DISTANCE LEARNING: THE PERSPECTIVE OF CACMS/LCME

- Medical school faculty and administrators should be responsible for the education provided to their students.
- Medical schools should accept the obligation to provide services to meet student needs and the resources to support student academic success.

CHARACTERISTICS TO AVOID

- A curriculum taught substantially or completely by distance learning.
- An educational program which is not developed and implemented through collaborative faculty effort and where student education occurs in isolation.
- A model where the chief academic officer and the faculty are not responsible for the educational program or for medical school policies related to the educational program.
- A program that does not:
 - provide access to the full range of student services,
 - allow students to have input into the educational decision-making process
 - apply a single standard for decisions about student academic progress.
- <http://www.lcme.org/distancelearning.pdf>

Technology Enabled Learning

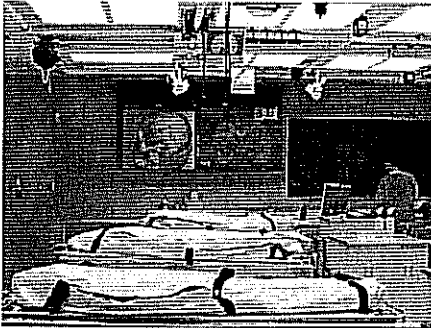


Uses of Technology

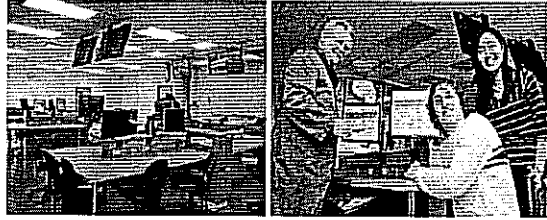
- Planning:
 - Meetings
 - Team rooms
- Administration:
 - Curriculum meetings
- Faculty development
 - Tutor meetings
- Instruction
 - Lectures
 - Labs
 - PBL groups
- Student support
 - Student connection
 - Student counseling
- Evaluation
 - Exams
 - Faculty/course evaluation



Gross Anatomy Lab

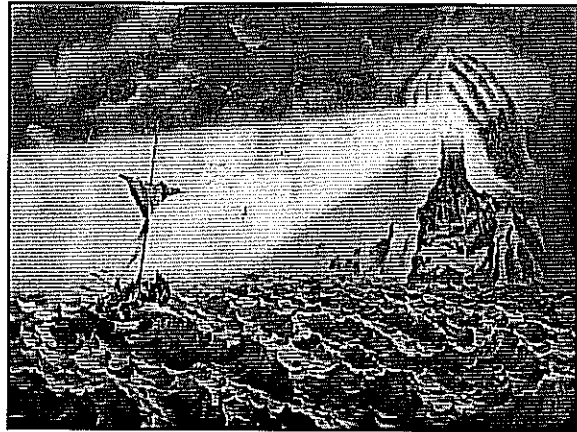


Multipurpose Lab:
Histology, Pathology



EDUCATIONAL TECHNOLOGY

- Strategic Plan, Guiding Principles
- Range of Technology
 - Synchronous Communication (videoconferencing)
 - Curriculum Management Tools
 - Educational Technology Tools (virtual patients, simulation)
 - Web-based learning resources
- Ongoing Monitoring and Improvement
- Knowledge Sharing, Copyright, and Intellectual Property
- Learner Engagement



Medical Education Study Workshop
 Brandon University,
 Brandon, Manitoba Canada
 January 19-21, 2012

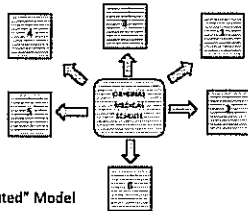
“DISTRIBUTED MEDICAL EDUCATION”

Joel Lanphear, PhD
 Senior Associate Dean
 CMU College of Medicine

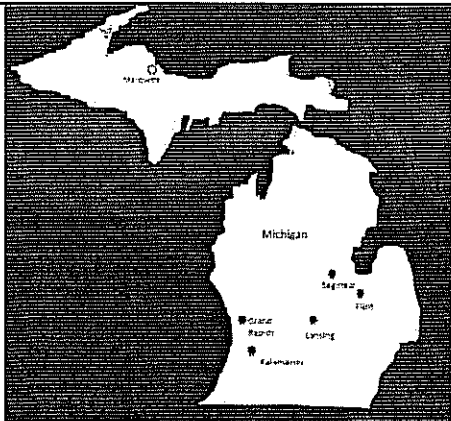
WHY START A MEDICAL SCHOOL?

- The need for additional resources, i.e., clinical, space, faculty, patients;
- To impact the distribution of physician manpower;
- To meet new mandates, i.e., social accountability
- As political initiatives or promises at the provincial or federal level;
- To expand the educational offerings of the University;
- To enhance the “prestige” of an institution;
- For profit;
- Some combination of these.

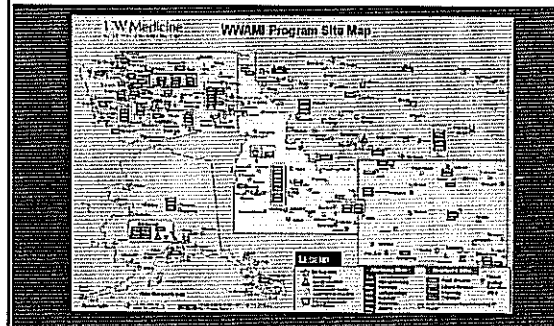
REGIONAL CAMPUS MODEL



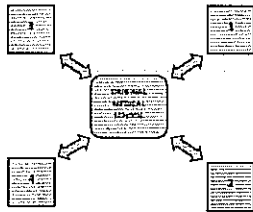
- Oldest “Distributed” Model
 - Year 1 / 2
 - Year 3 / 4
 - May become 4 year program
- Uniform Curriculum
- Single Accreditation
- Often in an “Existing” University [example, Indiana University]
- Geographically Separate



WWAMI



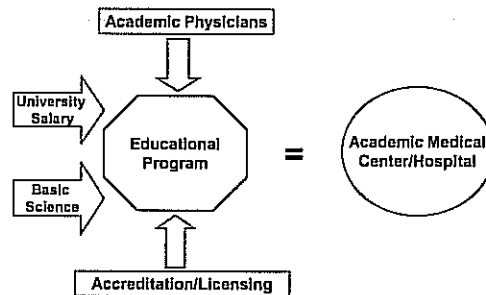
BRANCH CAMPUS MODEL



- New Distributed Model
- May "morph" from Regional Model (example MSU Grand Rapids)
- Usually a 4 year program
- May have a separate curriculum (track)
- Integrated accreditation process

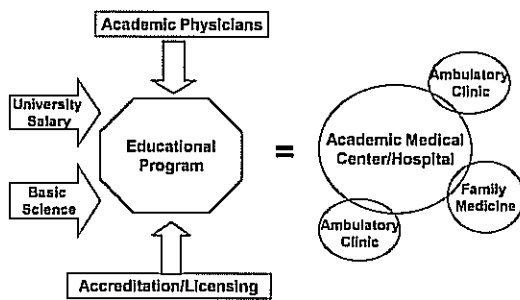
DISTRIBUTING MEDICAL EDUCATION Metro Centric

Curriculum Forces Site of Training



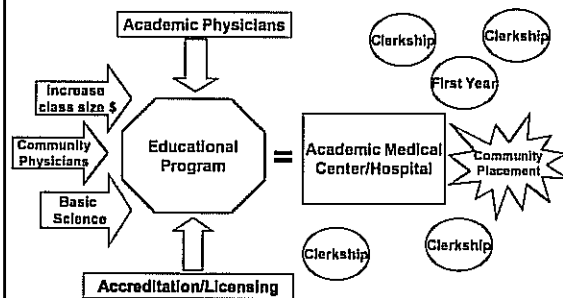
DISTRIBUTING MEDICAL EDUCATION Away from the Academic Medical Center

