Distributed Medical Education

A Student-Centered Review and Best Practice Recommendations

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Acknowledgements

In 2010, the Canadian Federation of Medical Student's Vice-President of Education was mandated with the responsibility of producing a student-centered review of Distributed Medical Education (DME) in Canada. As you read through this document, you will come to realize that no individual full-time medical student could have done this alone. This paper is the fruit of collaborative efforts deployed over many years by Canadian medical students who are passionate about DME.

Many thanks to Tyler Johnston who started this project during his mandate as CFMS VP-Education in 2008. His teammates, John Snelgrove and Gillian Shiau, contributed significantly to the CFMS's pioneering efforts in DME. Thank you for providing such a strong foundation for this paper.

Special thanks to Eamonn Rogers, a third-year medical student at the University of Western Ontario. As Chair of the CFMS DME Task Force, Eamonn has contributed significantly to this project. He has mobilized interest in DME within the CFMS membership, facilitated constructive dialogue and co-authored this final document. Eamonn, none of this would have been possible without you; thank you very much.

Every student representative on the CFMS DME Task Force was solicited for input at a certain point in the production of this document. Thank you all so very much for your valuable contribution.

A few members of the Task Force contributed directly to the drafting of this document. Lindsey Sutherland from the University of Alberta completing the literature review and helped compile data on DME policies. Shazeen Bandukwala from McMaster University, Rasydah Hamil from Memorial University and Asad Siddiqui from McMaster University contributed directly to the drafting of the best-practice guidelines. Your contributions were greatly appreciated.

Thank you all so very much for your hard work and dedication.

Sincerely,

Noura Hassan

VP-Education, Canadian Federation of Medical Students

Introduction

Definition

Distributed Medical Education (DME) is an umbrella term that describes a variety of medical education activities outside the traditional academic health centers. In Canada, the major types of DME practices adopted in undergraduate medical education include satellite campuses (also known as fully distributed medical education or FDME), community longitudinal clerkship rotations, mandatory rural placements, family medicine placements, and electives outside of traditional academic centers.

DME came to being in response to two key factors:

(i) The significant increases in medical school admissions and, more importantly

(ii) The ever-growing health care needs of underserved populations.

Hence, DME is a response to societal needs of underserved populations (including rural/remote areas) and educational needs of medical trainees and professionals.

History and Background

Since 2004, there has been a tremendous increase in the use of DME in Undergraduate Medical Education (UGME) across Canada. Despite the fact that the vast majority of Canadian medical students will participate in DME experiences, data demonstrating the impact of current practices on medical students are lacking. For this reason, the CFMS undertook a student-centered review of DME practices in 2008-2009 under the leadership of Dr. Tyler Johnston, the past VP Medical Education. A literature review was done to identify key issues in DME. This information was then used to provide direction to DME focus groups mandated to reflect upon pros, cons, challenges and general perceptions of DME amongst medical students. A survey was developed then developed and distributed electronically to all CFMS members in order to allow for the collection of data from coast-to-coast. Results of these consultations are presented in Appendix 1. These data were considered in the development of recommendations.

Passion for DME within the CFMS and in the Canadian medical education community at large is stronger than ever. In 2009, Health Canada mandated the AFMC with the Future of Medical Education in Canada (FMEC) MD project. The ever-evolving health care needs of the Canadian population were addressed and recommendations geared towards adaptation of the Canadian undergraduate medical education curriculum were made to ensure that our future physicians are properly equipped to respond to our population's needs. The FMEC-MD report, published in 2010, acknowledges the importance of DME in undergraduate medical education under "Recommendation #6: Diversifying Learning Contexts". It is stated that "[…] students require exposure to a wider range of learning

contexts. They need access to a broad range of complex, undifferentiated, and chronic illnesses; the full continuum of care; diverse patient populations; a variety of health care providers; as well as more diverse geographic, socioeconomic, and cultural settings"[1].

The following recommendations were made:

- Create opportunities for early and extensive learning in a variety of community settings, including longitudinal and integrated clerkships.
- Develop specific objectives for learning in community contexts throughout MD education.
- Promote an organizational culture that positively reinforces the value of multiple learning sites in MD education.
- Promote research on learning in community contexts.[2]

In the meantime, within the CFMS, a DME Task Force was struck during the 2009-2010 year in order to provide CFMS members with a platform to exchange on DME practices. This Task Force is still active and stronger than ever. Students from coast-to-coast are brought together periodically via teleconference to talk about challenges, best practices, rules and regulations, and other topics pertaining to DME. Furthermore, an online forum was created to facilitate further exchange, at the participant's leisure. See link for details: http://www.dmetaskforce.proboards.com/index.cgi

All aforementioned resources have been considered in the production of this final document. These DME Best Practice Guidelines were developed by medical students, for medical students in order to help improve DME practices across the country. It is also intended to provide stakeholders with the medical student perspective on DME in Canada.

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[1] *The Future of Medical Education in Canada: A Collective Vision. p 24-25*

[2] *Ibid*

Executive Summary

General Strengths and Challenges of DME

The CFMS membership was consulted on multiple levels in order to best identify perceived strengths, weaknesses and general impressions of distributed medical education from the students' perspective. The following is a summary of the findings elicited. Results of the 2008-2009 survey are available in Appendix 1.

Strengths of Distributed Medical Education

Academic:

- Close contact with preceptors
- More "hands-on" experience
- Exposure to a greater diversity of cases

Social:

- Small/tight-knit class (in satellite campuses)
- Exposure to communities for future practice
- Prior to DME experience: 46% of students were considering rural practice after graduation, **40% were not,** 15% did not know
- After DME experience, 48% were considering rural practice after graduation, **26% were not,** 26% did not know
- Opportunity to study close to family and friends

Financial:

- Experience is at least cost-neutral for 39% of students

Challenges of Distributed Medical Education:

Academic:

- Poor fidelity of videoconferencing technology
- Variability between sites
- Lack of access to learning resources/university resources (e.g. library, labs)

- Objective data comparing performance of students participating in full DME to students at main campuses not easily accessible (ex: CaRMS matching rates, general satisfaction, etc)

- Poor understanding of DME within the Canadian student body when applying to medical school.

Social:

- Disconnection from family/social life

- Estrangement from main campus makes involvement in extra-curricular activities more challenging

Financial:

- Experiences lead to out-of-pocket costs for 61% of students

Review of DME in Canada and Best Practice Recommendations

The following is a summary of the proposed best practice recommendations formulated by the authors based on identified advantages and challenges.

Satellite Campuses and Integrated Clerkships

Academic:

- Involve students from satellite campuses / community clerkships in the UGME applicant selection and recruitment process. This will allow applicants to ask questions and better understand the realities of medical education in community settings or distributed sites.
- Lecture content at various campuses should be as close to identical as possible. Direct video link or local lecturers may deliver the content.
- Provide lecturers with a handbook containing guidelines for presentations using IT platforms.
    - This handbook could include information that will ensure compatibility of the presentation content with the technological delivery method.
- An IT troubleshooting guide should also be provided to all lecturers. A copy should be made readily available at all sites.
- Stress the importance of electronic communication to students and the faculty. This will eliminate any perceived advantage to students located at the same site as the lecturer while ensuring adequate communication and fulfilling educational goals.
- All satellite campuses should be equipped with or have access to resources and materials that are equivalent to what is offered at the main campus

- Medical faculties should ensure easy access to data on student match success, or if there is a lack of such data, begin collecting it. If data shows that there is discrimination of applicants based on site of undergraduate training, this should be addressed.

Social:

- Having effective and knowledgeable staff in place can make a difference in the promotion of a healthy social environment and prevention of any potentially divisive issues from dampening the educational experience of medical students.
- Having administration play a major role in helping medical students foster links between sites by doing simple things such as organizing unified orientation experience and funding regularly scheduled integration weekends.
- Encouragement and facilitation of student leadership initiatives (ex: involvement in student government) for students attending satellite campuses can help bridge the gap between multiple sites. This may be accomplished in may ways, but most of the benefit will be realized by facilitating DME student involvement and their presence at committee tables.

Financial:

- Stipends should be made available to reimburse students for out-of-pocket costs. Ideally, students would be allowed to claim expenses at any time of the year with the only limitation being the maximal yearly amount allotted. This flexibility is essential as it would allow students to be involved in the extra-curricular activities of their choice without having to worry about timing for fiscal reasons.
- Financial allocations should be made available to promote student initiatives that help with campus integration. This allocation could be provided by the medical student society or through a set percentage of tuition allocated to the student government by the administration for this specific purpose. This would be beneficial for students from a social perspective by providing opportunities for collaboration in addition to promoting leadership initiatives.

<u>Mandatory Rural Placements</u>

Academic:

- Continual expansion of offerings in both specialty and region would have a positive effect on participation
- Ensure a webcast relay for students in rural areas without videoconference technology so that students may participate in educational and teaching sessions. Alternatively, record the teaching sessions so that students may view them online.
- Ensure that preceptors are aware of the educational level and capabilities of students

- Ensure Internet accessibility. If this is not technically feasible, properly inform students of limited Internet connectivity.

Social:

- Allow students to select preferred sites for mandatory rural placements. If their family or friends live in a rural community, this would allow them to have the enriching educational experience while being closer to loved ones.
- Ask students if they have familial obligations that need to be accounted for (ex: student parents) and make reasonable efforts to accommodate needs.
- Encourage hosting sites to organize social events to help familiarize visiting students with the community.

Financial:

- Ensure that the experience is at least cost-neutral. This can be achieved by providing accommodation or fully reimbursing costs associated with accommodation, fully reimburse travel expenses and providing a reasonable stipend for living expenses. This may help encourage students to travel to further and more remote locations.

<u>Electives</u>

Academic:

- A formal introduction and orientation is necessary for all new centers.
- Students should discuss the goals and objectives they wish to set for their elective placement with preceptors at the beginning of the rotation in order to maximize the educational value.
- Value the quality of clinical electives outside of traditional academic centers.

Social:

- Ample orientation material and guidance should be provided to students during the decision making process and prior to departure. Pre-departure training can be an effective mechanism.
    - It is the student's responsibility to know his/her own limits (ex: language barrier, religious beliefs, etc) and consider them when preparing for electives.
- Provide students with a support system (ex: a mentor) to guide them through the rotation and be available should any issues arise.

Financial:

- In order to ease the financial burden and increase the likelihood of student participation, it would be helpful if medical faculties covered rural elective fees.
- Subsidy of accommodations or improved access to readily available accommodations would also improve access.

    - Items which are non-perishable (cooking equipment, utensils etc.) should be stored by individual centers and cycled through students
- If bursaries were to be developed, they ought to be publicized by the home school well in advance so that students can plan their placements accordingly
    - Students should know the result of their bursary application prior to placement in the elective. This would help alleviate unnecessary anxiety associated with an addition financial burden.

Appendix 1: Results of CFMS 2008-2009 Student Survey on DME

Please refer to this section for details.

Appendix 2: DME site policies and regulations from CFMS member schools

Students from each CFMS member school were asked to look for formal policies governing their home school's DME activities.

To our surprise, this information was not always readily available. Many schools do not have any formally drafted policies governing their DME activities. This being said, LCME accredited medical schools must adhere to all accreditation standards, including those deemed to be more specific to DME (ED-8, ED-39, ED-40, ED-41 and ED-43). Therefore, a reliable quality control mechanism exists to ensure that DME experiences are adequate.

In conclusion, it is felt that every Faculty of Medicine ought to formally draft its DME policies and make them readily available to all Canadian medical students.

Appendix 3: DME Literature Review

Please refer to this section for details. Of note is the fact that data on the student perspective of DME are lacking.

Review of Distributed Medical Education in Canada and Best Practice Recommendations

Given the scope of distributed medical education and the broad range of educational activities encompassed by this umbrella term, formulating best practice guidelines that are general enough to be applicable to all forms of DME poses a significant challenge. In order to facilitate the analysis and provide a user-friendly product, we have divided our analysis into three broad categories:

A. Satellite campuses and integrated community clerkship rotations
B. Mandatory rural placements
C. Electives outside of the traditional academic centers.

A. Satellite Campuses and Integrated Community Clerkship Rotations

<u>Academic</u>

It is important that the level of academic rigor and educational expectations be the same at both main and DME sites. It would be improper for an institution to train students at differing levels of expertise due to inherent differences in instruction at various sites. Medical schools do ensure that scholarship is equal, though not necessarily identical, across multiple sites. The Canadian accreditation process helps ensure that the quality of medical education for every student meets certain standards. It is therefore in the best interest of all Canadian medical schools to maintain these high standards for students and the Canadian society.

- Lectures
    - Technology has made it possible to connect main campuses with their satellites. Videoconferencing is one of the most currently used technologies in DME. The mechanisms of delivery vary depending on the equipment used, but most videoconferencing will have a lecturer at one location delivering both video and data content to one or more distant sites.
    - Technical difficulties can interfere with the education experience of students at a distant site.
        - For example, certain animations used in PowerPoint presentations may not be visible to students at a distant site.

- Instructors
    - The lack of in-person access to instructions, either directly after lecture or during office hours, can be a disadvantage for students at distant sites.
    - Although instructors at academic centers and community-based centers may differ, this does not necessarily confer advantages or disadvantages to medical students at either site. There can be a benefit to having instruction come from an academic centre, in that there is often greater access to clinicians pursuing a teaching career. The benefit is derived from experience and cumulative faculty development. Often there are fewer residents at community hospitals, as opposed to academic hospitals, allowing greater student-physician interaction.

- Resources
    - In order for any student to achieve their potential, they must be equipped with the appropriate resources. A student should have access to adequate library services, study space, anatomical specimens, as well as electronic resources. As with most academic aspects of DME, medical schools have often anticipated this need prior to the establishment of the satellites.

- Post-graduate training
    - There has been some concern among CFMS members at various satellite sites regarding the competitiveness of their portfolio compared to their colleagues at the main campuses. There is concern that they may not be seen as equivalent applicants through the CaRMS matching process.

