

Impact of an urban regional medical campus: perceptions of community stakeholders

L'impact d'un campus clinique régional en milieu urbain : les perceptions des parties prenantes de la collectivité

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Abstract

Background: Regional medical campuses (RMC) have shown promise in addressing physician shortages. RMCs have been positively evaluated in rural/remote communities, however, it is unclear whether this model will be as beneficial in underserved urban areas. This study evaluated the impact of a RMC on a midsized urban city (Windsor, Ontario). We compare our results with a similar study conducted in a remote community in British Columbia (BC).

Methods: A broad array of community stakeholders representing different sectors were consulted using a semi-structured interview format replicated from the BC Northern Medical Program (NMP) study. Thematic analysis based on the resulting rich data was conducted within a grounded theory context.

Results: Twenty-three participants (52% male) representing healthcare, education, business, community and government/politico sectors were consulted. Their views regarding the Windsor Regional Medical Campus (WRMC) aligned around several themes: improved healthcare, enhanced community reputation, stimulated economic/community development, expanded training opportunities and an engaged community regarding the WRMC. These results were compared to the main findings of the NMP study with both similarities (e.g. increased community pride) and differences (e.g. resource concerns) discussed.

Conclusion: Community stakeholders provided strong support for the WRMC through their perceptions of its positive impact on this urban region. These findings are consistent with similar RMC studies in rural/remote areas. Those interested in developing a RMC might benefit from considering these findings.

Résumé

Contexte : Les campus cliniques régionaux (CCR) se sont révélés prometteurs pour remédier à la pénurie de médecins. Les CCR ont été évalués positivement dans les collectivités rurales/éloignées, mais il n'est pas certain que ce modèle soit aussi bénéfique dans les zones urbaines mal desservies. La présente étude évalue l'impact d'un CCR dans une ville de taille moyenne (Windsor, Ontario). Nous comparons nos résultats avec ceux d'une étude similaire menée dans une collectivité éloignée en Colombie-Britannique (BC).

Méthode : Un large éventail de parties prenantes de la collectivité représentant différents secteurs a été consulté par le biais d'entrevues semi-structurées calquées sur celles de l'étude du BC Northern Medical Program (NMP). L'analyse thématique des riches données obtenues a été faite selon l'approche de la *Grounded Theory* (théorie ancrée).

Résultats : Vingt-trois participants (52 % d'hommes) des secteurs de la santé, de l'éducation, des affaires, de la vie communautaire, du gouvernement ou encore du monde politique ont été consultés. Leurs opinions concernant le campus clinique régional de Windsor (WRMC) s'articulaient autour de plusieurs thèmes : l'amélioration des soins de santé, le renforcement de la réputation de la collectivité, la stimulation du développement économique et communautaire, l'élargissement des possibilités de formation et l'engagement de la communauté envers le WRMC. Les résultats ont été comparés aux principales conclusions de l'étude du NMP, en analysant aussi bien les similitudes (par exemple, fierté accrue de la collectivité) que les différences (par exemple, les préoccupations en matière de ressources).

Conclusion : Percevant l'impact positif qu'a eu le WRMC dans la région urbaine, les acteurs de la collectivité témoignent d'un ferme appui à son égard. Ces résultats sont conformes aux études similaires portant sur des CCR dans les zones rurales/éloignées. Les résultats de l'étude seraient utiles à tous ceux qui souhaitent mettre sur pied un CCR

On a personal note, [when] moving back to Windsor... one of the cons on our list was the healthcare system; it was probably my single greatest concern, the ability to find a doctor... It took us two years to find a family doctor... My family physician is someone who graduated and did her residency and decided to stay in Windsor (who was not originally from Windsor). So, that directly, inadvertently, I reap the benefits of the program... this is who we're with now and we absolutely, positively love her, just love her. [G-018]

Background

Many regions across Canada experience an inadequate supply of health care professionals. Such challenges adversely affect not only the health status of citizens of these regions, but also the socio-economic well-being of their local communities. Chronic shortages and/or poor distribution of physicians have resulted in several initiatives to increase the number of physician trainees and offer new education models. For example, medical schools in several countries have begun training medical students and medical residents at clinical sites that are sometimes located far from main campuses and/or teaching hospitals.¹⁻⁶ These practices have led to a number of benefits such as increased physician recruitment in underserved communities^{7,8} and improved learning outcomes by medical learners.^{9,10}

Some have suggested that as physicians become part of an under-served community, they positively influence the community's self-perception and provide a stimulus for the local economy.^{11,12} It is not clear if these findings, mostly from rural communities, hold true for urban areas that had also experienced significant shortages of physicians.