Curriculum Forces Site of Training



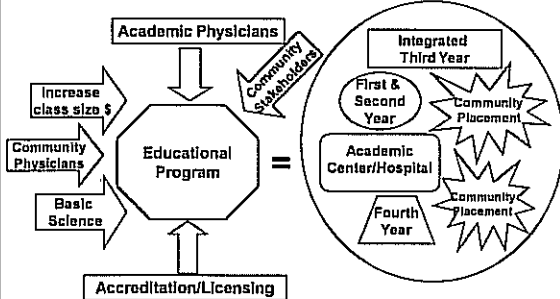
DISTRIBUTING MEDICAL EDUCATION Into the Community

Curriculum Forces Site of Training



DISTRIBUTING MEDICAL EDUCATION Further Community Distribution

Curriculum Forces Site of Training



QUESTIONS
AND
COMMENTS

DME AT MCMASTER

DME DEVELOPMENT AT MCMASTER

2002	PG – Implementation of ROMP funded FM PGY3 positions as well as specialty rotations.
2002	MacCARE – UG & PG rotations. Family Medicine Rural residency Program – growth throughout
2007	UG – Opening of Waterloo Regional Campus
2008	UG – Opening of Niagara Regional Campus Opening of Brant-Six Nations Clinical Education Centre
2010	Development of CaRMS matched positions for Psychiatry and Internal Medicine in Kitchener-Waterloo
2011	Opening of Halton Clinical Education Campus

MEC and CEC Sites

Medical Education Campuses (MEC's) provide a comprehensive medical education program for Undergraduate and Postgraduate learners

Clinical Education Campuses (CEC's) provide clinical medical education for Undergraduate and Postgraduate learners

PRINCIPLES OF DME AT MCMASTER

- × Funding follows the learner
- × McMaster is responsible for support and the structure of the learning environment, and the administration of clinical placements in MECs
- × DME is focused on our regional campuses with integration between UG and PG rotations
- × DME outside of the regional campuses is looking at developing/augmenting educational experiences for all McMaster learners

MACCARE

Program Philosophy

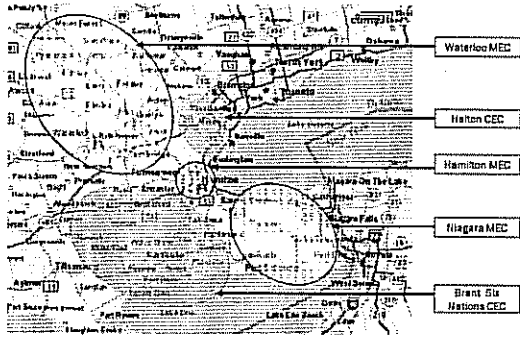
- × Purposeful placement of medical students in a rural setting
- × Provide teaching capacity not available in Hamilton as enrollment expanded.

MACCARE

Challenges over the decade

- × Funding rules; rurality index; rotation time restriction
- × Funding model has evolved with new TPA's
- × Overlapping territories of MacCARE and ROMP

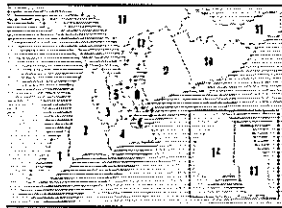
MEC and CEC Regional Sites



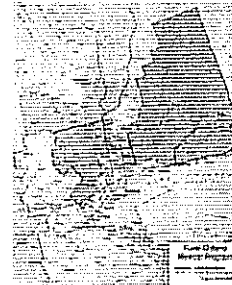
MEC and CEC CLINICAL TEACHING SITES

Waterloo Regional Campus WRC MEC - (LHIN 3)	Halton Clinical Education Campus Halton CEC - (LHIN 6)
Cambridge Memorial Hospital, Cambridge David Ross Hospital, Kitchener St. Mary's Community Hospital, Fergus St. Joseph's Hospital, Guelph Humberwood Health Care Centre, Guelph North Wellington Health Corporation Mount St. Vincent Paramedic Site St. Mary's General Hospital, Kitchener St. Joseph's Health Care, Guelph	Halton Healthcare Services Chedoke Division Hospital, Oakville Milton District Hospital, Milton Georgetown Hospital, Oakville Hills
Brant St. Nations Clinical Education Campus BSN CEC - (LHIN 4)	Niagara Regional Campus NRC MEC - (LHIN 4)
Brant Community Healthcare System Brant General Hospital, Brantford The NRC, Port Hope Hollandbrook Memorial Community Norfolk General Hospital, Chatham St. Michael's Healthcare, Chatham West Hollandbrook General Hospital, Niagara Falls	Hotel Dieu-Claremont Health & Rehab, St. Catharines Niagara Health System Chedoke Division Site, St. Catharines Chedoke Memorial Hospital, Fort Erie Chedoke Niagara Centre, Niagara Falls Niagara-on-the-Lake Site, Niagara-on-the-Lake Port Colborne General, Port Colborne St. Catherine General, St. Catharines Volant Site, Welland West Lincoln Memorial Hospital, Simcoe

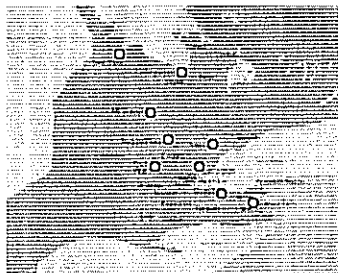
LOCAL HEALTH INTEGRATION NETWORKS



RURAL ONTARIO MEDICAL PROGRAM




FAMILY MEDICINE RESIDENCY Sites



○ Family Medicine Community Residency Sites


UG and PG Enrolment

Year	Hamilton MEC			Waterloo MEC			Niagara MEC		
	UG	PG-FM	PG-RC	UG	PG-FM	PG-RC	UG	PG-FM	PG-RC
2000 - 2001	128	37	49	--	--	--	--	--	--
2007 - 2008	146	43	93	24	7	--	--	--	--
2008 - 2009	146	42	110	31	12	--	15	7	--
2009 - 2010	146	46	118	28	11	--	20	5	--
2010 - 2011	147	51	114	28	15	--	18	8	--
2011 - 2012	147	61	116	28	17	3	18	9	--


AFMC
 The Association of Faculties
 of Medicine of Canada


Data on Distributed Medical Education in Canada
 Steve Slade, VP Research and Analysis CAPER-ORIS, AFMC

Brandon Medical Education Study Workshop
 January 18-21, 2012
 Brandon, Manitoba, Canada

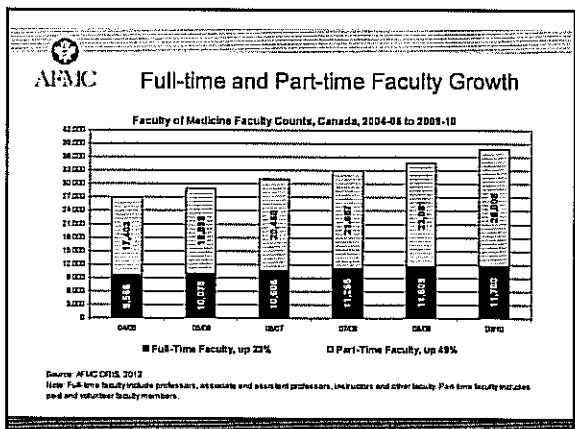
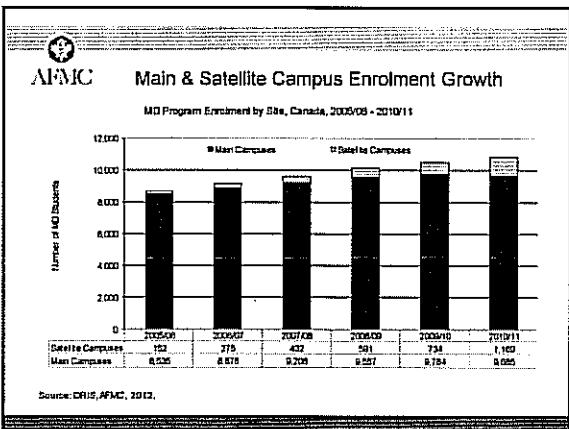
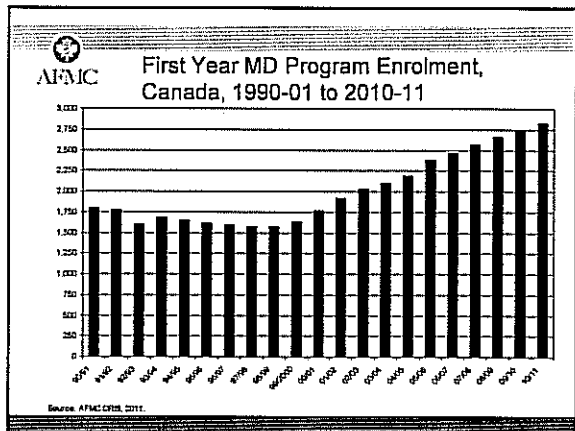