Recommendations:

- Involve students from satellite campuses / community clerkships in the UGME applicant selection and recruitment process. This will allow applicants to ask questions and be adequately informed about the realities of medical education in community settings or distributed sites.
- Lecture content at various sites should be as close to identical as possible. Direct video link (ie: videoconferencing) or local lecturers may deliver the content.
- Provide lecturers with a handbook containing guidelines for presentations using IT platforms.
    - This handbook could include information that will ensure compatibility of the presentation content with the technological delivery method.
    - An IT troubleshooting guide should also be provided to all lecturers. A copy should be made readily available at all sites.
- Stress the importance of electronic communication to both the students and the faculty. This will eliminate any perceived advantage to students located at the same site as the lecturer while ensuring adequate communication and fulfilling educational goals.

- All satellite campuses should be equipped with or have access to resources and materials that are equivalent to those offered at the main campus.
- Medical faculties should ensure easy access to data on student match success, or if there is a lack of such data, begin collecting it. If data shows that there is discrimination of applicants based on site of undergraduate training, this should be addressed.

Social

A very large part of medical school is what happens outside of lecture halls and the clinical teaching units. Given that undergraduate medical education is a significant turning point in medical students' lives, it is natural that they should begin to form social networks with their colleagues. Along with fun and camaraderie also comes very important mutual support that helps pull individuals through periods of peak stress. It would be a shame if this important aspect of medical education were lost.

- Group size
    - Satellite campuses often begin as small cohorts, expanding with the increase in competence, capacity, and government funding. There is a large difference in the dynamic of a cohort of 24 compared to that of 124. With a smaller group, just a few strong personalities can influence the dynamic of the class.

- Inter-campus interaction

    - A strong link between the students of a satellite and a main campus can go a long way in promoting positive extra-curricular experiences.

Recommendations:

- Having effective and knowledgeable staff in place can make a difference in promoting a healthy social environment and preventing any potentially divisive issues from dampening the experience.
- Administration should play a major role in helping medical students at all sites foster links by doing simple things such as organizing unified orientations and funding regularly scheduled integration weekends.
- Encouragement and facilitation of student leadership initiatives (ex: involvement in student government) for students attending satellite campuses can help bridge the gap between multiple sites. This may be accomplished in may ways, but most of the benefit will be realized by facilitating DME student involvement and their presence at committee tables.

Financial

Being situated at a satellite campus can result in increased financial expenditures. This can be due to issues such as transportation between campuses and cost variability between cities. The CFMS student survey on DME has shown that 61% of students experience out-of-pocket costs due to distributed medical education. Meetings for clubs, interest groups, and student activities often require students at satellite campuses to commute to the main campus.

Recommendations:

- Stipends should be made available to reimburse students for out-of-pocket costs. Ideally, students would be allowed to claim expenses at any time of the year with the only limitation being the maximal yearly amount allotted. This flexibility is essential as it would allow students to be involved in the extra-curricular activities of their choice without having to worry about timing for fiscal reasons.
- Financial allocations should be made available to promote student initiatives that help with campus integration. This allocation could be provided by the medical student society or through a set percentage of tuition allocated to the student government by the administration for this specific purpose. This would be beneficial for students from a social perspective by providing opportunities for collaboration in addition to promoting leadership initiatives.

B. Mandatory Rural Placements

Canadian medical schools have varying policies on mandatory rural placements (MRPs). Presently, 4 medical schools (Universities of Saskatchewan and Manitoba, NOSM, Dalhousie University) have a mandatory rural week(s) in pre-clerkship and 9 schools (UBC, U of A, U of S, U of M, UWO, U of O, NOSM, McGill, Memorial) have a mandatory rural placement during clerkship. Three of these nine schools do not necessarily mandate a Canadian rural setting as the rural family medicine requirement can also be met internationally (McGill), in a small to mid sized community (UWO) or anywhere outside the Ottawa Hospital district (U of O).

Academic

There are numerous benefits to completing a portion of clerkship in a rural placement. Among these include the understanding of how rural practice is conducted as well as experiencing the diverse scope of primary care that often differs from urban tertiary settings. Medical faculties offer a wide range of placements, in a variety of sites and specialties, allowing interested students to experience these disciplines in various contexts. One potential drawback of MRPs is that a student doing one of their core rotations at a rural site may be missing the educational teaching days conducted at the main campus since many rural locations lack videoconferencing technology.

It is also important, especially for core rotations, that the preceptors be informed as to the level of knowledge, capabilities and role of medical students within the care team.

Finally, some accommodations in the rural settings lack Internet access, making applying for CaRMS, preparing for clinics, and staying in touch with friends and family difficult.

Recommendations:

- Continual expansion of distributed education offerings
    - Increasing the number of both specialty and regional offerings may have a positive effect on participation
- Ensure a webcast relay for students in rural areas without videoconference technology so that students may participate in teaching sessions. Alternatively, record the teaching sessions so students may view them online.
- Ensure that preceptors are aware of the educational level and capabilities of medical students and provide them with learning objectives for the rotation
- When possible, ensure Internet accessibility at accommodations
    - If this is not feasible, properly inform students of limited Internet connectivity.

Social

Many medical students appreciate mandatory rural placements because they offer the opportunity to discover a community that they may not have otherwise visited. However, one of the main concerns voiced by CFMS members regarding the social aspect of mandatory rural placements is the sentiment of estrangement.

Furthermore, mandatory rural placements may cause significant challenges to student parents. Leaving home base for a few weeks is more challenging to students who have familial obligations.

Recommendations:

- Allow students to select preferred sites for mandatory rural placements. If they have family or friends living in a rural community, this would allow them to experience an enriching educational experience while being closer to loved ones.
- Ask students if they have familial obligations that need to be accounted for (ex: student parents) and make reasonable efforts to accommodate their needs.
- Encourage hosting sites to organize social events. This will help familiarize visiting students with the community, thus minimizing feelings of isolation and estrangement.

Financial

The purpose of mandatory rural placements is to increase interest in the rural regions that are currently experiencing severe physician shortages while providing enriching education experiences. If these experiences result in additional financial burdens, the positive aspects of the experience may be dampened and yield a counter-productive result.

All schools that mandate a rural placement provide some degree of financial assistance although the amount and the party providing the funding differ across the provinces. The most encompassing program is the one offered by the province of Quebec where the Ministry of Health and Social Affairs covers travel, accommodation and living expenses for students doing a rural placement. In the province of Alberta, the Rural Physician Action Plan, in partnership with Alberta Medical Association, College of Physicians and Surgeons and Provincial Health Regions, provides and arranges accommodation and one round trip. University of Saskatchewan provides a reimbursement of $1872 for a 4-week rotation. UWO arranges accommodation and provides funding for travel.

Recommendations:

- Ensure that the experience is at least cost-neutral. This can be achieved by providing accommodation or fully reimbursing costs associated with accommodation, fully reimbursing travel expenses and providing a reasonable stipend for living expenses. This may help to encourage students to travel to further and more remote locations.

C. Electives

Medical electives in the undergraduate medical education program are training opportunities that can be undertaken in any field, as per the students' preferences and educational goals. These may take place locally or overseas. Students might have a desired destination, or a particular specialty, or a mission that they have in mind when organizing them. This section focuses on medical electives done outside of the tradition academic health centers.

Academic

There are many advantages to completing elective rotations outside of the traditional academic heath centers. There is usually a close interaction between the medical student and the attending physician engendering excellent student-preceptor relationships. This has a few knock-on effects. Firstly, students are often able to tailor their experience to meet their personal educational goals. Secondly, while working so closely with clinicians, students are usually able to gain valuable insight into the lifestyle that each specialty entails.

There are also drawbacks to rotating through such programs. Often there is less opportunity for formal, didactic education and there may be limited studying and learning resources. There might also be difficulties associated with integration into a team that has functioned together for a long period of time. Finally, residency programs may be unfamiliar with the educational experience offered at these sites and may therefore question the quality of said experiences. This may lead students to disregard this educational experience as a reasonable option by fear of the impact it may have on their career planning efforts.

Recommendations:

- A formal introduction and orientation is necessary at all new sites. It is expected that accreditation standards already account for this in Canadian and American teaching sites. This should be encouraged in other international placements.
- Students should discuss goals and objectives for their elective placement with their preceptors at the beginning of the rotation in order to optimize the educational value.
- Value the quality of clinical electives outside of traditional academic centers.

Social

The social benefits of spending time outside of the traditional academic centres for an elective might be realized in being able to be closer to family or friends. Often, these communities are actively seeking medical students and therefore go the extra mile in terms of welcoming and accepting the students. It is also possible for students to gain a sense of the lifestyle enjoyed by those practicing in smaller communities.

Spending time away from friends and classmates, even peers of similar training, can be difficult. Feelings of stress and unease can be compounded by unfamiliar settings with different social norms. In these types of situations, students on rural or international electives don't have all their usual support networks and must be adequately prepared to maintain a healthy outlook and attitude.

Recommendations:

- Ample orientation material and guidance should be provided to students during the decision making process and prior to departure. Pre-departure training can be an effective mechanism.
    - It is the students' responsibility to know his/her own limitations (ex: language barrier, religious beliefs, etc) and consider them when preparing for electives.
- Provide students with a support system, (ex: a mentor) who would be able to guide the student through the rotation and be available should any issues arise.

<u>Financial</u>

The decision to participate in an elective at a distributed site is partly influenced by financial considerations. Funding programs that will help offset the costs incurred exist. However, these programs are variable and not guaranteed.

Recommendations:

- In order to ease the financial burden and increase the likelihood of student participation, it would be helpful if medical faculties covered elective fees for placements outside of traditional academic centers.
- Subsidy of accommodations or improved access to readily available accommodations would also improve access.
    - Items which are non-perishable (cooking equipment, utensils etc.) should be stored by individual centers and cycled through students
- If bursaries were to be developed, they ought to be publicized by the home school well in advance so that students can plan accordingly
    - Students should know the result of their bursary application prior to placement in the elective. This would help alleviate unnecessary anxiety associated with an addition financial burden.

Conclusion

Overall, Canadian medical students are satisfied with their distributed medical education (DME) experiences. High-quality clinical experiences with more “hands-on” experiences, close contact with preceptors and exposure to a scope of practice that they may not have otherwise considered are cited as major advantages of DME. In light of the health care needs of Canadian communities, it is important to make rural/community practice an attractive option for Canadian medical students. These advantages need be put to the forefront in order to foster interest in community practice.

The major challenges reported by medical students include the lack of fidelity of videoconferencing, variability between sites, social isolation and costs incurred during DME experiences. All identified challenges were addressed in the body of the paper. The recommendations formulated by our working group can help improve DME experiences for medical students across Canada.

Another significant concern voiced by the CFMS membership is the fear that a DME experience may not be regarded as highly or considered equivalent to a clinical experience in a traditional academic center. The CFMS strongly encourages medical students to explore the root of these concerns on a local level as this may very well be the manifestation of an underlying hidden curriculum. Likewise, we would encourage Faculties of Medicine to be proactive in addressing this issue since the role DME in UGME will likely continue to grow in importance.

Distributed Medical Education (DME) now plays a role in the undergraduate medical education curricula of all CFMS member schools. Some universities including UBC, NOSM, UWO, McMaster, Dalhousie and MUN have made DME a central part of their educational strategy whereas others continue to use DME on a very limited scale.

Moving forward, DME will likely continue to expand and develop across Canada. The Future of Medical Education in Canada (FMEC)-MD project recommendations (specifically recommendations #1 and #6) suggest that DME should continue to play an increasingly important role in UGME. A number of stakeholders are taking keen interest in this phenomenon and are continuously looking for ways to ensure that all parties are satisfied with their DME experiences. Given the CFMS’s role as the representative voice of Canadian medical students, this organization has devoted significant resources to the development of this document. It is our hope that this piece of work has helped shed light on the student perspective and that the recommendations formulated will help guide future decision-making in DME.

Appendix 1: Results of the 2008-2009 CFMS DME Student Survey

Background

Motion for CFMS "student-centered" Review of DME

AGM-08-07

WHEREAS distributed medical education is being increasingly employed as a central feature of program design in Canada's Medical Schools and the CFMS has guidance for the examination of DME through resolution BAGM-08-19,

BIRT the CFMS undertake a "student-centred" review of DME in Canada that focuses on student views about the successes and challenges of DME.

BIFRT the CFMS develop a set of parameters/guidelines for the implementation of DME that serve the best interests of students and Canadians.

Cost: $500

Source: VP Education Budget

Level of Effort: This initiative would be a major undertaking and requires a significant investment of time and energy by the VP Education and student volunteers.