This study explores the socio-economic and related benefits of establishing a regional medical campus (RMC) within a mid-size urban community, specifically the Schulich School of Medicine & Dentistry's Windsor [Regional Medical] Campus (WRMC). These domains include health, education, economic, political and community engagement.

Program description

Windsor, Ontario is Canada's southern-most city and is part of Essex County which mostly comprises rural/agricultural and small-town areas (2016 population for Windsor = 217,188; Essex County = 181,530). Communities within Essex County are typically within a one-hour automobile ride of one another. The Windsor/Essex County area is well

known for its manufacturing, agriculture, and until recently, its chronic physician-shortages. The physician shortage resulted in significant community activism which, in part, led to the creation of the WRMC in 2008. It is a collaborative project between Western University (London, Ontario – home of the Schulich School of Medicine & Dentistry) and the University of Windsor, 180 kilometers to the southwest. The curriculum used at the WRMC parallels that of the main campus with identical assessment protocols. The WRMC is a "combined model" 4-year undergraduate medical education program (UME)⁵ primarily delivering didactic classroom teaching in the first two years and clinical training in the last two. There have been 310 physicians who have graduated (May 2020) having attended Schulich Medicine's WRMC.

Aside from UME, the WRMC also offers post-graduate training for resident physicians including full-time programs in Family Medicine and Psychiatry; residents from a variety of other specialties also train in Windsor for one to several rotations at a time: in 2016-17 there were 228 residents from 16 medical schools accounting for roughly 622 resident rotations or about 2500 weeks of resident training.¹³ Additional details regarding the WRMC are available elsewhere.¹⁴

Social and economic relevance of the study

With the WRMC celebrating its tenth anniversary in September 2018, our focus was increasingly on the social and economic impact of the program, not unlike the focus of other medical schools.^{12,15-19} We were actually attracted to one such study given the similarity in structure of the academic program and the contrast in geographical context. That is, a group from the University of British Columbia explored the impact of their RMC which opened in 2004 (known as the Northern Medical Program – NMP) in Prince George, BC at the University of Northern British Columbia (UNBC) campus—a fairly remote urban center of roughly 84,200 people.^{12,18,19} The NMP team sought feedback from community leaders from several networks in 2005 ($n = 8$) and 2007 ($n = 23$).

The authors initially reported that the NMP was associated with an elevated level of community pride, new partnerships, a confident attitude, and an increased ability to recruit new expertise to the local community. A later study¹² reported that the NMP led to 1) a higher level of interest in medical careers by local students 2) perceived improvements in overall health and well-being of the community and 3) increased cultural amenities. Interestingly, the 2013 study found that the increased

number of medical students may have unduly strained existing healthcare resources. The authors also acknowledged that they may have gathered their data too soon after the program's commencement saying "the impact of the program on physician workforce will not be fully known for a decade or more."¹² Thus, it was our hope that by conducting this study approaching ten years after the inauguration of the WRMC, we might meaningfully observe a fuller range of impacts.

Methods

This study explored community stakeholders' perceptions of the socio-economic and related impacts of an urban RMC. In addition, we were inspired by and keen to replicate the Northern Medical Program (NMP) study,¹² thus a second purpose of our study was to compare our results with the NMP's findings.

Project planning began in July 2016 by making a preliminary list of sectors, organizations and individuals who would be important to interview. Our preference was to utilize a qualitative approach given that we were keen to obtain a nuanced perspective. In addition, we sought guidance from members of the NMP team.

Prior to data collection, the study received approval from the Research Ethics Boards at Western University and the University of Windsor. We utilized a purposeful sampling approach²⁰ to develop a list of key stakeholders that represented different levels, perspectives and organizations within the following sectors from Windsor/Essex County: health, education, business, community and government/politico. We strived to maintain an equal roster of male and female interviewees; all were adults (aged 18 and older). Interviewees were given the opportunity to suggest others to be interviewed and this "snowball" recruitment approach resulted in a small number of additional interviews. We targeted five interviews from each sector and initially sent letters of invitation via email in June 2017. Study participants were assured anonymity of responses. Scheduling of the interviews was facilitated by email and/or telephone communication and follow-up communications were made with all whom we did not hear from. All interviews were conducted between June 2017 and August 2017.