AFMC

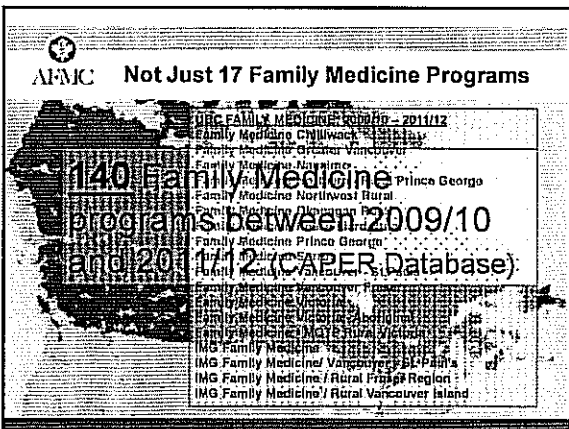
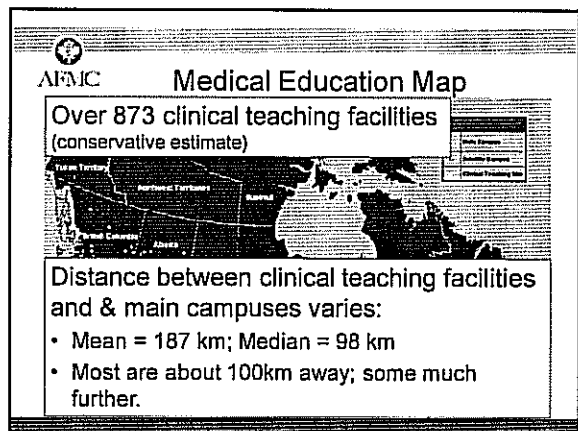
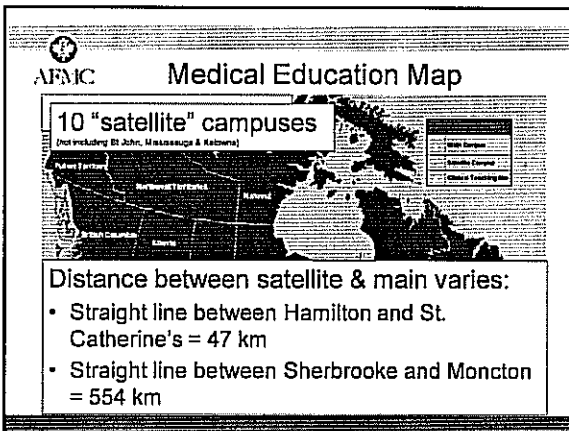
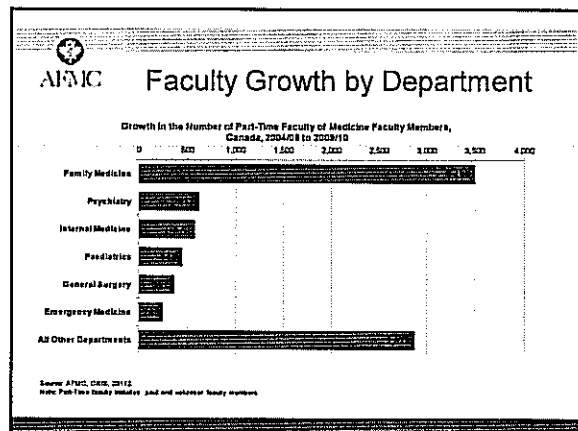
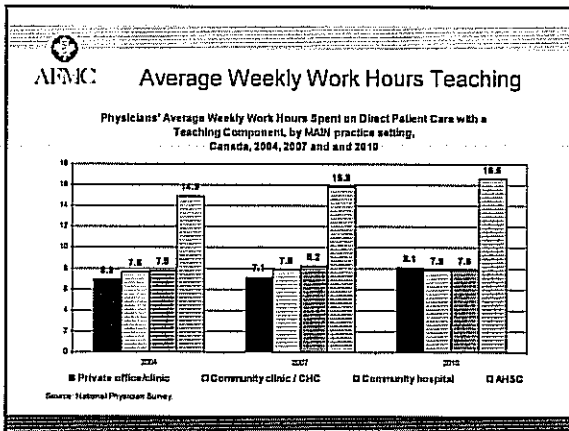
Caveat and overview

- The nomenclature is complex. Upfront apologies if any words/phrases are jarring.
 - Distributed medical education, community based education, community engaged medical education, integrated learning, etc
 - Satellite campus, main campus, parent university, teaching site, AHSC
- What do current data suggest about DME developments in Canada?
- What do we currently know and measure about physician mobility and practice location?


AFMC

What do current data suggest about DME developments in Canada?
DATA RELATED TO DME

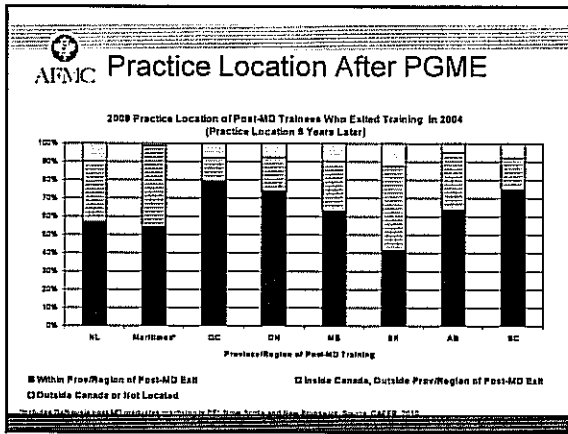
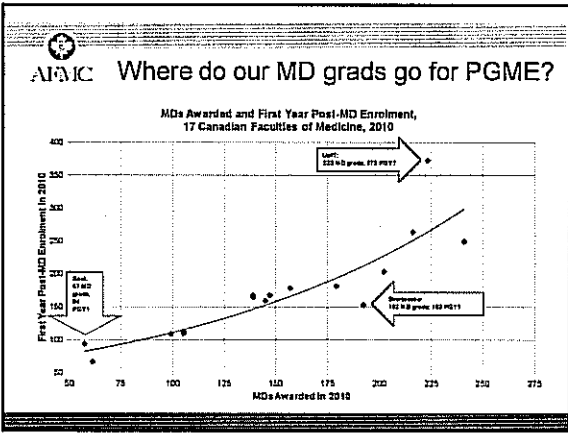
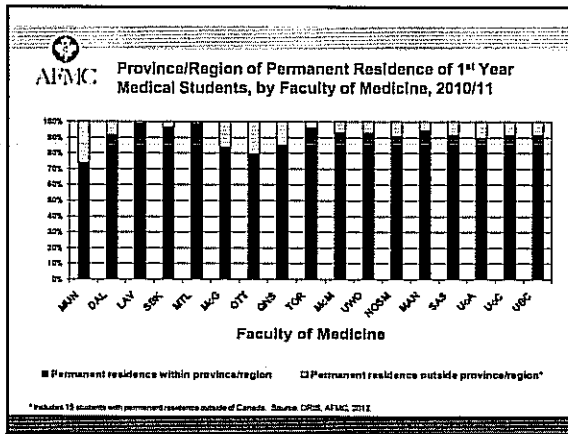
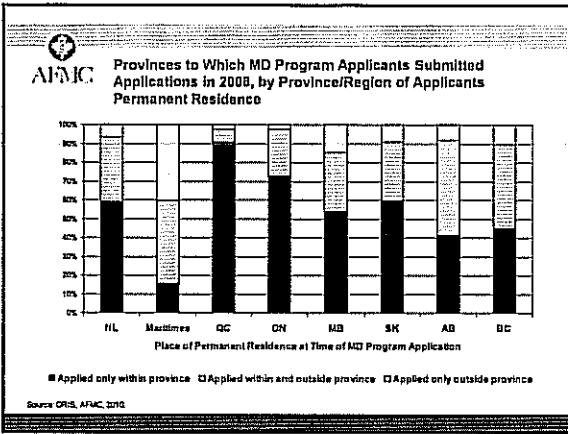




AFMC

What do we currently know and measure about physician mobility and practice location?