Moved by: Tyler Johnston

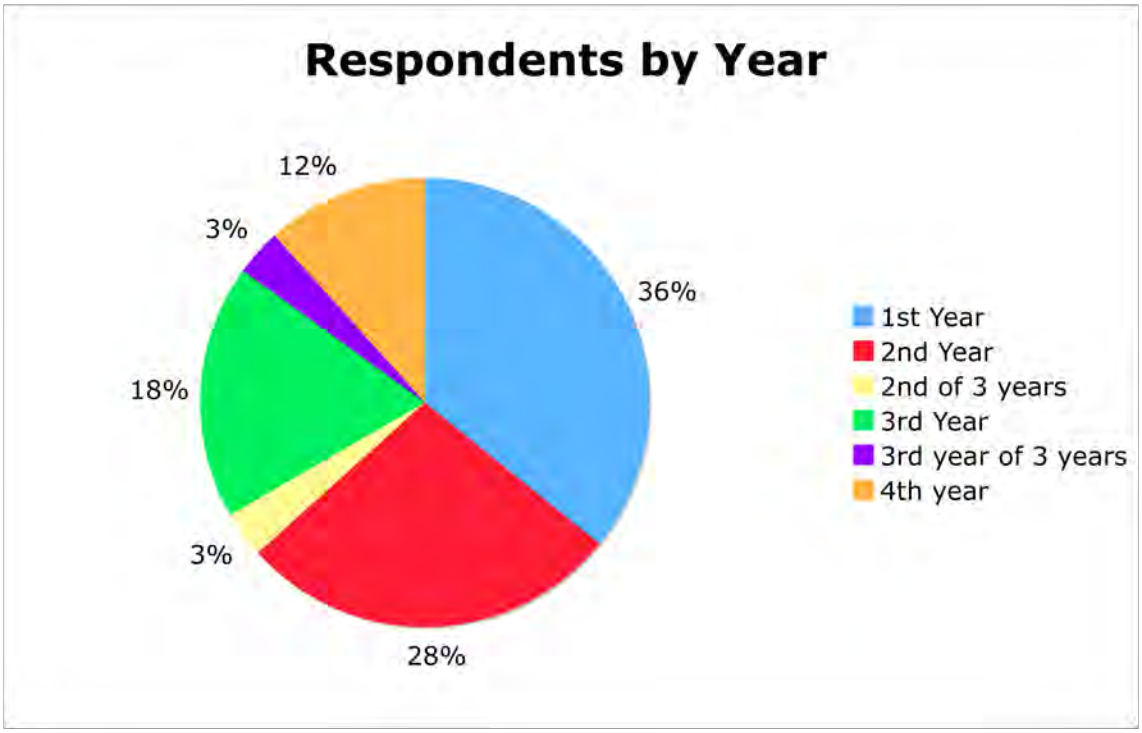
Seconder: Morgan Riggan

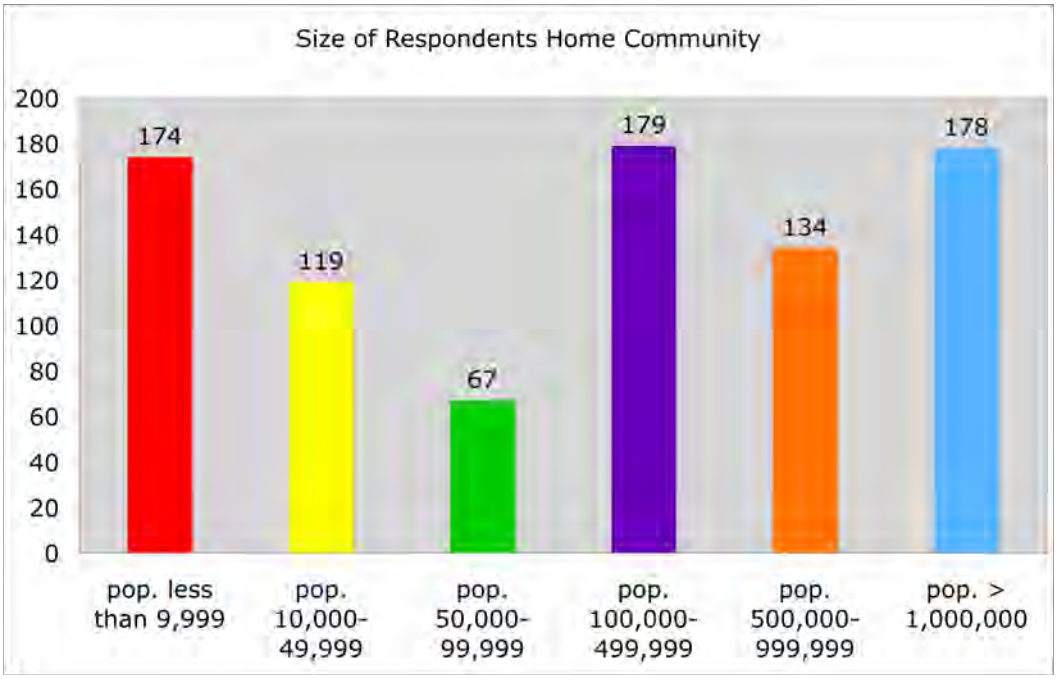
Motion carried unanimously

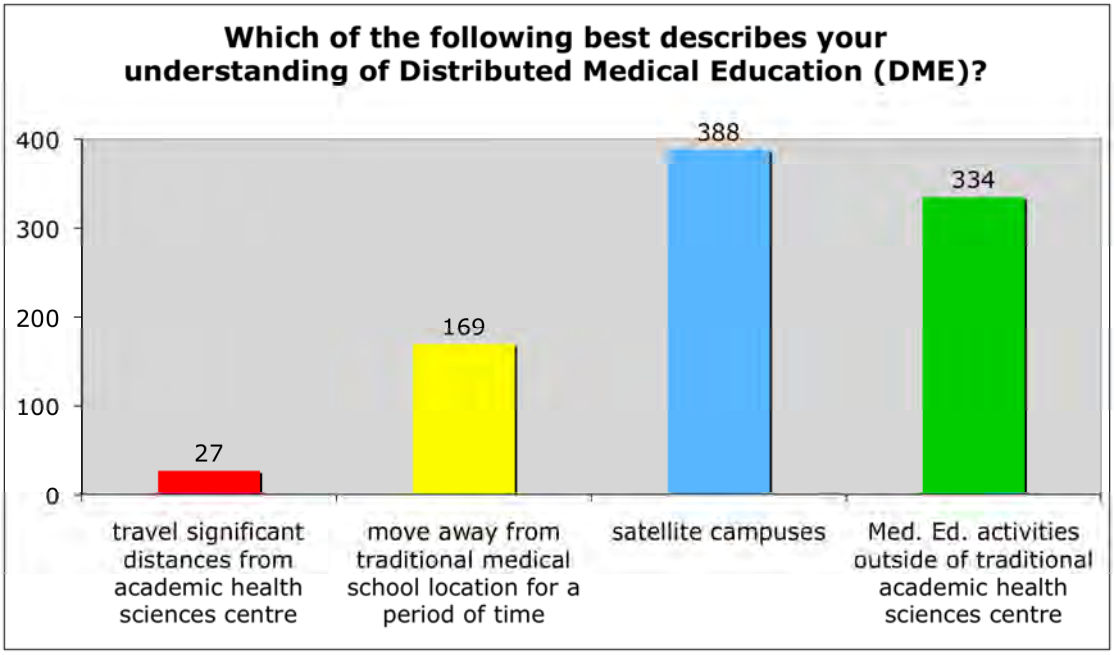
DME Survey

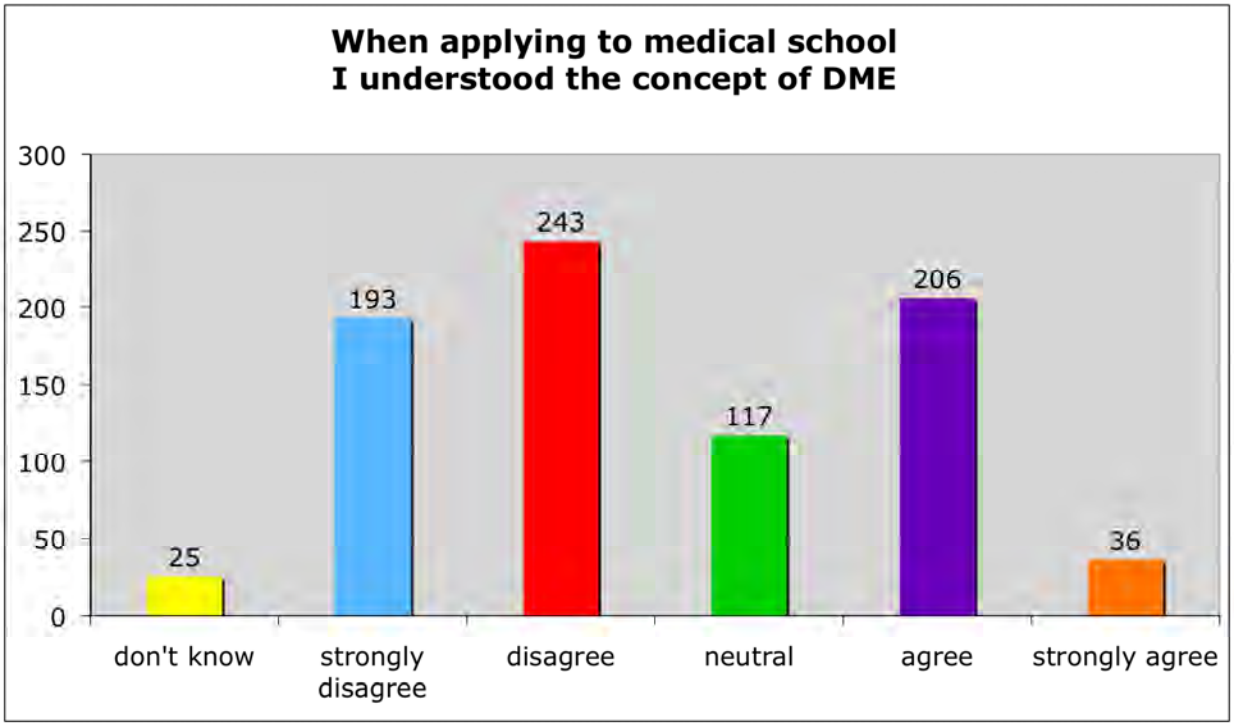
- Developed from focus group data
- Administered electronically via surveymonkey.com and distributed via email
- In English
- 849 respondents, 13% response rate
- Participation from each CFMS medical school coast-to-coast

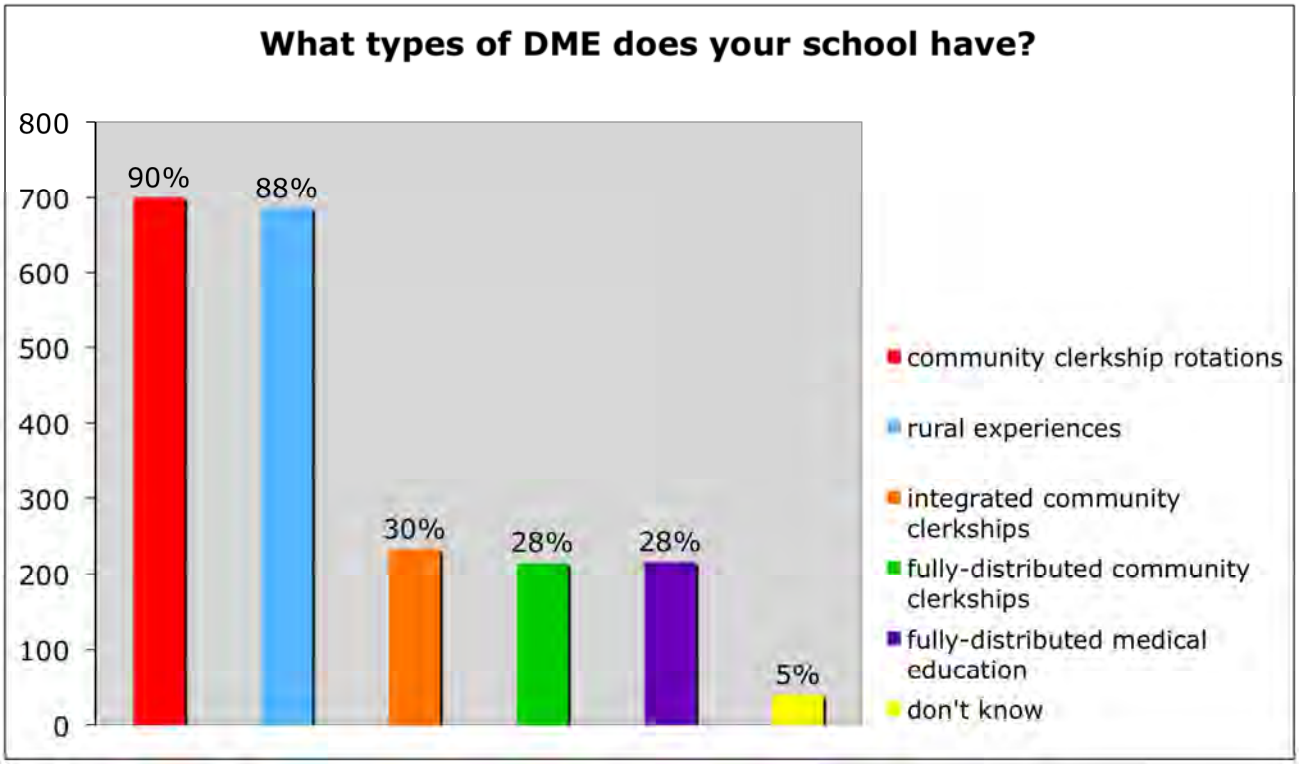
Summary of Results





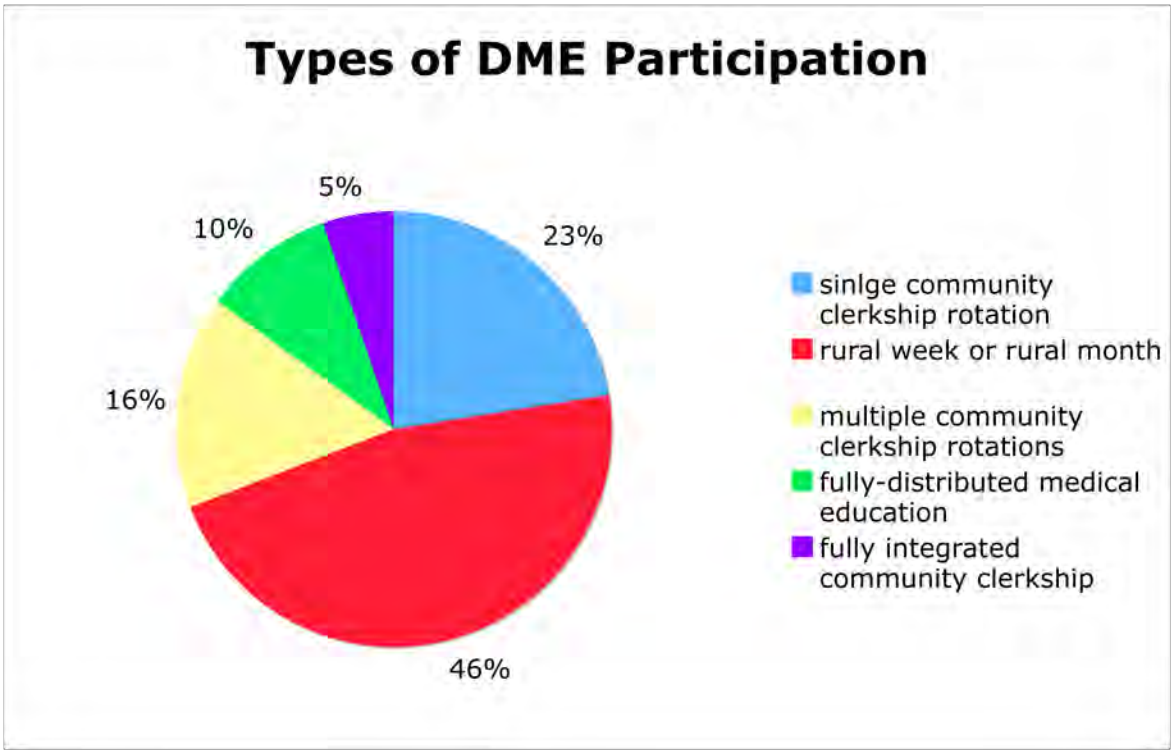

Which of the following best describes your understanding of Distributed Medical Education (DME)?
400
300
200
100
0
27
169
388
334
travel significant distances from academic health sciences centre
move away from traditional medical school location for a period of time
satellite campuses
Med. Ed. activities outside of traditional academic health sciences centre

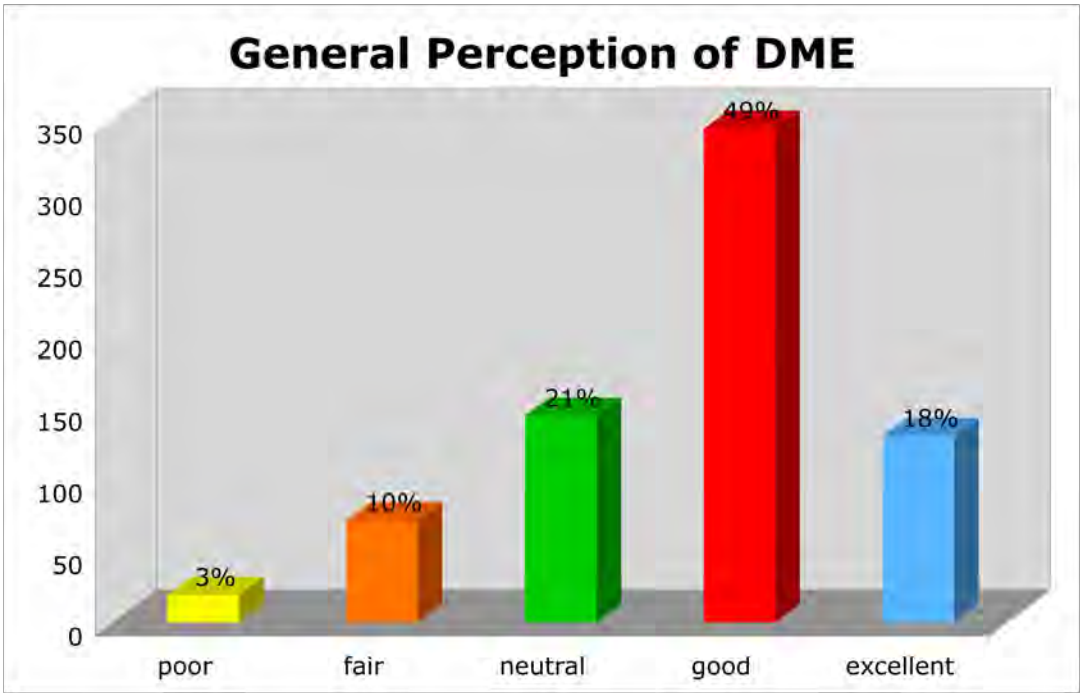

When applying to medical school I understood the concept of DME
300
250
200
150
100
50
0
25
193
243
117
206
36
don't know
strongly disagree
disagree
neutral
agree
strongly agree



67% of respondents had participated in some form of DME

46.6 % of participation was mandatory, 12.5 % was elective, 31.3 % had participated in both mandatory and elective experiences,





Strengths of DME Ranked:

1) “hands-on” learning (56% strongly agree (SA), 35.9% agree)

2) close contact with preceptors (46% agree, 44% strongly agree)

3) greater variety in educational experiences (46% agree, 25% SA)

4) smaller class sizes (44% agree, 27% SA)

5) explore communities for future practice (56% agree, 22% SA)

DME Weaknesses Ranked:

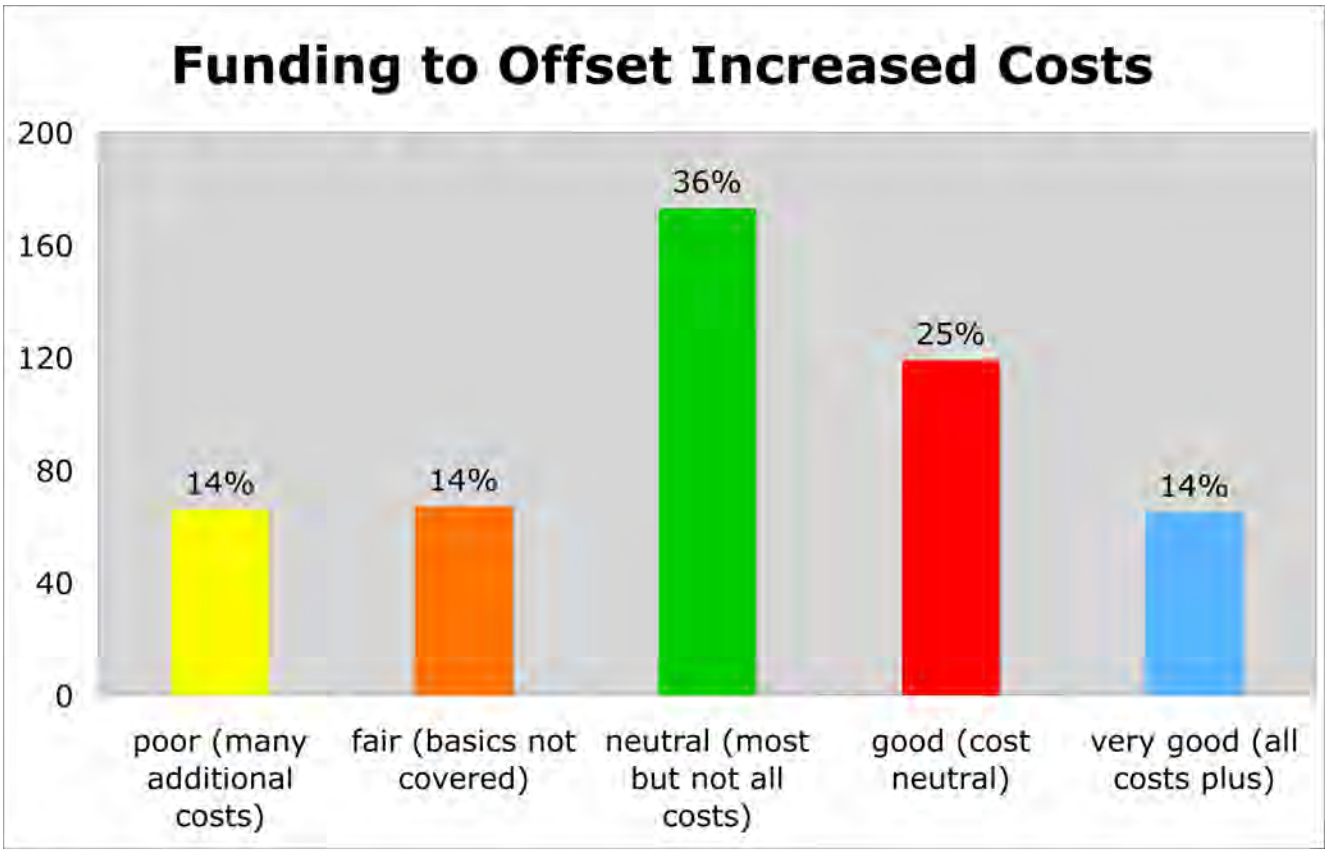
1) disconnection from current social life (43% agree, 23% SA)

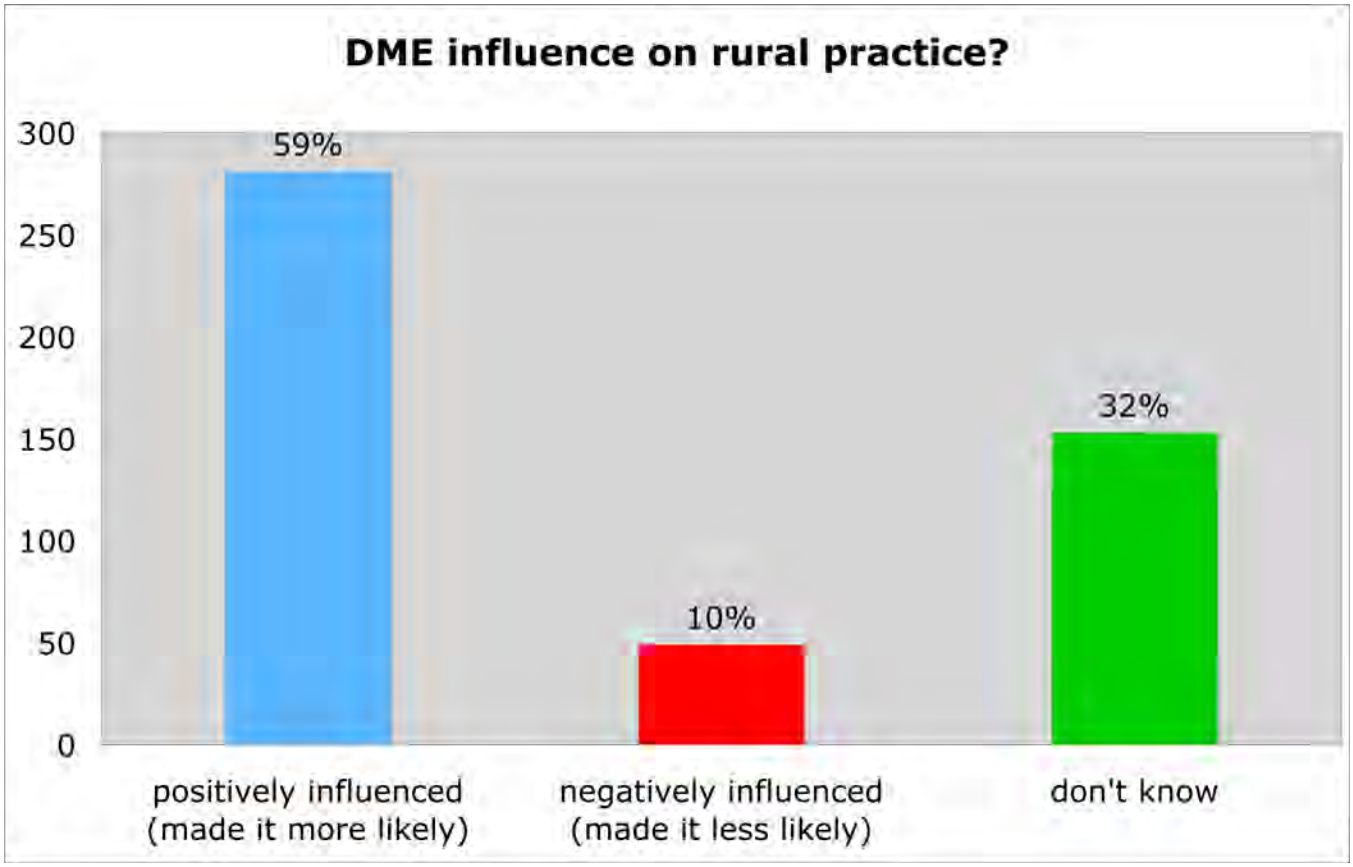
2) increased costs: travel, tech., housing (46% agree, 23% SA)

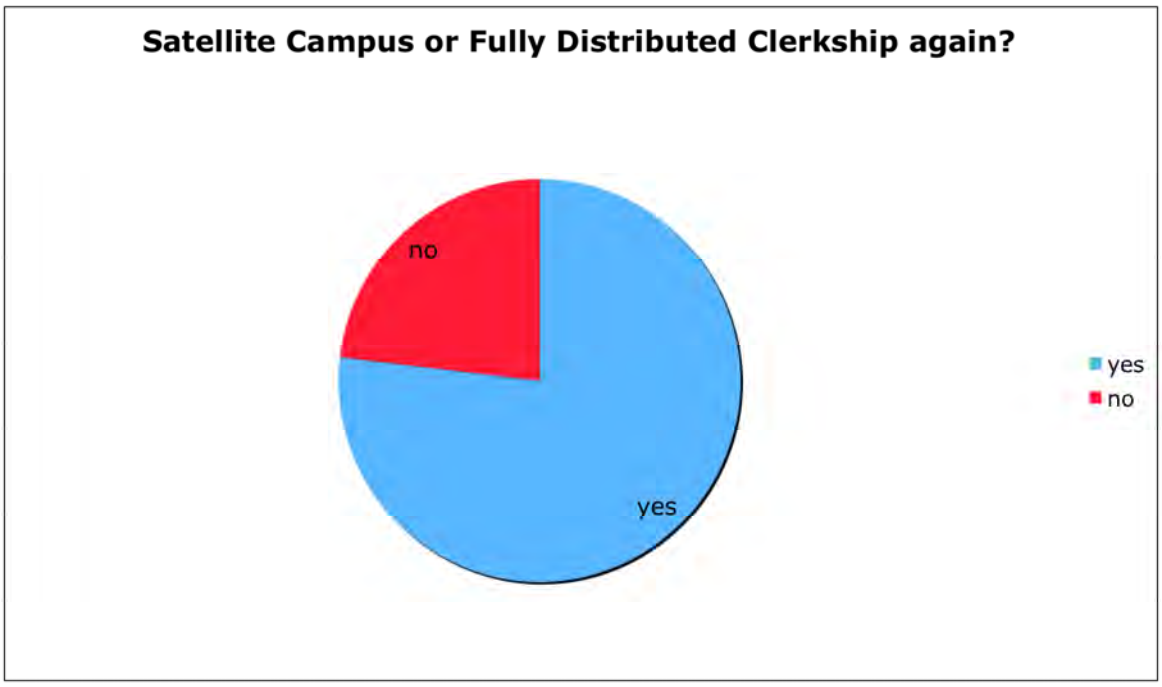
3) lack of access to learning resources (39% agree, 13% SA)