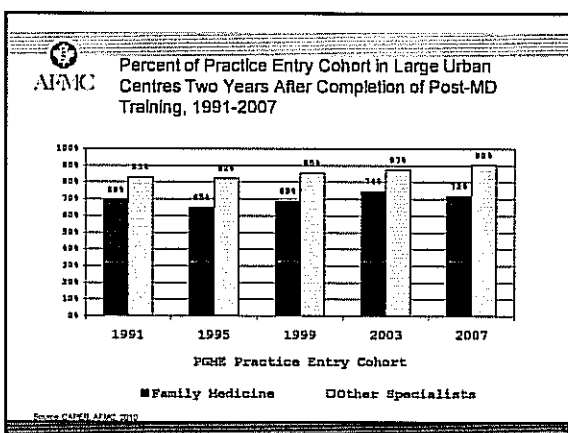
DATA RELATED TO MOBILITY AND PRACTICE LOCATION

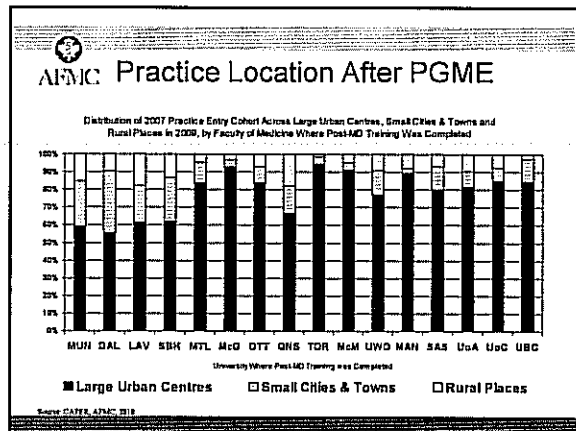
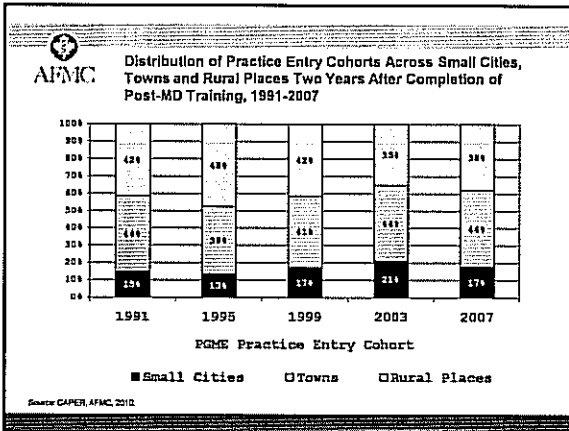


AFMC Working Definitions: Large Urban Centre, Small City, Town and Rural Place

- Large Urban Centres are census metropolitan areas with population of at least 100,000
- Small Cities are tracted census agglomerations with urban core population of 50,000 – 99,999
- Towns are untracted census agglomerations with urban core population of 10,000 – 49,999
- Rural Places are metro influenced zones outside of census metropolitan areas and census agglomerations, as well as the Territories

Source: Postal Code Conversion File (PCCF) Reference Guide, Statistics Canada, 2009.





- AFMC** Beyond the data bytes...
- Faculty-specific and collaborative studies
 - UBC & U Sherbrooke collaboration to study regional campuses
 - NOSM-CRaNHR tracking study
 - MUN Learners and Locations
 - CHEC DME community
 - Newly-formed AFMC DME Resource Group

Distributed Medical Education Governance - Dalhousie

Workshop on Options for Distributed Medical Education (DME) in Manitoba

January 18th to 21st, 2012

Brandon University
Brandon, Manitoba, Canada



Dalhousie - DME

- Long history – back to 50's
- Primarily in NB
- 1990's led by FM residency programs- key factor
- 110 teaching sites
- Developing inventory/nomenclature
- Now 2 campuses - Launched DMNB 2010
- 7 FM residency program sites
- Int Med and CFPC EM programs in NB (more?)
- Pilot LIC – Mirimachi 2012



Dalhousie DME - Complex

- 3 provinces
- 6 provincial government departments
- 3 licensing authorities; medical societies
- 12 health authorities
- 3 medical schools: Dal; MUN; Sherbrooke
- Considerable investment in DME infrastructure in NB and PEI; less so in NS



Government Relations

- Dean; Senior Associate Dean, Education; Associate Dean Operations and Policy
- All do NS; focus on Funding; AFP's
- SADE: NB & PEI
- Tri-Provincial Committee: UGME; PGME; Health and Education from all 3 provinces
- Primarily communication with some collective problem solving but no real authority



DMNB

- Tri-partite agreement – "contract"
Dalhousie
UNBSJ
NB Government
- Bi-lateral agreement
Dalhousie
UNBSJ
- Similar model at Sherbrooke/U de M
- Dalhousie "centric"; UNBSJ – host
- "Dal Med NB"
- Funding is a 5 year grant held by MPHEC and transferred to both Universities according to annual budget



DMNB

Accountability and Oversight Committee

- 3 members Dalhousie University including Chair
- 2 members UNBSJ
- 2 members NB government
- 1 member Horizon Health Network (non-voting)
- Associate Dean DMNB (reporting)
- Financial accountability (sub-committee)
- Outcomes



DMNB Implementation

- Implementation Committee
 - key faculty and administrators
 - large NB Community Faculty presence
- Started while negotiations were taking place (2008)
- 14 Task Forces
- Biggest challenge – main campus



DMNB Key Lessons

- Engage medical educators
- Engage community
- Then Universities
- Then Government
- Everyone at the table
 - Errors: clinicians, NS Government
- Ensure technology/new resources serves everyone's needs
- Appointment and Promotion must serve all well
- **Communicate, Communicate, Communicate**



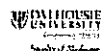
Academic Governance

- NB designated positions on multiple committees
 - Faculty Council
 - Curriculum Committees
 - Progress Committee
 - Search and Survey
- Challenge is engagement and no AFP's



Nova Scotia Medical Education Network

- 8 rural District Health Authorities
- MOU's; Affiliation Agreements
- Provided funding for Medical Education Leader and administrative support
- Partnership
- Remuneration for clinical teaching



The DME Story: An International Perspective

Paul Worley

January 2012
Brandon, Manitoba

Overview

- History of Distributed Medical Education
- International Evidence based rationale for distributed medical education
 - Educational principles and outcomes
 - Health Service improvement
 - Social Accountability
 - Professional Development
- International Models of Distributed Medical Education
- Conclusions

Flinders
UNIVERSITY
Leading in Learning

History

- Distributed apprenticeship
- Universities and colleges
- Napoleon Boneparte

Flinders
UNIVERSITY
Leading in Learning

History

- Distributed apprenticeship
- Universities and colleges
- Napoleon Boneparte
- Flexner contraction to academic medical centres

Flinders
UNIVERSITY
Leading in Learning

History

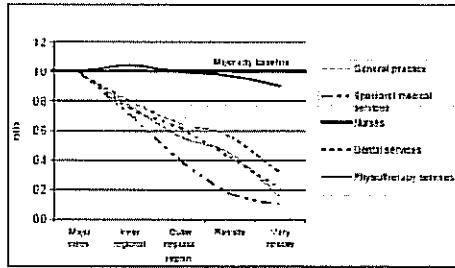
- Distributed apprenticeship
- Universities and colleges
- Napoleon Boneparte
- Flexner contraction to academic medical centres
- 1970s onwards expansion - medical workforce and community pressure