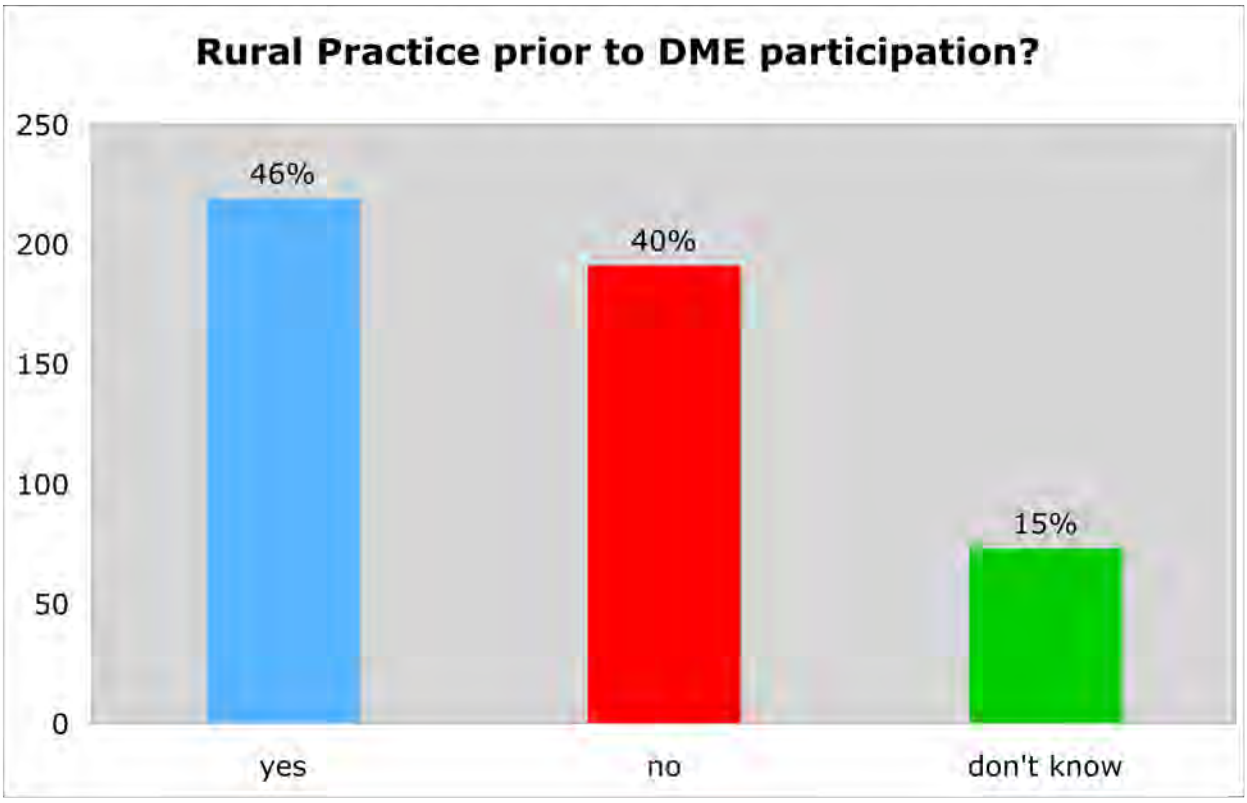
4) decreased ed. quality due to videoconferencing (28% agree, 12% SA)

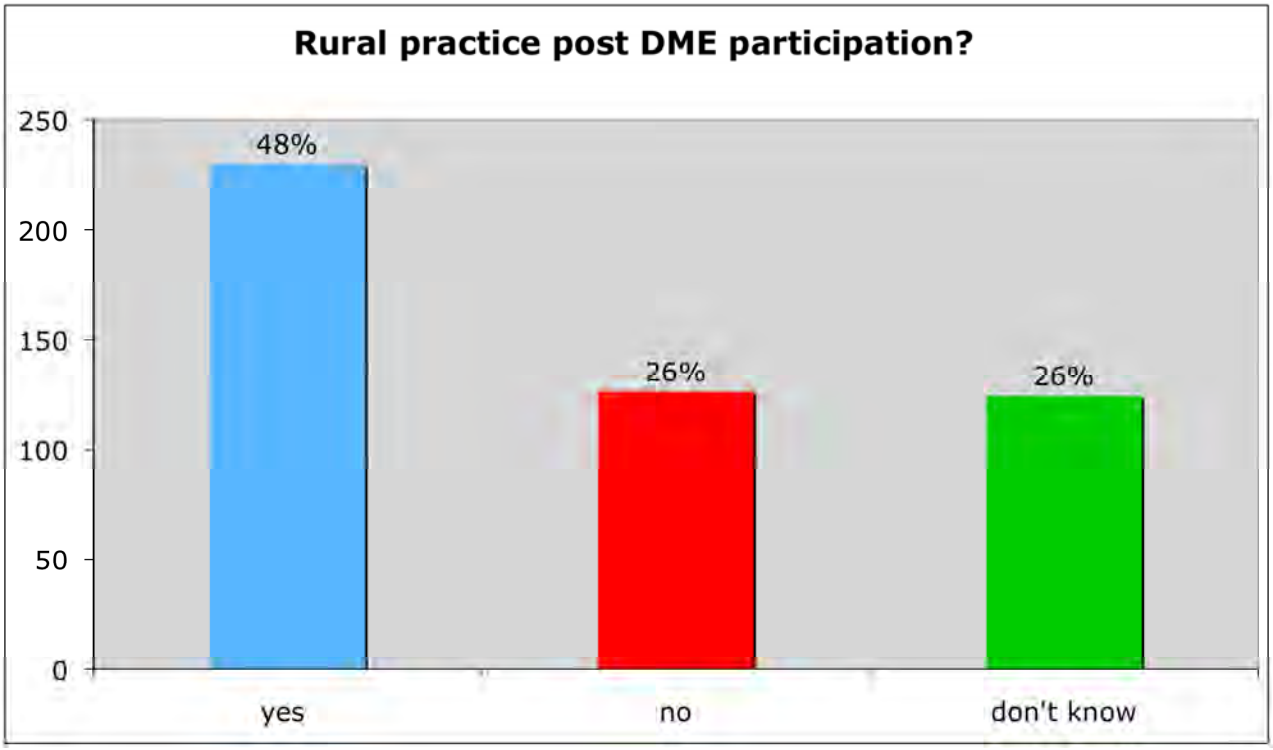
5) lack of access to university resources (37% agree, 9% SA)


Funding to Offset Increased Costs
200
160
120
80
40
0
14%
14%
36%
25%
14%
poor (many additional costs)
fair (basics not covered)
neutral (most but not all costs)
good (cost neutral)
very good (all costs plus)


DME influence on rural practice?
300
250
200
150
100
50
0
59%
10%
32%
positively influenced (made it more likely)
negatively influenced (made it less likely)
don't know


Satellite Campus or Fully Distributed Clerkship again?
no
yes
yes
no


Rural Practice prior to DME participation?
250
200
150
100
50
0
46%
40%
15%
yes
no
don't know


Rural practice post DME participation?
250
200
150
100
50
0
48%
26%
26%
yes
no
don't know

Additional comments

"I would encourage any institutions considering DME to give it a try, it has greatly enhanced my medical education by giving me opportunities I would have never had received through a 'classical' program."

"The impact of being socially isolated in a community and practice setting (no residents or medical students around) has more of an impact than one would imagine. The lack of access to gyms, libraries, and things like copy-centres and even post offices (which have VERY limited hours of operation in rural settings), make DME a huge inconvenience, especially during very important times like CaRMS"

"you visit towns you would normally not visit and fall in love with the extended scope of practice of the physicians there... it's great!"

"one main issue with DME is that there are often no residents on rotations and thus very little teaching -often docs at satellite locations do not really understand our role as clerks - it is disruptive to have to do so many mandatory regional rotations but I was happy to be able to choose to do rotations such as my family medicine rotation in a rural setting"

"DME helps me to remember why I am working so hard."

Appendix 2: DME Policies in CFMS Member Schools

Introduction

In response to the DME Task Force members' desire to learn more about DME policies in Canada, a student-lead review of policies governing DME practices was conducted.

The DME Task Force was struck in 2009 in response to the CFMS membership's interest in DME, the need for communication and exchange of DME practices across the country. In 2010, the DME Task Force was made up of at least one student representative from each of the CFMS member schools.

This Task Force, chaired by Eamonn Rogers from the University of Western Ontario, met periodically via teleconference to discuss issues of concern in DME across Canada. An online forum (http://www.dmetaskforce.proboards.com/index.cgi) was also created to allow members to exchange at their own leisure.

Methodology

The CFMS DME Task Force members were asked to look for formal policies governing their home school's DME activities. Of interest were:

1) Policies that help ensure academic equivalency across sites

2) Policies that promote a sense of belonging in the community / sense of belonging to the medical school

3) Policies that help ensure financial well-being

Results and Conclusions

To our surprise, the data sought were not always readily available. Many schools do not have any formally drafted policies governing their DME activities. This being said, LCME accredited medical schools must adhere to all accreditation standards, including the following which are deemed to be more specific to DME:

- ED-8 - There must be comparable experiences and equivalent methods of evaluation across all alternative instructional sites within a given discipline

- ED-39 - The medical school's chief academic officer must be responsible for the conduct and quality of the educational program and for assuring the adequacy of faculty at all educational sites

- ED-40 - The principal academic officer of each geographically remote site must be administratively responsible to the chief academic officer of the medical school conducting the educational program.
- ED-41 - The faculty in each discipline at all sites must be functionally integrated by appropriate administrative mechanisms.
- ED-42 - There must be a single standard for promotion and graduation of students across geographically separate campuses.
- ED-43 - The parent school must assume ultimate responsibility for the selection and assignment of all medical students to component campuses or tracks.
    - A. There must be a process that permits a student with an appropriate rationale to request an alternative assignment when circumstances allow for it.

Therefore, a reliable quality control mechanism exists to ensure that DME experiences are adequate.

The following is a summary of our findings. Note that the information presented below is a summary of the data obtained by student representatives on the DME Task Force. This information may not be exhaustive but it provides an idea of the data that was made available to students seeking DME policies at their home school.

The CFMS member schools are listed in order, from east to west.

Memorial University of Newfoundland

- Academic equivalency:
    - All clinical experiences are to be logged on the One45 system
- Mandatory rural placements in clerkship
    - Accommodation:
        - Free of change, provided by hospital
        - Travel expenses: gas reimbursed, economy fare flight reimbursed
- Core rotations in New Brunswick
    - Reimbursement of gas expenses or economy fare flight via Department of Human Resources of Eastern Health, St. John's.
- Electives outside the province: Reimbursement of half of the travel costs for a maximum amount of 300$ (half of economy flight OR half of the expenses for gas

Dalhousie University

- Dalhousie has a mandatory rural week in pre-clerkship and a recently founded satellite campus in New Brunswick.
- Development and implementation of Dalhousie Medicine New Brunswick (DMNB) Evaluation Sub-Committee in 2010
    - Sub-committee of Dalhousie's UGME Curriculum Committee
    - Purpose: to "define an approach for evaluation of the DMEP NB implementation and the sustained evaluation of the education program."
        - Evidence-based approach that addresses the needs of all stakeholders
    - Certain terms were defined:
        - *Comparability of the undergraduate medical education program across sites and for both students and faculty (as appropriate to faculty's varying roles and responsibilities) refers to comparability of*

            1. opportunities for learning experiences;

            2. access to learning and support resources; and

            3.educational outcomes using identical learning objectives and equivalent methods of assessment.

            - *Differences when detected will be explored and reported to the Curriculum Committee and referred to UGME/DMNB leadership for action when appropriate using quality improvement processes.*
        - Accreditation standard ED-8 "The curriculum of a medical education program must include comparable educational experiences and equivalent methods of assessment across all instructional sites within a given discipline."
            - Development of clear educational objectives and student feedback key to attaining this accreditation standard.
- Lectures:
    - Recorded and available to students on password-protected portal
    - Learning material all available online
    - Equivalent access to laboratories for students at all sites

McGill University

Integrated Clerkship in Gatineau:

- Academic:
    - Equivalency ensured by having the same objectives and logging tools (one45) for all McGill students
    - Though curriculum is not identical, this insures equivalency
- Social
    - Events organized by staff/residents/students to promote group dynamic
    - Health services made available to students
    - Home university fitness center made available to students
- Financial:
    - Quebec ministry of health provides stipend to students in order to account for transportation and living expenses.

Mandatory rural family medicine placements (4 weeks) in clerkship

- Can be done at McGill affiliated sites or at the student's site of choice
- Equivalency is ensured by defined rotation objectives logged in one45
- McGill affiliated site:
    - Accommodations provided by hospital
    - Quebec ministry of health reimburses expenses (travel, accommodations PRN and daily living)
- Non-affiliated sites within QC
    - Student's expenses may be reimbursed by QC ministry of health
    - Rotation must be approved by Faculty (preceptor needs to accept McGill's evaluation criteria and learning objectives)
- International placements (student's choice)
    - Mandatory pre-departure training session at McGill
    - Rotation must be approved by Faculty (preceptor needs to accept McGill's evaluation criteria and learning objectives)

University of Ottawa

- Mandatory rural placements:
    - Pre-clinical shadowing experience (1 week) and mandatory 4 week rural placement during clerkship (3rd or 4th year)
        - Standardized evaluation criteria for all students
        - Reimbursement provided by many provincial organizations (ex: NOSM, ERMEP, SWOMEN, ROMP) or the Faculty of Medicine
            - Covers travel costs and accommodation expenses
            - uOttawa has a partnership with ERMEP so it is expected that student will find placements more easily via this DME network.
        - Alternatively, out-of-province placements may be reimbursed by the Consortium national de formation en santé as per the *Politique de remboursement des frais de déplacement pour stages en milieu clinique*

Queen's University

No formal policy governing DME practices were made available to our student representative.

*Note that all medical students in Ontario have access to the services provided by ERMEP, SWOMEN, ROMP and NOSM.

University of Toronto

No formal policy governing DME practices were made available to our student representative.

*Note that all medical students in Ontario have access to the services provided by ERMEP, SWOMEN, ROMP and NOSM.

McMaster University

No formal policy regulating equivalency across sites.

Travel and living expenses accounted for by Mac-CARE travel and accommodation policy.

- Travel
    - Reimburse travel expenses from home base to Mac-CARE community sites (within ROMP) for a maximum of 450$/month
    - One return-trip per 4 week block may be reimbursed
    - Additional travel (ex: for mandatory, non-recorded lectures) may be considered for reimbursement.
    - Rotations taking place in Hamilton are NOT eligible for Mac-CARE funding
- Accommodation:
    - Up to 800$ paid directly to the landlord for students living in the community.

http://maccare.mcmaster.ca/documents/TravelandAccommodationPolicy.pdf

*Note that all medical students in Ontario have access to the services provided by ERMEP, SWOMEN, ROMP and NOSM.

University of Western Ontario

General

- UWO has a mandatory rural placement all students must complete during their clerkship experience.
- Equivalency can be achieved via appointment of a Regional Dean who would facilitate communication between campuses. In addition to promoting equivalency, this would help drive innovation for the Schulich school of Medicine and Dentistry.
    - People
        - Respect between individuals as a key to innovation
    - Process
        - Best process leads to best practice: documenting what people do to help improve outcomes.

- Technology
    - Review new technologies and how it can be used by the school to improve educational experience
    - Use as a TOOL

- Educational
    - Lectures: students must attend lectures at their assigned site only

*Note that all medical students in Ontario have access to the services provided by ERMEP, SWOMEN, ROMP and NOSM.

Northern Ontario School of Medicine

NOSM's entire curriculum is entrenched in DME. The school has 2 main campuses: Lakehead University of Thunder Bay and Laurentian University of Sudbury.

NOSM defines the community clerkship experience offered as "Distributed Community Engaged Learning", (…) "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."

- Academic:
    - Material for case-based learning activities made available online
    - Use of technology (ex: teleconferencing/videoconference) for whole group sessions.
    - Integrated Community Experience (ICE)
        - 3 mandatory 6-week placements (aboriginal and rural/remote community placements)
        - Developed with LCME accreditation standards in mind
    - Comprehensive Community Clerkship (CCC)
        - mandatory eight month longitudinal clerkship in a primary case setting away from main campus (ie: NOT in Sudbury or Thunder Bay)

- Financial
    - Accommodation: provided by the hosting community for ICE placements
    - Travel reimbursement and a food stipend are available for students doing community placements in Aboriginal communities.
    - 9000$ stipend provided by the provincial government to help offsets costs associated with CCC

*Note that all medical students in Ontario have access to the services provided by ERMEP, SWOMEN, ROMP and NOSM.

University of Manitoba

No formal policy governing DME practices were made available to our student representative. However, students at U of M must complete a mandatory rural placement both in pre-clerkship and during their clerkship.

University of Saskatchewan

- Students at must complete a mandatory rural placement both in pre-clerkship and during their clerkship.
- Accreditation expects consistency between sites, not equal but equivalent
- There must be comparable educational experiences and equivalent methods of evaluation across all alternative instructional sites within a given discipline.
    - All rotations have mechanisms for sharing data between sites
        - All student evaluations are shared between sites and negatives evaluations are handled appropriately
        - Objectives are common to all sites
- Student assigned to all campuses should receive the same rights and support services
    - All students have same access to financial resources
    - Help is provided if students are having trouble finding accommodation at remote site
    - Students are encouraged to find family physicians in Regina, the College will help is there are difficulties
    - Students have access to U of Regina athletic facilities

- Student will be reimbursed travel costs for any student service that is unique to the main campus and not available remotely
- Library services are available at remote site 24hrs/day
- There are College Student Intermediaries (aka Learner's Affairs officers) available at remote site for any personal or academic concern

University of Alberta

There is a mandatory rural placement for all students during their clerkship experience.

Policies for Rural Rotations

Room & Board

- Site-specific arrangements for accommodations and food, site/preceptor will have this information
- If the site provides meals, food costs will not be reimbursed
- If meals are not provided, reimbursement will be provided for up to $25/wk with original, itemized receipts
  - Not alcohol, medications, etc.
  - Not accommodation supplies (i.e. Toilet paper, dish soap), that is responsibility of the site

Transport

- Reimbursement will be provided for 1 round-trip
- Reimbursement will be for predetermined mileage if travelling by personal vehicle
- Travel by bus will be reimbursed with submission of original ticket
- Airfare will be reimbursed, provided approval is gained prior to purchase

Accommodation Regulations of RPAP (Rural Physician Action Plan)

- Pets are not allowed on the premises of any RPAP accommodation. In consideration of anyone suffering from allergies, and to adhere to requirements of RPAP leases, pets are not allowed in any RPAP accommodation.
- For health and safety, SMOKING IS NOT PERMITTED in any RPAP accommodation.
- RPAP must be informed of ALL visitors, including family members. Family is defined as spouse/partner and children. RPAP is unable to accommodate parents or extended family.
- The accommodations must be kept clean during your stay and must be clean when you leave.

- Generally, there should be no noise after 10 pm. Refrain from disturbing your neighbours.
- Assist with keeping your accommodations secure:
    - Please turn off all lights and small appliances when you are not on site.
    - Ensure all doors and windows are securely locked when you leave.
    - Return keys promptly after your stay.

Integrated Community Clerkship (ICC)

- Definition: Clerkship that is completed in rural communities, using family medicine practices as core
- Selection via application and interview
    - Students with poor academic records are not eligible
- Community placement is via lottery, though consideration can be given to exceptional reasons
    - 2 students per each community, for support and collegiality
- Sites - Bonnyville, Edson, Hinton, Peace River, Ponoka, St. Paul, Slave Lake, Sylvan Lake, Westlock and Whitecourt.
- Site-coordinators will be responsible for scheduling, ensuring that feedback occurs, and evaluations
- Senior teachers from the medical school will visit approximately each every six weeks to observe the students and preceptors, the ICC program director will visit each community approximately 1-2 times over each year
- Typical day
    - 4-5 half-days in family medicine clinic
    - 0.5-1 day of surgery
    - 0.5 day structured learning session
    - 0.5 day with another health professional
    - Expected to be on call 1 evening/week
- Typical year
    - 2 week Link block
    - 3 day research workshop
    - 1 week orientation
    - 37 week assignment
    - 2 week debrief
    - 3 weeks of selectives
        - identified gaps during the ICC year that students feel was under-represented in their communities
    - 5 weeks unscheduled time at end of ICC
- Evidence (both UofA and from other medical schools) suggests that students at ICC site do as well or better academically and have advanced procedural skills

Preclinical Networked Medical Education (May 2010)

- Initiative to expand rural educational programmes beyond current 3rd year Family Medicine rotations
- Goal is to increase student exposure to generalist environments earlier in their medical education as well as increasing educational capacity
- Current project will deliver GI course to a total of 16 students in 3 rural communities (Hinton, Peace River, and Grande Prairie)
    - 6 week course, 1st and 6th weeks in Edmonton, with weeks 2-5 in rural community
    - Lectures to be delivered by vodcast and webcast
    - Virtual office hours over Skype with course presenters
    - 1/2 day per week to shadow a local physician with at least 1 observed endoscopy
    - Weekly quizzes will be completed online
    - All course material will be identical
- Application process to determine students, with an interview if there are more applications than positions
- Accommodation and travel to/from site will be provided

University of Calgary

No formal policy governing DME practices were made available to our student representative.

University of British Columbia

All students are required to complete a rural placement during their clerkship experience.

Distributed sites: Prince George, Victoria, Kelowna

- These sites host all years of the medical program.
- First years spend the first 4 months in Vancouver so that there is a chance for all students to get to know each other.
    - After Christmas, students travel to their distributed site.
- Each site is equipped with anatomy labs, histology labs, small group rooms, research facilities, lecture theatres and videoconference equipment.
- There are 32 students each year at each of these distributed sites.
- UBC policy dictates that opportunities available at one site cannot be offered unless they are available at all sites.

Staff

- Each site has student affairs offices, a dean, support staff, teaching staff, medical undergrad society (MUS) representation, etc.
- There is no office in Vancouver that does not have at least one representative at each site.
- Policy states that when possible one lecture should be given from each site each week. This is not always possible as not all sites have all specialties.

Equality

- Any opportunity that is available at one site must be available at all sites before it can be offered.
    - This includes shadowing, research, student interest group presentations, 3rd year rotations etc.
- There is funding for student groups at all sites and
    - All events that can be videoconferenced must be.
        - VC facilities are available in the student space and are available for all student groups to broadcast their speaker series and meetings.
- All major and most minor committees in both the MUS and school of medicine have representation from each of the distributed sites.
- Several times a year, block leaders or lecturers that give frequent lectures (such as anatomy lecturers) are sent to one of the distributed sites
- Students are not allowed to answer questions after the lecture has concluded by going to the podium, all questions must be asked on the VC microphones or one website forums where all students can hear or find the answers.

Travel

- Funding exists for compensation to cover travel costs for students to attend scientific forums in Vancouver
    - i.e. the student research poster day
- The school of medicine has funding for 'inter-site connectivity' that is used to cover the cost of travel to another site for faculty run or sponsored events.
- For non sponsored events such as MUS parties, the annual class play or other such non-academic events, there is funding available from the student society to offset up to $400 of the cost of the travel.

Exams

- Examinable material is only that which is presented in class from official lecture material.
    - If a lecture, such as clinical skills, is not video-conferenced any additional material provided by the local lecturer is not testable.

Integrated Clerkship sites: Terrace, Ft St John, Chilliwack, Duncan (and soon at least one site in the southern interior)

- These sites host 2-6 3rd year students each year.
- Entirety of 3rd year is completed at these sites.
- They complete the equivalent amount of time in each speciality, spread out throughout the year.
- Exams are spread throughout the year
  - Comprehensive, summative exam at end of year.
- Sites are open to students at any site, including Vancouver.
- Each student at an integrated site is also given money to help cover the cost of travel to and from some exams in other cities.

Other distribution

Some Vancouver students are also taking blocks of 3rd year such as Obs/Gyn in other cities around BC. Videoconferencing facilities are available in every hospital that UBC students are sent to so that they can receive lectures from any of the other sites and ask questions in real time during the lecture.

Appendix 3: Distributed Medical Education Literature Review

General Overview

The academic investigation and evaluation of Distributed Medical Education is (DME) not fully developed. However, some systematic investigations from Canada and throughout the world are available and may help inform the future of DME. Although it must be stated that DME is a phenomena somewhat distinct from that of rural medical education (RME) and community based medical education (CBME), it should be recognized that the study of CBME and RME is very closely linked to that of DME. After all, one of the reasons DME is employed is in order to attempt to meet the needs of under-serviced populations (e.g. rural communities). Below is a list of resources divided into relevant categories that can help inform the study of DME.

A. Canadian Initiatives

Barrett, F.A., Lipsky, M.S., Nawal Lutfiyya, M. (2011). The Impact of Rural Training Experiences on Medical Students: A Critical Review. *Academic Medicine.* 86(2): 259-263.

Review of 72 studies that analyzed outcomes from rural training of medical students.

- Mixed results with USMLE exam completion : some studies showed no differences between students in the rural versus traditional urban training, one study showed rural students scoring better on the USMLE exam, and two studies found that rural students did poorer on the Step 1 but better on the Step 2.
- Students self-reported that their skills were significantly increased in the management of chronic disease, ability to handle acute problems, and understanding of health systems.
- Students placed in rural areas saw more patients and had more opportunities to practice procedural skills than in the non-rural training programs.
- Student satisfaction was measured in 8 studies and overall found that students were satisfied with their rural experience and exposure to community providers. They also perceived value in their experience and appreciated being considered a junior partner in their rural training experience.

Cameron, P. & Mann, K. (2006) Results of a survey of distributed medical education activities at Canadian Faculties of Medicine. *The Association of Faculties of Medicine of Canada.* Available at: http://www.afmc.ca/search-f/search.php?zoom_query=activities

- A survey and subsequent workshop (May 2006) attempted to establish a definition of DME and to describe the DME related activities undertaken at various levels of Medical Education in Canada (i.e. UGME, PGME, CME)

- Definition: ''Distributed medical education (DME) is an umbrella word that covers a wide range of activities outside the academic health centres offered to medical students completing their M.D program, residents at the postgraduate level and participants to continuing medical education. DME activities are frequently identified as a way to bring medical students or residents closer to populations/communities with the hope that the first will be better prepared to serve the second. DME is a social response to the need to increase the number physicians who will deliver health care in regions where there is a shortage of physicians and where the population is underserved. All DME approaches represent complimentary and additive efforts of faculties of medicine to creatively respond to the medical workforce needs of the health

- Survey enjoyed 69% response rate after round 1, 80% after second mailing
- 65% of faculties employed satellite and partner campuses throughout all levels of medical education (e.g. UGME, PGME, CME) many of which were new within the last 3-4 years
- Great variety was reported between faculties with regard to the types of DME activities undertaken at each school particularly across various education levels
- DME activity at the undergraduate level was believed to be increasing. Virtually all medical residents participate in some sort of DME during residency. CME was noted to be the least active level of medical education in Canada although many initiatives were described
- Many successes of DME were identified including: social accountability (service to underserviced areas), enhanced clinical experiences for learners and new infrastructure for communities and medical professionals.
- Greater vertical integration (e.g. UGME, PGME, CME integrated at the same site) technological refinement, infrastructure development, improved quality and meeting the needs of citizens and physicians at DME sites were identified as future goals

Lovato, C., Grand'Maison, P. & Bates, J. (2007). Fully Distributed Undergraduate Programs in Regional Campuses : Post Conference Workshop Report. *2007 Medical Education Conference, Victoria Conference Center, Victoria B.C., May 5-9, 2007. (92 page Workshop Report)*

- This report noted the specific standards applicable to DME development:
  •ED-8 - There must be comparable experiences and equivalent methods of evaluation across all alternative instructional sites within a given discipline
  •ED-39 - The medical school's chief academic officer must be responsible for the conduct and quality of the educational program and for assuring the adequacy of faculty at all educational sites
  •ED-40 - The principal academic officer of each geographically remote site must be administratively responsible to the chief academic officer of the medical school conducting the educational program.

•ED-41 - The faculty in each discipline at all sites must be functionally integrated by appropriate administrative mechanisms.
•ED-42 - There must be a single standard for promotion and graduation of students across geographically separate campuses.
•ED-43 - The parent school must assume ultimate responsibility for the selection and assignment of all medical students to component campuses or tracks. –There must be a process that permits a student with an appropriate rationale to request an alternative assignment when circumstances allow for it.