Flinders
UNIVERSITY
Leading in Learning

Medical Workforce Pressure

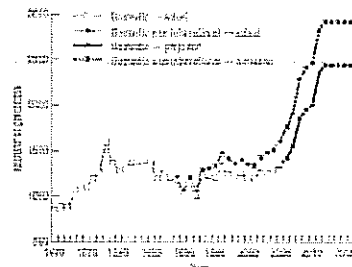
- 1996 Banff Conference on the Canadian rural workforce crisis
 - called for "an increased exposure to rural medicine for all Canadian undergraduates in response to the haemorrhaging of doctors from rural practice"

Flinders
UNIVERSITY
Leading in Learning



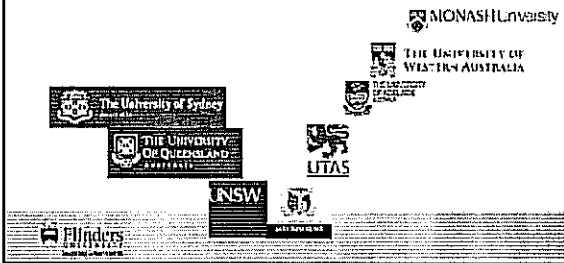
Productivity Commission, 2005

Australian university medical school graduates: actual and projected, 1970-2016

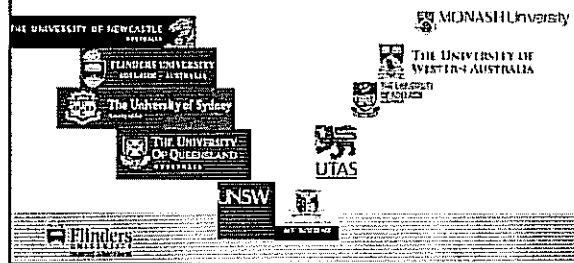


Joyca, Stoelwinder, McNeil and Pilerman, MJA 2007

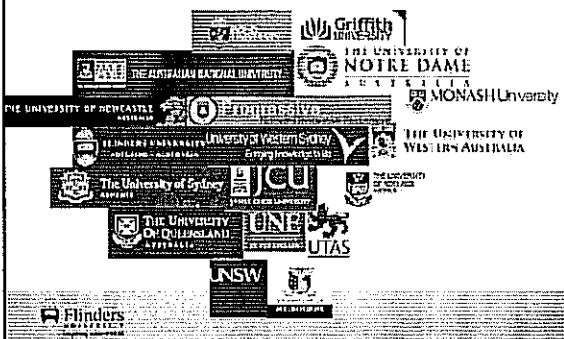
Australian Medical Schools 1970



Australian Medical Schools 1975



Australian Medical Schools 2005



Ruralisation of medical schools 1997

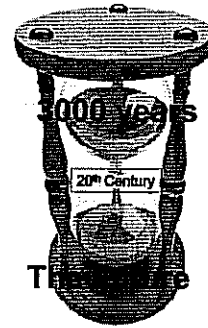
- University Departments of Rural Health
 - Increase rural intellectual capital
 - Increase rural Multi-disciplinary training
 - Facilitate rural research



Department of Health and Ageing



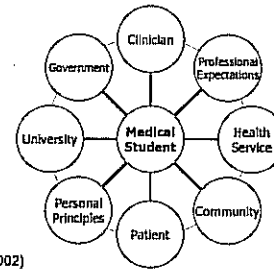
- Ruralisation of medical schools 2001
- Nine new Rural Clinical Schools – the Revolution
 - Based on UNSW and Flinders models
 - 25% of students to undertake at least one clinical year in a single regional Health and Ageing community
 - 300 new training positions to find in 18 months
 - Disruptive technology



International Evidence for Distributed Medical Education



The 4R model of Medical Education



(Worley 2002)



Educational Rationale

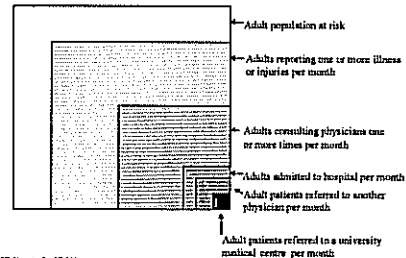
"the students should be where the patients are"

– William Osler

Where are the patients?



Monthly prevalence estimates of illness in the community. Roles of physicians, hospital, and university medical centres providing medical care to patients 16 years and older.



Source: (White et al., 1961)

Educational Rationale

How can you adapt to regional and community teaching environments?

CLIC
 Consortium of Longitudinal Integrated Clerkships
 THEnet
 Training for Health Equity Network



Educational rationale

Surgery	Medicine	O&G	Paeds	Psych/GP
---------	----------	-----	-------	----------



The Parallel Rural Community Curriculum (PRCC)

Surgery	Medicine	O&G	Paeds	Psych/GP
---------	----------	-----	-------	----------

(Worley, Stagy, Pridoux et al., 2000, Med Ed)

Surgery
Medicine
O&G
Paeds
Psych/GP



Educational Rationale

- Experience common conditions and procedures



Common Conditions and Procedures

- Kamien Inventory (Culhane et al., 1992, MJA)
 - 140 items
 - 78 common procedures
 - 62 common conditions
 - Likert scale Rating
 - experience
 - perceived confidence/competence
 - Week 35



Common Conditions and Procedures

- Increased experience of Common Conditions
 - (Wilcoxon W = 579319, Z = -4.347, p < 0.001)
- Greater experience with common procedures
 - (Wilcoxon W = 917133.5, Z = -3.715, p < 0.001)
- Greater confidence in common procedures
 - (Wilcoxon W = 911888.5, Z = -2.617, p = 0.009)



Educational Rationale

- Experience common conditions and procedures
- Greater patient contact



Greater Patient Contact

Student Activity	Location				Statistics	
	FMC	Riverland	NT	Combined	Chi-square 2 df	Fisher's Exact FMC v Riverland
Patient Contact	22' 11"	27' 43"	21' 10"	23' 11"	P < 0.001	P < 0.001
Individual Study	27' 3"	25' 33"	25' 22"	25' 33"	P = 0.08	P = 0.5
Tutorials	6' 3"	0' 13"	10' 55"	7' 54"	P < 0.001	P < 0.001
Lectures	2' 31"	4' 12"	3' 52"	3' 12"	P < 0.001	P < 0.001
Sleep	53' 45"	57' 50"	58' 18"	55' 57"	P < 0.001	P < 0.001
Recreation	21' 10"	18' 49"	23' 31"	21' 20"	P < 0.001	P = 0.001
Family time	5' 12"	4' 2"	0' 50"	3' 42"	P < 0.001	P = 0.002
Employ't	1' 0"	0' 0'(6)	0' 0"	0' 40"	P < 0.001	P < 0.001
ADL/Other	25' 54"	20' 30"	23' 31"	25' 42"	P < 0.001	P < 0.001



Greater Patient Contact

Activity Site	Location			Total
	FMC	Riverland	Darwin	
Hospital	14.2	10.3	12.5	12.9
GP	0.2	13.8	0.3	3.2
Student's home	16.4	37.2	53.6	56.3
Lecture /Tutorial Room	7.8	5.3	11.1	8.2
Other/Library	21.5	13.4	20.6	19.5
Total	100	100	100	100



Educational Rationale

- Experience common conditions and procedures
- Greater patient contact
- Value clinical learning more highly



Value clinical learning more highly

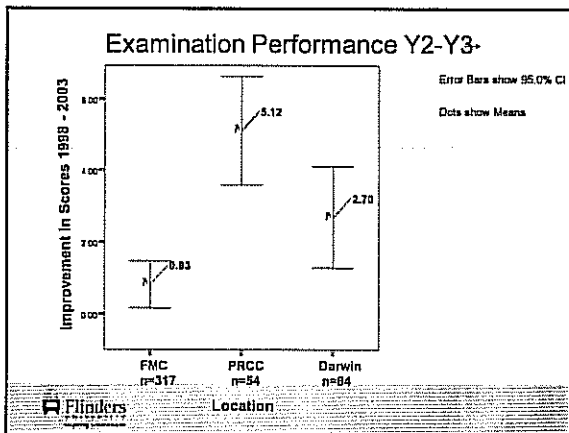
Location	Educational Value	Learning Site			
		Hospital	General Practice	Student's home	Lecture /Tutorial Room
FMC	Very Low	2	0	3	10
	Low	18	0	2	7
	Moderate	36	0	14	28
	High	37	0	63	37
	Very High	17	0	18	18
Riverland	Very Low	2	1	0	9
	Low	8	8	0	14
	Moderate	45	48	74	48
	High	38	41	26	29
	Very High	7	1	0	0
Darwin	Very Low	3	0	1	4
	Low	13	0	2	21
	Moderate	24	0	22	25
	High	52	0	58	43
	Very High	8	0	17	7



Educational Rationale

- Experience common conditions and procedures
- Greater patient contact
- Value clinical learning more highly
- Comparable or improved academic performance





Comparison of longitudinal learning between traditional block clerkship students and Yankton LIC students.