- The report discusses the challenges and ideas around trying to meet these standards while delivering UGME at DME sites (specifically for programs that include both pre-clinical and clinical education). The document outlines a number of areas including delivery of Student Affairs resources at the DME sites (many Universities have a Student Affairs staff member assigned to the DME sites).
- The document notes the reasons that various Universities have stated for their development or interest in developing DME medical education programs as:

  > "In addition to responding to the need for more physicians, schools indicated that other reasons for developing regional campuses were: (1) meeting the medical workforce needs of rural and remote regions (social accountability), (2) to expand and provide better medical education for students, and (3) political pressure from provincial governments or from within the universities."

Siu, E. (2010). Fully Distributed Medical Education Undergraduate Programs (FDME-UGP): A New Approach to Medical Education. *University of Toronto Medical Journal*, 87(3): 130-32.

- When medical school enrollment is increased, the number of Residency positions must also be increased to prevent student frustration in obtaining post-graduate training.
- Simply increasing the number of spots in medical school does not solve the issue of unbalanced distribution of physicians in Canada. There needs to be a greater emphasis on training medical students and residents in the rural/underserviced communities so that they are more likely to practice outside of the major Canadian cities.
- Once the new FDME-UGP is introduced at UofT, the student organizations and support programs will be equivalent at both the University of Toronto main campus and the Mississauga campus. A proportion of the lectures will be delivered from the Mississauga campus as well (ie. 20% of students are in Mississauga, therefore approximately 20% of the lectures will be delivered from there). The lecture theatres and facilities at the Mississauga campus were developed to be high-tech and able to deliver live videoconferencing for lectures and student group initiatives.
- The University of Toronto hopes to expand the program from 54 to 216 students by 2014 and they will be conducting multiple studies concurrently and involving students regularly to ensure student satisfaction with the program in Mississauga.

B. Descriptive Studies and Overviews

Beaton, N.S., Nichols, A., McLellan, A., Cameron, B., & Sen Gupta, T. (2001). Regionalization of rural medical training in far North Queensland: A learning experience for medical education. *Australian Journal of Rural Health,* 9supp. : S32-S38.

- Need for vertically-integrated training pathway for rural doctors was identified and Australian associations attempted to address the shortfall of rural physicians
- Australian government undertook a study in 1997 about its General Practice Strategy and identified the following needs:
    - need for collaboration between educational institutes, hospitals, doctors medical profession organizations and regional health services
    - need for recognition of rural medicine as a distinct discipline that does include general practice
- Australian government recommendations to the shortfall:
    - GP education at all levels of medical education
    - professional groups (eg. Australian College of Rural and Remote Medicine)
- Key success steps taken by the Far North Queensland group:
    - design of specific curriculum for north Queensland à effective and culturally appropriate protocol (consulted with indigenous communities)
    - regionalized health training units developed – geographically, philosophically and functionally rural hospital chosen to lead this initiative
    - funding achieved
    - longitudinal programs developed (high school à undergraduate à vocational training à professional development) at the regional, state and national levels in accordance with needs assessments, community involvement and support
    - engage the locals – local hospitals, local doctors, primary health care services, non-governmental organizations, stakeholders
- Provision of tips for how regionalization of rural medical training in north Queensland was successful

Deaville JA, Wynn-Jones J, Hays RB, Coventry PJ, McKinley RK, Randall-Smith J. (2009). Perceptions of UK medical students on rural clinical placements. *Rural and Remote Health*. 9:1165.

- This paper identifies student ideas, concerns, and beliefs about how a rural clinical placement would be. The school was considering the implementation of rural clinical placements and asked Year 1 and Year 3 students about their ideas of what rural means, what concerns they would have about moving to a rural area for medical education, and beliefs about the health status of rural communities.
- Results: Many students were anxious about leaving family, friends, part-time jobs, and their city social life. Views on the health status and roles of a GP in rural areas were mixed, but most believed that rural GPs would be responsible for more areas of

medicine (ie. minor surgery, etc.). Financial reimbursement was a very important concern to students and it was strongly felt that they would need financial compensation for increased costs associated with living in the rural communities.

Downey, L. H., Wheat, J. R., Leeper, J. D., Florence, J. A., Boulger, J. G. and Hunsaker, M. L. (2010). Undergraduate Rural Medical Education Program Development: Focus Group Consultation With the NRHA Rural Medical Educators Group. *The Journal of Rural Health*, no. doi: 10.1111/j.1748-0361.2010.00334.x

- This paper used a focus-group approach to determine 5 key elements to the development of a successful rural medical education program and resulted in 5 Recommendations:
    1. Identify Best Practices of Rural Medical Program Admission Processes
    2. Develop Competencies to Be Met Through Curricular Elements That Occur and Are Required in Rural Training Sites
    3. Develop Case Stories and Studies that Document Model University-Rural Community Partnerships From Established Rural Medical Programs
    4. Explore the Potential of a Participatory Research Agenda Among Rural Medical Education Programs
    5. Identify Additional Relevant Data Elements and Investigate the Feasibility of Establishing an Inter-university Rural Medical Education Program Database
- There was discussion of the importance of utilizing student and preceptor feedback in evaluating the program; Recommendation 4 highlights the importance of this strategy and students as resources in medical education program development and improvement.

Glasser,M., Hunasaker, M., Sweet, K., MacDowell, M., Meurer, M. (2008). A comprehensive medical education program response to rural primary care needs. *Academic Medicine,* 83 (10): 952-61.

- Review of the RMED program in Illinois, United States that has been in operation since 1993. As of 2008, “159 students have graduated, with 76% entering primary care residencies; 103 are currently in practice, with 64.4% in primary care practice in small towns and/or rural communities” and “89% of Rockford graduates electing family medicine residencies have been RMED Program students.”
- This program has students in a rural area for all four years of their medical education and is for students from a rural area that are committed to returning to a rural area (especially for primary care). This study looked at four years of the program and saw that although the MCAT scores for RMED students were slightly lower than those in the urban program, the USMLE Part 1 scores were nearly the same, and RMED students were getting 48% of the awards, despite comprising less than 1/3 of the student body.
- Student perspective of curriculum outcome: “Students consistently rate their skill development as positive, with major gains made in the areas of understanding the

primary care office structure, ancillary health care systems, the hospital care system, and the general community." The report also noted that preceptors tended to rate the student performance even more positively than the students self-reported performance.
- The researchers have not analyzed scores for the USMLE Part 2 at this time.

Magzoub, M.E.M.A. & Schmidt, H.G. (2000). A taxonomy of community-based medical education. *Academic Medicine, 75 (7)*: 699-707.

- This article categorized Community-Based Medical education into three different categories : 1) Service-oriented programs, 2) Research-oriented programs, and 3) Training-focused programs with two subcategories within each of these. Examples of each were provided in a qualitative narrative format, mostly written by students who had experienced these types of programs. The response of the students were very positive, however many were more applicable to developing and under-developed countries.
- The paper makes the important distinction between Community-oriented and Community-based medical education, whereby Community-oriented medical education refers to the policies and curriculum being taught to students at the urban Universities versus Community-based medical education involves the activities that students are participating in at community educational sites.

McLean R.G., Pallant J., Cunningham C., DeWitt D.E. (2010). A multi-university evaluation of the rural clinical school experience of Australian medical students. *Rural and Remote Health,* 10:1492.

- The study used a questionnaire sent to 166 medical students who had completed one year at a Rural Clinical School (RCS) in one of six participating Universities across Australia. The response rate was 75.3% for the 29 item questionnaire.
- Results : 86% of respondents said that they would participate in the RCS again if they had their time over and 64% said that they would spend more time at the RCS if they could. The twelve items that pertained to the students' educational experience reported greater than 80% agreement. Items involving procedural skills development had 97% agreement. Clinical supervision items had >80% agreement and most students found their supervisors approachable (97%), enthusiastic (96%), and respectful (95%).
- Open-Comments from students : 59 open-ended comments about the RCS experience were separated into positive comments (42%), those containing both positive and negative comments (32%), and those that only contained negative comments (25%).
    - Positives : Patient exposure and skill development, most supervisors were very keen to teach, exposure to the lifestyle of rural physicians.
    - Negatives : Some students felt they needed more exposure to specialists and would appreciate more didactic learning.

- Overall, the majority of the comments and results were positive from students participating in the Rural Clinical Schools in Australia.

Norris, T.E., Coombs, J.B., House, P., Moore, S., Wenrich, M.D. & Ramsey, P.G.. (2006). Regional solutions to the physician workforce shortage: The WWAMI Experience. *Academic Medicine, 83:* 952-961.

- Alternative method for medical school expansion – regional (ie. across five US states – Washington, Wyoming, Alaska, Montana, Idaho)
- Existing universities for first-year education, 2nd year at "home" Seattle campus, clinical sites across all five states
- Physician workforce predictions have shaped expansion/contraction of medical school growth
- Current prediction = shortage of primary care physicians and specialists
- Regional campuses defined =
    - geographically separate campuses that are not the medical school's primary site
    - administrative ties to a single dean's office
    - offers at least four of the required third-year clerkship rotations
- Benefits
    - increased enrollment in "cost-effective fashion" – lower overall start-up costs compared to brand new schools
    - increased clinical training opportunities,
    - response to unique health care needs of each region's populations
    - retention of students practicing in their "home" states
- Challenges
    - recruitment of basic-science faculty at regional sites
    - start-up costs to upgrade facilities
    - trying to ensure education equivalence across sites
    - expectations for initiating new research programs as other "traditional schools" have.

Sturmberg, J.P., Reid, A. & Khadra, M.H. (2001). Community-based medical education in a rural area: a new direction in undergraduate training. *Australian Journal of Rural Health, 9*(suppl): S14-S18.

- [Teritary care hospitals] [2]expose students only to a small facet of medical care. The other much larger aspects of medical care can only be learnt in the community, like the early presentation of conditions, the importance of continuity of care, disease prevention and health promotion and the effects of social status on health behaviour and health care utilisation."
- It is recognized that students need to reflect on the experiences that they are having in the rural community-based clerkship program. To do this, students participate in

weekly online integration tutorials to help link the experiences "covering medical, sociological, epidemiological, public health and economic issues of patient care. In addition, students are observed at the bedside and present in topic-orientated tutorials."

Tesson, G., Curran, V. Pong, R.W. & Strasser, R. (2005). Advances in rural medical education in three countries: Canada, The United States and Australia. *Rural and Remote Health*: 397. Available from: http://www.rrh.org.au

- 31 open-ended interviews of medical school personnel supplemented by published materials on 7 medical schools in Canada, the United States and Australia. Interviews were used to identify common themes, successes and challenges, and to answer questions such as what type of rural medical education model best serves the needs of rural populations.
- A typology of rural medical education is suggested: Mixed Urban/Rural Schools (e.g. University of Washington WWAMI Program, University of British Columbia), Defacto Rural Schools (e.g. Memorial University, University of New Mexico), and Stand Alone Rural Schools (e.g. Northern Ontario School of Medicine, James Cook University).
- Various practices ares compared based on the typology of schools including admissions procedures, curriculum content, clinical training, and funding arrangements
- It is noted that 'stand alone' rural medical schools (e.g. NOSM) have more opportunities to develop curricula that are innovative and address the health needs of rural populations and that 'stand alone' schools also allow greater rural clinical exposure particularly with regard to training in specialties.
- The authors pointed out that rural medical schools and programs often receive funding that is outside of the 'traditional funding pool' and that such funding could be something to be concerned about as it may not be sustainable. Furthermore, this type of funding may put strains on the long-term financial viability of some programs (e.g. extra funding to pay rural preceptors who are not required to teach as are those with traditional tertiary care center academic appointments).
- Many schools noted that pressures from government to ensure funding outlays for rural medical schools increased the supply of rural physicians.

<u>C. Advantages and Disadvantages of DME / Success and Challenges</u>

Bianchi, F., Stobbe, K. & Eva, K. (2008). Comparing academic performance of medical students in distributed learning sites: the McMaster experience. *Medical Teacher,* 30; 161-171.

- Aim: to compare the academic performance of medical clerks who spend at least 5 weeks studying at distributed sites vs. students who study in an academic center.

- Methodology: comparison of academic performance by group prior to training at distributed sites and post-distributed site education
  Pre-clerkship academic performance assessed by pre-clerkship tutorial evaluation (i.e. professional behaviour, groups process, group content, clinical reasoning exercise [exam], clinical skills) and inaugural OSCE

  Post-clerkship academic performance assessed by clerkship tutorial evaluations (i.e. clinical skills performance, tutor ratings, end of rotation examinations) and post-clerkship OSCE

- No statistically significant differences were noted between groups before distributed educational experience. However, students undertaking distributed scored higher on post-clerkship OSCE that non-distributed experience students
- Conclusion: First Canadian study to demonstrate that students studying at distributed sites have academic performance comparable to counterparts at academic centers

Denz-Penhey, H., Shannon, S., Murdoch, J.C., Newbury, J.W. (2005). Do benefits accrue from long rotations for students in rural clinical schools. *Rural and Remote Health*, 5: 414 (online).

- Australian government funded medical students to have substantial rural clinical experience with the ultimate goal of increasing the quantity and quality of rural physicians (studies show that rural experience during training à increased likelihood of practicing in a rural setting after graduation)
- 29 students in UWA … in 2003 and 2004 had a home-base for the year with 3-4 week rotations away
- 10 students (volunteers) in 2003 at SGRHS had 6 week rotation system, moving every 6 weeks … then 15 students in 2004 had a home-base with short rotations away from home base for specialties
- Study compared different types of placements –
  - Long-term in one centre with only a few days away at a time
  - Long term with short rotations (3-6 wks) away from home
  - Week-long rotations without a homebase
- Most students preferred having home base in one centre with as little time away as possible because
  - Academic: excellent teaching/learning opportunities in the rural site … why disrupt it unnecessarily? Students directed their own learning experiences to be more self-directed, seeking the opportunities they wanted/felt were lacking … rotating away à lose “learning rhythm”
  - Clinical: longer rotations allowed students to feel more useful … they become more familiar and “known” on the clinical team so that they can be given the appropriate amount of responsibility (don’t have to constantly re-establish themselves)/can make appropriate contributions to the team …

more time allows student to gain confidence as a helpful contributor to the team! HOWEVER, short breaks away from the home-base were socially healthy in terms of getting a "break"
    - Social: staying in one centre longer allowed for students to participate in a wide range of community activities OUTSIDE their role as med students
- Longer rotations are better than shorter ones because they allow students to be exposed to and inducted into the "rural lifestyle", which is the real way students are convinced to go into rural medicine
- ***2 week introduction to the rural community was found to be useful although at first it was termed to be lacking in relevance

Denz-Penhey, H.; Murdoch, C.; Lockyer-Stevens, V. (2004). 'What makes it really good, makes it really bad.' An exploration of early student experience in the first cohort of the Rural clinical School in the University of Western Australia. *Rural and Remote Health,* 4, 300 [online].