21 YAP students and 52 traditional clerkship students agreed to participate in the study and completed the medicine, surgery and OB/GYN shelf exams in October, March, and June (all three tests 3 times). Traditional clerkship students would have completed one of these clerkships shortly before each testing time.

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Leif Hanson

The Harvard Medical School-Cambridge Integrated Clerkship NBME SHELF Results

	CIC 1-3 (n=27)	CON 1-3 (n=40)	P
Ob/Gyn	73.70	71.75	0.375
Pediatrics	80.60	74.79	0.008
Surgery	76.85	73.32	0.098
Psychiatry	80.22	71.05	0.001

Internal Medicine Content Exam (MKSAP)

	CIC 3 (n=11)	PCE 3 (n=45)	P
MKSAP Score	85.90	78.06	.010

David Hirsh

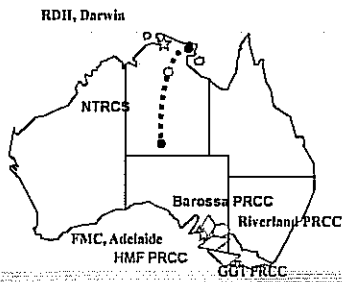
Health Service Rationale

The Flinders experience of symbiosis between health services and university

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Academic Health Science Centre

Flinders Year 3 Sites



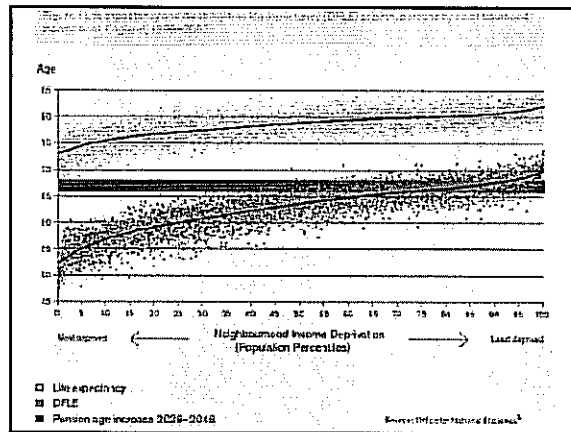
Health Service Rationale

Distributed Medical Education is both a consequence of and a facilitator for moving from an Academic Health Science Centre to an Academic Health Science System or Network

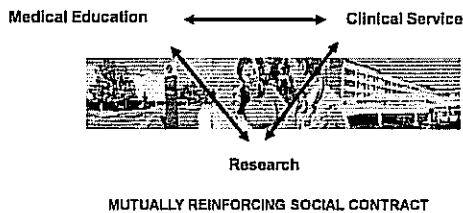


Health Service Rationale

- AHSC
 - last century construct
- AHSS
 - Incorporates primary care
 - Able to incorporate implementation science component of translational pathway
 - Able to impact on the social determinants of health

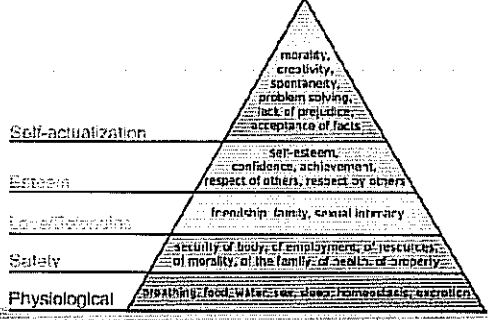


ACADEMIC HEALTH SCIENCE SYSTEM



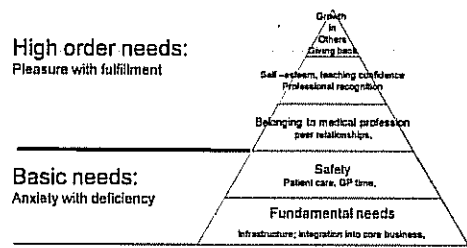
But... Is this sustainable in private practice?

Maslow's Hierarchy of needs



Flinders Lucie Walters

Precepting hierarchy



Lucie Walters

Time

Parallel consulting model



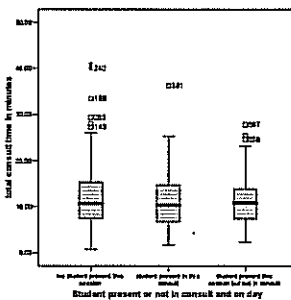
Time

PRCC Student precepting session

Appointment time	GP consulting room	Student Consulting room
9am	Patient 1 *Parallel consultation	Patient 2
9.15 am		GP joins student and Patient 2 *Teaching consultation
9.30am	Patient 3	Patient 4
9.45am		GP joins student and Patient 4

Lucie Walters

Consultation times



The mean time for the three kinds of consultations were:

- no student present: 13 mins 42 sec
- Precepting consultation: 13 mins 18 sec
- Parallel consultations: 12 mins 45 sec

Lucie Walters

Does it change what the doctor does?

Ranked frequency of activities	No student today	Precepting consultation	Parallel consultation
1	Management (3.67)	Management (3.18)*	Management (3.53)
2	Other (3.24)	Other (2.04)*	Other (2.43)
3	History (2.01)	History (2.46)*	History (2.07)
4	Exam (1.61)	Teaching (1.06)*	Exam (1.63)
5	Intro (0.83)	Exam (0.95)*	Intro (0.83)
6	HP (0.24)	Intro (0.84)	HP (0.20)
7	Research (0.06)	HP (0.25)	Research (0.10)
8	Teaching (0.00)	Research (0.02)	Teaching (0.07)

*significance p<0.05

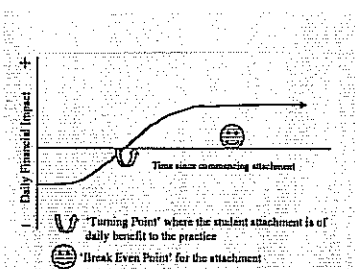
Lucie Walters

Non-consultation time in session

Student Precepting session	N	Mean (minutes)	Std. Deviation	Sig
No	33	51.01	29.09	-
Yes	34	50.81	24.76	.976

Lucie Wallers

Impact on clinical practice



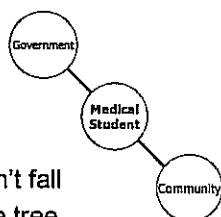
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(Worley et al.; RRH 2001)

Social Accountability Rationale

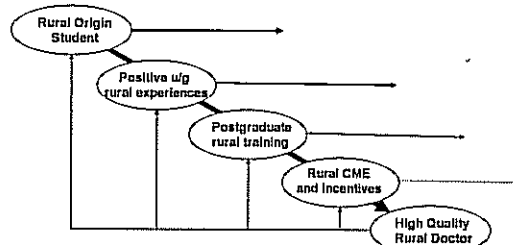
Recruitment
And
Retention

The apple doesn't fall
far from the tree



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Melbourne, Australia

Distributed Medical Education



Norris, AJRH 2005

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Melbourne, Australia

Social accountability rationale

- Recruitment & Retention

$$R\&R = S \times E \times X \&Y$$

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Workforce Outcomes

- Seven times more likely to choose regional, rural or remote practice
- Twice as likely to choose Primary Care
- Graduates in all major specialties and all locations of practice