- Aim: to evaluate the experiences of students attending five Rural Clinical Schools (RCS) during the first year of the RCS programme run by the University of Western Australia
- Qualitative structured surveys (2) and a semi-structured interview were used to collect data from both students and staff. Data were transcribed and thematic analysis performed. Triangulation between staff, students and different sites was used to identify major themes and clarify relationships between themes.
- Student anxiety identified as overarching dimension prominent in content analysis of all major themes
- Factors that ameliorated student anxiety included larger group size at RCS site, reassurance that curriculum was comparable to the main urban site
- Perception that RCS coordinators were not fully equipped to support rural staff and not sufficiently familiar with curriculum and assessment
- Higher anxiety among students who did not have day-to-day continuity of exposure in discipline-specific clinics—need for structured learning tasks identified
- Students articulated need for assessment specific to RCS rather than based on urban main site
- Student anxiety not related to competence as measured by final assessment marks
- Burnout identified as significant cause of anxiety—informal teaching out of hours created unique learning opportunities but contributed to student stress
- Findings from study used to adjust and improve RCS programme for future cohorts

DeWitt, D.E, McLean, R., Newbury, J.; Shannon, S.; Critchley, J. (2005). Development of a common national questionnaire to evaluate student perceptions about the Australian Rural Clinical Schools Program. *Rural and Remote Health,* 5, 486 [online].

- Federation of Rural Australia Medical Educators (FRAME) created questionnaire to evaluate nine (9) rural clinical schools (RCS) and track medical students in these programmes
- Questionnaire developed to assess student perceptions and educational effectiveness with respect to student recruitment, academic and clinical education, effects of RCS exposure on training or vocation in rural Australia
- Survey methodology utilized mainly the Delphi technique: subsequent questionnaires built upon responses to preceding questionnaire with final version upon participant consensus
- Additional survey item development from unpublished work, questionnaires identified through MEDLINE search and from FRAME member input
- Longitudinal data will be collected using the online FRAME survey and maintained by each RCS school as the common evaluation tool for education outcomes and student perceptions

Jones, G.I.; DeWitt, D.E.; Cross, M. (2007). Medical students' perceptions of barriers to training at a rural clinical school. *Rural and Remote Health,* 7, 685 [online].

- Aim: to identify reasons for low recruitment rates of medical students to Rural Clinical School (RCS) programme for clinical training
- Methodology: Quantitative/qualitative internet-based questionnaire sent to medical students from all years
- Clinical education and exposure ranked as most important factor in decision of clinical school
- Family commitments, financial issues, housing issues identified as three main concerns for students not selecting RCS
- Ability to obtain preferred internship also identified as a perceived concern with RCS programme
- Increased financial incentives identified as factor that would improve RCS recruitment
- Evidence of equal teaching and learning experience identified as factor that would improve RCS recruitment
- Analysis did not show results of cross-tabulation by demographic factors but indicate that being female, graduate-level entry, and rural origin are associated with RCS selection
- Reviewer's note: Separate analysis not performed for pre-clinical versus clinical years. This results in difficulty with interpretation as students already in clinical school were analysed along with those still considering their clinical school preference

Jones, G.I.; DeWitt, D.E.; Elliott, S.L. (2005). Medical students' reported barriers to training at a Rural Clinical School. *Australian Journal of Rural Health,* 13; 271-275.

- Aim: to evaluate student concerns about clinical training in a Rural Clinical School (RCS) setting in Australia
- Methodology: qualitative theme analysis of written responses to clinical school preference applications
- Social commitments due to family, spouse, support network, work (part-time job) as well as transportation issues, financial barriers, and the difficulty with moving were among the main themes identified regarding RCS training
- Academic reasons were not mentioned in written responses, however article goes into discussion of perceived detriment to adequate training and future career among students as a barrier to RCS recruitment
- Article makes several suggestions to improve recruitment:
    - Assigning student to clinical placement earlier to allow them to prepare more adequately
    - Enhancing the attractiveness of rural training at entry into medical school
    - Encouraging community involvement to address social needs of students (housing, support network, part-time employment)
- Reviewer's note: The discussion points to improve RCS recruitment do not appear to have been based on the data analysis itself but on the experience of the authors with the RCS programme. The validity of the data may be questioned since non-anonymous survey methods were used to collect data, despite subsequent de-identification for analysis. Additionally, survey items analysed were included on administrative forms for clinical school preference, thus the reported reasons for preference might differ from actual reasons for choosing urban or rural placement if this item was perceived as being used to evaluate and justify the students' listed preferences. Considering the lack of academic reasons (eg. competitiveness for internships, adequate training and assessment, etc) it appears this may have influenced the manner in which students responded to the question.

Mihalynuk, T., Snadden, D., Bates, J., Scott, I., Frinton, V. & Wilson, G. (2008). Size Matters: what influences medical students' choice of study site?. *Medical Teacher,* 30;4,e108-e114.

- Aim: To understand what influences students' preference of study site in a single medical school with three separate campuses, one with a rural mission.
- Methodology: qualitative, semi-structured interviews conducted individually with 37 students from all sites

  Some students were preferentially selected for interviews such as aboriginal students, students who chose the rural site (22 of 37 students interviewed), students of rural origin who selected the academic center site

  Iterative rounds of coding with coding scheme used to identify common themes

- Size of community, size of class and partner and family ties were key themes influencing campus choice
- Perceived advantages of the traditional academic center noted by students included access to medical and educational specialists as well as the diversity offered by a larger, more anonymous class, patient case-mix and access to the amenities of a large city
- Perceived advantages of the rural and community sites included close relationships with classmates, better opportunities for close mentorship by preceptors and the advantages of life in smaller rural settings
- Family and relationship ties "trumped" education factors in relative importance to site selection
- Qualitative analysis identified many factors influencing site selection and describe a complex process that may "explain why admissions committees have not been able to accurately and consistently predict students' choice of eventual practice location to date
- Descriptive analysis lays groundwork for enhanced medical school selection procedures
- Description and factors identified could possibly used to help inform students applying to medical school about the factors they should consider before ranking the various campus sites available to students.

O'Sullivan, M., Martin, J. & Murrary, E. (2000). Student's perceptions of the relative advantages and disadvantages of community based and hospital based teaching: a qualitative study. *Medical Education,* 34;648-655.

- Aim: to obtain the perceptions of medical students regarding the relative advantages and disadvantages of clinical rotations in community teaching sites (usually GP's offices) vs. the teaching hospital setting.
- Methodology: qualitative thematic analysis of interviews and focus groups with 24 students
- Advantages of hospital environments included access to learning experiences related to specialties, availability of patients with clinical signs, experience with acute presentations, following patients from admissions to discharge, being a part of social life of the hospital and others.
- Disadvantages of hospital environments included a lack of clear learning objectives and "ad-hoc" teaching, inadequate supervision and feedback on patient encounters, patient's unwillingness or illness preventing student participation, teaching cancelled at short notice, hierarchical nature of hospital
- Advantages of community based environments included: learning about common conditions, gaining insight into the psychosocial context of disease, high level of supervision and feedback, skilled and enthusiastic preceptors, and others

- Disadvantages of community rotations included: travel and expense to community sites, fewer signs on physical examinations, fewer opportunities for procedural practice, and lack of associated social activities

Page, S., Birden, H. (2008). Twelve tips on rural medical placements: what has worked to make them successful. *Medical Teacher.* 30:592–596.

This article provides 12 key tips for successful rural medical placements, they are:

1. Focus training in appropriate areas
2. Select students wisely
3. Provide adequate practice infrastructure support
4. Provide good (not merely adequate) accommodation
5. Provide strong student support
6. Provide strong preceptor/supervisor support
7. Take advantage of the potential to provide trans-disciplinary health care team learning (and doing) experiences
8. Provide adequate learning supports from the home campus
9. Capitalise on the opportunity to provide an immersion learning experience
10. Evaluate
11. Involve rural clinicians and students in course development and evaluation
12. Foster involvement of the community at large

The paper provides a detailed explanation for achieving each of these tips and what they entail. Note that many of them involve strong consideration for student satisfaction, individual needs (ie. accommodation, family, finances, homesick, etc.), and encourage the involvement of student feedback and consultation in program development and improvement.

Rackleff, L.Z., O'Connell, M.T., Warren, D.W. and Friedland, M.L., "Establishing a Regional Medical Campus in Southeast Florida: Successes and Challenges", Academic Medicine, 82(4):383-389, April 2007.

Challenges:

- Examinations are the same for students taught at the urban and the regional campuses. However, the regional campus has community-physician guest lecturers and other lectures that differ from the urban site. Student perspective is that the urban faculty have more impact on the examination questions, which resulted in a reduced attendance at the community-based lectures in favour of live webcasting the urban lectures online. To deal with this, the faculty worked to have the community-based faculty and the urban-based faculty work together on examination questions. Of note is that the live webcasts were discontinued in 2005.
- Students expressed concern over the lack of continuity from year-to-year with community-based lecturers and that the program can not develop and mature as well due to this. The school decided to create a minimum time commitment for community-based lecturers when they agree to participate in teaching roles.

- The LCME accreditation standards require that the tuition in the urban and regional sites be comparable; however the urban campus has very high tuition which made it difficult to entice students into the regional program.
- The LCME accreditation protocol requires a shared common set of objectives for learners between the urban and regional sites, rather than a comparable list of objectives. This reduces some of the freedom in making the community-based opportunities more unique or applicable to the community-based medical education intentions. Additional objectives for the community-based program can be included, but must remain comparable.

Successes:

- Student Organizations are recognized as being important. Students are involved in academic societies promoting professionalism and leadership. Students must travel between the regional and urban campuses on occasion. The school is working to balance the promotion of cohesion between the two campuses with the desire to have student identify with the regional campus as their own.
- The success of the two-year program (pre-clinical) has led to the development of a four-year program at the regional site where students can complete both their pre-clinical and clinical medical education. Specific objectives have been developed to account for the key differences between the two types of learning environments and this program was initiated in 2007.
- Funding from the government was obtained due to the nature of the initiative (promoting interest in physicians practicing in underserviced communities).

Waters, B., Huges, J., Forbes, K. & Wilkinson, D. (2006). Comparative academic performance of medical students in rural and urban clinical settings. *Medical Education, 40*: 117-120.

- Comparison of 3 cohorts (2 full, 1 part) of medical students in rural and urban settings (n = 209 in first cohort, 226 in 2nd, 220 in 3rd)
- Metric: academic performance in end of year exams and specialist rotation exams
- Results:
    - no statistically significant differences in academic performance in 2002
    - rural students had higher scores on end-of-4th-yr clinical skills exam for 2003
    - rural students had higher scores in 3rd year mental health rotation and lower scores in 3rd year medicine rotation for 2004 cohort
    - *note that the overall magnitude of the difference was only 3.4% in the 2003 cohort and 3.1% in the 2004 cohort*
- Conclusion: comparable education in rural to urban settings in terms of academic performance on exams.

Worley, P., Prideaux, D., Strasser, R., Magarey, A. & March, R. (2006). Empirical evidence for symbiotic medical education: a comparative analysis of community and tertiary-based programmes. *Medical Education, 40*: 109-116

- Case study based on 3 structured interviews with each of 6 students from community-based program and 16 students from tertiary hospital-based program for 2 years
- Computer software analysed the interviews thematically
- 4 themes: clinical, institutional, societal and personal factors
- Clinical:
    - community students had more hands-on/participatory experience, but experience was more varied in a tertiary centre (hit or miss as to whether it was participatory)
    - patient population and opportunities more limited in a tertiary centre,
    - community students treated like colleagues (less hierarchical)
    - better faculty-to-student ratio
- Institutional:
    - community students felt more valued than those in hospital-based sites where students tagged along or were at the bottom of the pile
    - integrated learning environment – students self-selected to be in the program and saw community-based program as opportunity to direct their own learning and took on that challenge
    - community students had trouble with "variety" of practice at beginning of year, but by end of year, better overall view of patients seen as advantageous
- Societal:
    - both community and tertiary students viewed system as strained and overstaffed BUT community students felt they were part of the solution not the problem
    - Got to see the patient multiple times in multiple settings in community (including socially) resulting in greater continuity of care
- Personal:
    - tertiary hospital-based students had different supervisors on EACH rotation compared to community-based students with same supervisors for the whole year, providing more opportunity for ongoing mentorship
    - more of an ability to "work with" doctors than "learn from" in community
- Evidence for importance of effective relationships between: 1) doctors and patients, 2) government and community, 3) health service and university, and 4) profession's expectation and personal principles.

Worley, P., Silagy, C., Prideaux, D. & Newble, D. (2000). The Parallel Rural Community Curriculum: an integrated clinical curriculum based in rural general practice. *Medical Education*, 34:558-565.

- To address two issues (maldistribution of health care workers between rural and urban centres and inappropriate caseloads at urban tertiary centres): year-long program of rural general practice instituted in town of 35,000 located 25km from big city.
    - Focus was **teaching in rural general practice**, no **about** rural general practice
- Metric = student academic performance
- Eight volunteer students from group of 20 that applied and selected based on interest in and commitment to rural practice AND academic history
- Funding given for relocation and rental subsidies because of potential savings through students assisting
- Sites for GP learning based on having 1) a substantial and varied practice across all ages and specialties, including chronic diseases, and 2) appropriate facilities (libraries, videoconference theatres for lectures etc.) for students
- Results: greater access to patients and clinical learning opportunities and more holistic/integrated view of patient care with longitudinal exposure (eg. could follow a woman throughout pregnancy) to common diseases, gained high level of competence and increased confidence (comparatively)
- Students had to take on greater responsibility for own learning because they were not always exposed to EVERYTHING in a rural setting (rely on "what walks through the door"). Initially, they felt disadvantaged but later on in the year, students at city centre felt disadvantaged
- Requires an EFFECTIVE organizational and communication strategy to facilitate adequate program
- Academically: a PRCC student topped the class and six out of eight were in the top 15 student