Worley et al 2009, MJA



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UNIVERSITY
Melbourne, Australia

Rural and Remote Health

ORIGINAL RESEARCH

Rural origin plus a rural clinical school placement is a significant predictor of medical students' intentions to practice rurally: a multi-university study

JJ Walker, DJ De Wit, JJ De Santis, CE Cunningham*

Medical University, Victoria, Australia
University of Medicine, Singapore, Toronto, Australia

Published: 29 August 2010, *Academic Open Access* 2(1):1, Published: 21 January 2012

Walker JJ, DeWitt DJ, DeSantis JJ, Cunningham CE

Rural origin plus a rural clinical school placement is a significant predictor of medical students' intentions to practice rurally: a multi-university study
Rural and Remote Health 12:1906, (2010) 20:2

Available: <http://www.aacr.org.au>

Social accountability rationale

- Recruitment & Retention
- Increasing Social and Economic capital

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Social Accountability Rationale

- Health services directly account for 10% of economic activity in small county – 13,000 people, single hospital
- 20% of economic activity with secondary impacts

Rural and Remote Health

ARTICLE IN PRESS

Economic importance of the health-care sector in a rural county

A. J. De Santis, J. J. Walker, D. J. De Wit, C. E. Cunningham

Centre for Rural and Northern Health Research, Exploring the socioeconomic impact of the Northern Ontario School of Medicine (Final report). Thunder Bay & Sudbury, ON: Lakehead University and Laurentian University; 2009.

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NOSM Socioeconomic impact

- new economic activity across Northern Ontario that is more than double the School's budget
- Optimism about the future among community participants which they attribute to NOSM.

Centre for Rural and Northern Health Research. Exploring the socioeconomic impact of the Northern Ontario School of Medicine (Final report). Thunder Bay & Sudbury, ON: Lakehead University and Laurentian University; 2009.

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Social Accountability Rationale

- Regional medical education mobilises existing social capital

Rural and Remote Health

ORIGINAL RESEARCH

Exploring the role of social capital in supporting a regional medical education response

JJ Walker, DJ De Wit, JJ De Santis, CE Cunningham*

Medical University, Victoria, Australia
University of Medicine, Singapore, Toronto, Australia

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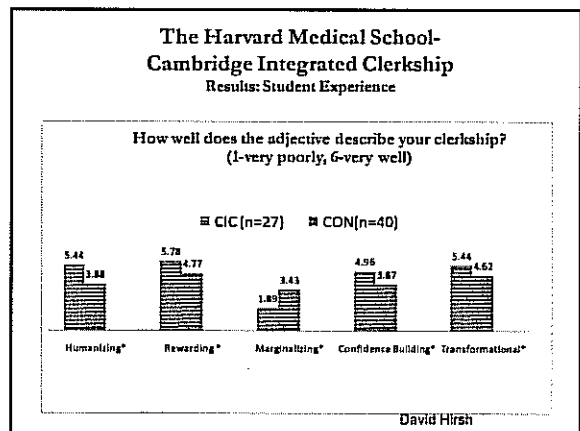
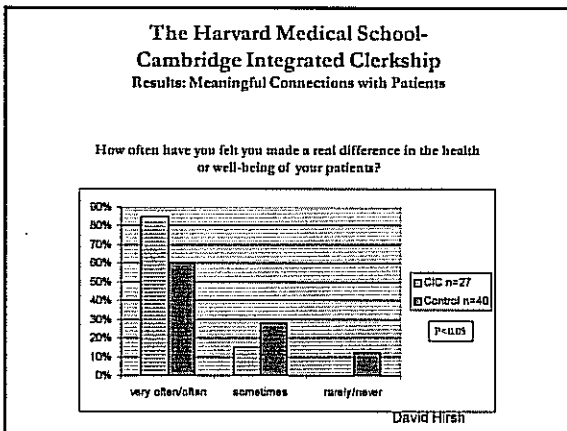
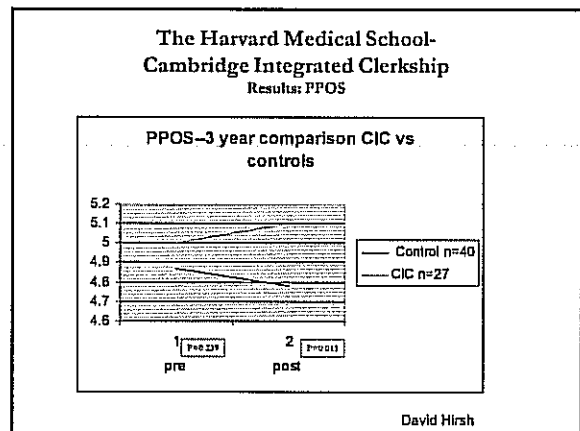
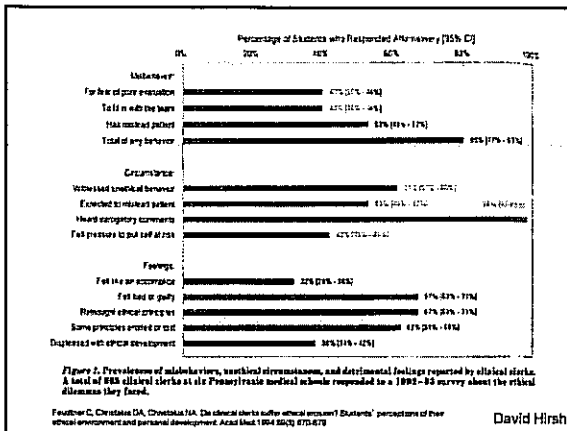
Available: <http://www.aacr.org.au>

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Professional Development Rationale

Is standard medical education damaging medical students?

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Flinders student data

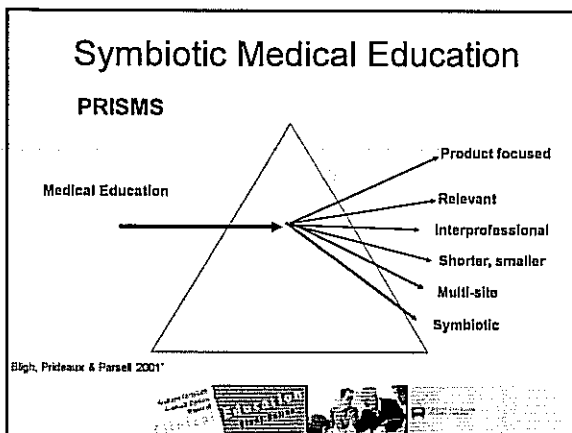
- Greater patient contact – ‘my’ patient vs ‘the’ patient
- Increased time in clinical settings – continuity of supervision
- ‘Work’ rather than ‘study’

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Leading in Learning

Professional Development rationale

- Moral erosion able to be reversed in smaller, integrated, continuity enabled clerkships
 - far easier to implement in smaller more naturally integrated health services than larger, more naturally sub-specialised services

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Leading in Learning



International Models of Distributed Medical Education

Typology of rural schools (2005)

- Mixed urban/rural
- De facto rural
- Stand alone rural

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International Models of Distributed Medical Education

Assumed aim of government funders:

to meet workforce and social capital (political) needs of a presently underserved region/community – may be rural or urban

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International Models of Distributed Medical Education

Commence/increase clinical rotations to the region

- Usually seen as less important than central rotations
- Usually seen as more educational/enjoyable than the central rotations – a cognitive dissonance

"The following electives are available to medical students at this hospital. The objective in each case is to give the student an exposure to the specialty or sub-specialty as it is practiced on a day-to-day basis in a non-academic, non-teaching hospital environment."

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International Models of Distributed Medical Education

Commence/increase clinical rotations to the region

- Often little investment involved
- Clinicians seen as tutors, not academics
- Quality control difficult
- Student accommodation an issue
- Impact on workforce small

Examples: Most US and UK schools employ this model

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International Models of Distributed Medical Education

Form a Clinical School in the new region

- requires more investment, including capital
- may cross Provincial International borders
- student numbers can be more flexible
- Community or hospital based
- students commit to an extended presence
- accommodation may be student's responsibility

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International Models of Distributed Medical Education

Form a Clinical School in the new region

- 'us and them' requires significant work to overcome
- may involve student sub-quotas
- can be significant workforce returns
- opportunity for clinical academic careers, some with research
- can be an opportunity to pilot curricular innovation

Examples: Australian rural clinical school transformation with this model in existing medical schools, UQ in USA



International Models of Distributed Medical Education

Conduct entire medical program in the new region

- often built on an existing clinical school by adding the pre-clinical years
- requires significantly more investment, including capital
- may cross Provincial/International borders
- high profile for the new region
- admissions can be focused
- accommodation is student's responsibility



International Models of Distributed Medical Education

Conduct entire medical program in the new region

- college pipelines important, may involve collaboration with a separate university
- 'us and them' requires significant work to overcome
- can have smaller student numbers
- significant workforce returns
- opportunity for clinical and scientific academic careers with research
- reputation based on existing program



International Models of Distributed Medical Education

Conduct entire medical program in the new region

- opportunity for clinical and scientific academic careers with research
- IT linkages crucial
- requires alteration of curriculum content and delivery
- assessment a crucial common denominator

Examples: Flinders NT Medical Program, New England Program, Monash Malaysia, Peninsula UK



International Models of Distributed Medical Education

New stand alone medical school

- opportunity for focused new curriculum
- accreditation more difficult
- significant workforce returns
- requires greater critical mass of academics
- requires higher student numbers and therefore clinical placements



International Models of Distributed Medical Education

New stand alone medical school

- requirement for clinical and scientific academic careers with research performance crucial
- IT linkages not as important
- opportunity for competition and collaboration
- reputation builds on the new university's reputation

Examples: Australian National University, James Cook University, University of Western Sydney, Hull UK



International Models of Distributed Medical Education

- Increase rotations
- Form a clinical school
- Conduct entire course in new site
- Create new medical school

International Models of Distributed Medical Education

	Staffing	Career Opp'y	Student Accom'n	Social Capital	Research
Rotations	+/-	-	++	+/-	-
Clinical School	++	++	+++	++	++
Entire Program	+++	+++	-	+++	+++
New School	+++	+++	-	+++	+++
	+	+		+	

International Models of Distributed Medical Education

	Resources	Accred'n	Workforce Return	Student Numbers	IT linkages
Rotations	+/-	-	+/-	+/-	+/-
Clinical School	++	+	++	+/++	+++
Entire Program	+++	++	+++	++	+++
New School	+++	+++	+++	+++	-
	+	+		+	

International Models of Distributed Medical Education

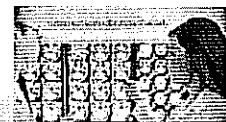
- Further evidence needed
 - MISSILE (>50 schools)
 - Multi Institutional
 - Simultaneous Study of
 - Integrated Longitudinal Education

Conclusions

- Distributed Medical Education is returning to be the norm
- Strong evidence supporting quality and outcomes

Conclusions

- Variety of proven models can be constructed dependent on ABC:
 - Aims
 - Budget
 - Capacity for student numbers



The DME Story: An
International Perspective

Paul Worley

January 2012
Brandon Manitoba

THE MANITOBA CONTEXT

Workshop on Options for Distributed Medical Education (DME) in Manitoba

January 19th – 21st, 2012
Brandon University



The Province

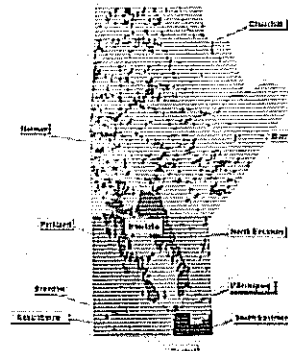
POPULATION: 1,246,000 (2011 est.)
 LANDSCAPE: agricultural, Precambrian shield, tundra
 AREA: 649,950km²
 KEY INDUSTRIES: agriculture, manufacturing, forestry,
 mineral, freshwater fish
 4 LARGEST CITIES: Winnipeg, Brandon, Thompson, Portage La
 Prairie
 3 LARGEST
 UNIVERSITIES: University of Manitoba, University of
 Winnipeg, Brandon University



Healthcare Administration in Manitoba

Manitoba's health care system is administered through 11 regional health authorities:

1. Assiniboine
2. Brandon
3. Burtwood
4. Central
5. Churchill
6. Interlake
7. NOR-MAN
8. North Eastman
9. Parkland
10. South Eastman
11. Winnipeg



Healthcare Administration in Manitoba RHA Population Breakdown

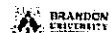
Winnipeg :	697,274
Central:	107,668
Interlake :	78,815
Assiniboine:	68,505
South Eastman:	68,383
Brandon:	52,550
Burtwood:	48,080
North Eastman:	41,846
Parkland:	41,658
Nor-Man:	24,570
Churchill:	921

SOURCE: Manitoba Health Services Council, June 2011



Healthcare Administration in Manitoba RHA Facilities Breakdown

RHA	Health Care Facilities	Primary Care Physician Resources
Assiniboine	- 23 Health Centres	- 62 GPs
Brandon	- 1 Regional Health Centre	- 32 GPs with hospital privileges - 17 GPs without hospital privileges - 8 Specialists
Burtwood	- 1 General Hospital - 8 Hospital Health Centres	- 22 GPs
Central	- 2 District Hospitals - 2 Hospitals - 12 Health Centres	- 91 Full-time GPs - 1 Part-time GP
Churchill	- Northern Medical Unit	- 16 permanent GPs – return coverage
Interlake	- 2 Community Health Centres	- 48 GPs
Nor-Man	- 3 Acute Care Hospitals	- 25 GPs
North Eastman	- 1 District Hospital/Primary Health Care Centre - 1 Hospital - 6 Primary Care/Health Care Centres	- 24 GPs
Parkland	- 1 Regional Health Centre - 1 District Hospital	- 43 GPs (not all full-time) - 131 coverage through contracts
South Eastman	- 2 Hospitals - 2 District Health Centres	- 37 GPs with hospital privileges
Winnipeg	- 2 Tertiary Hospitals - 4 Community Hospitals - 6 Health Centres - Multiple community-based health care facilities	- 553 (includes family medicine clinics in hospital)



Healthcare Administration in Manitoba Physician Resources

Number of Licensed Practitioners in Manitoba:
Within Winnipeg – 1,888 (75.5%) Outside Winnipeg – 614 (24.5%)

Percentage of Physicians in Manitoba by Country of Origin:
CANADA – 63.3% UK & Ireland – 5.3% Asia – 17.6%
Other: 13.5%

Additions and Deletions of Manitoba Physicians:
Additions – 394 Deletions – 307
NET +87 physicians

SOURCE: College of Physicians and Surgeons of Manitoba



Profile of Brandon University

- Brandon College established in 1899; Brandon University received its first Charter in June, 1967
- Current full-time enrolled student population: approx. 3,500
- Degree programs:
 - Faculty of Arts
 - Faculty of Education
 - School of Health Studies
 - School of Music
 - Faculty of Science



Profile of Brandon University

School of Health Studies

Programs in the School of Health Studies at Brandon University include the following:

- Bachelor of Nursing (BN)
- Bachelor of First Nations and Aboriginal Counseling (BFNAC)
- Bachelor of Indigenous Health and Human Services (BIHHS)
- Bachelor of Science in Psychiatric Nursing (BScPN)
- Bachelor of Science in Mental Health (Post-Diploma) (BScMH)
- Master of Psychiatric Nursing (MPN)



Medical Education in Brandon Community Engagement To Date

"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."

- Association of Manitoba Municipalities (November 24th, 2009)

"That the Government of Manitoba establish in Brandon rural and northern medical training for physicians."

- Manitoba Chamber of Commerce (May 4th, 2010)

"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."

- Manitoba Women's Institute (February, 2010)



Medical Education in Brandon Progress To Date

- Document entitled "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" was approved by COPSE in April, 2011
- Steering Committee established to oversee feasibility study
- Site visits completed to James Cook University in Australia and the Northern Ontario School of Medicine
- Upcoming consultation sessions in communities in rural and northern Manitoba