Most interviews took place at the respective offices of individual participants and they lasted about an hour. One interview was conducted by telephone and another via email at the participants' request. Data were primarily collected using a semi-structured interview format based

on eight open ended questions that were adapted from the NMP Study¹² (Appendix A). Interviews were conducted by two medical students who were members of our research team and trained in qualitative research methodology and interviewing skills.

Participation in this study was voluntary and participants were not provided with any reimbursement or incentive. All participants gave written consents to having their answers audio-recorded and to enabling the study team to quote from their responses providing these were de-identified. Participants had the right to abstain from answering any question in the interview without losing the right to continue in the study. As intended, participants represented a variety of levels within their respective organizations and across the aforementioned sectors. All were knowledgeable about the WRMC, however, their level of involvement ranged from being directly connected to the program to little, if any, connection. Interviews were recorded and afterwards transcribed by a professional service. Files were encrypted and password protected during transmission to and from the transcription service.

To best understand themes emerging from the data, three investigators analyzed the data albeit in slightly different fashions. The two medical students independently utilized open coding though they met often to discuss their observations and findings. The principal investigator engaged in a similar process analyzing all transcripts including phone interviews and email correspondence. Later in the data analysis process, all three members who participated in initial data analysis along with a fourth member of the team met to discuss their understanding of the data and to validate thematic analysis; this resulted in a unanimous consistency of terminology and language used to describe the themes and their connection to one another.

Qualitative data analysis followed a grounded theory approach²¹ with all members of the study team helping to analyze data and construct theory²². Our target of key stakeholder interviews was generally considered an appropriate number for this kind of study.²³ We were mindful of three common shortcomings of many grounded theory research studies: the need for data collection (interviews) and analysis to occur simultaneously whenever possible; the tension between selecting predetermined themes versus the need for open thinking regarding emergent ones; and the need to move the research effort forward from identifying themes to developing theory.²⁰

Each of the study participants received an interim report in May 2018, including information regarding the themes that we identified and a copy of a poster presentation.²⁴

Results

WRMC qualitative data

Twenty-three interviews were conducted (52 percent male). Table 1 describes the primary connection study participants had to a sector (several participants had secondary connections to more than one sector). We have also included a unique participant code using the first letter of the sector (for example: G-018 for a government sector participant) to demonstrate the distribution of participants' quotes.

Table 1. Study participants by sector

Sector	Sample Size
Education	7 (30%)
Business	5 (22%)
Health	4 (18%)
Community	4 (18%)
Government/Politico	3 (13%)

The largest group (30 percent) were primarily considered education sector leaders, followed by the business sector (22 percent), 18 percent each from health and community sectors and 13 percent were from the government/politico sector. Combined, the interviews resulted in very rich data spanning roughly 189 single-spaced pages of text. While we did not satisfy our target of five participants per sector, we believe that the 23 interviews provided an acceptable depth of qualitative data upon which to base our analysis.

Participants primarily believed that there was a link between medical education and socio-economic and community issues. For the most part, they were overwhelmingly very positive about the contributions of the WRMC and its impact on the Windsor/Essex County community. No substantial negative outcomes were identified, though there were several suggestions regarding how to improve future outcomes. Our analysis of the interviews revealed the following five themes: improved healthcare, enhanced community reputation, stimulated economic/community development, expanded training opportunities (such as interprofessional education - IPE) and community engagement regarding the WRMC. Given the high degree of inter-connectivity among these themes, participant comments below (in italics and with unique participant codes) often related to more than one theme. To ensure no single voice was over-amplified, we

made sure to quote all participants at least once and no more than twice, an approach advocated by others.^{25, 26}

Improved healthcare: Participants resoundingly indicated that in their opinion, the standard of healthcare has been elevated as a result of having an RMC within Windsor/Essex County. Almost every participant talked about how the introduction of the WRMC has mitigated the physician shortage that previously plagued Windsor/Essex County:

Since the medical school opened, I haven't heard too many concerns or complaints about not having enough physicians, whereas prior to the medical school being here, that seemed to be almost front and center. [H-110]

I don't know if you saw the Windsor Star last month, but there were some ads in there by... some graduated physicians who were advertising for patients. So clearly, my sense is that it has been a raving success, not only with our family physicians but also for specialists as well. [H-101]

Participants also felt this was connected to the WRMC's ability to attract/retain physicians including those interested in medical education and/or research. We were told that having medical learners within the hospital and in clinics is an additional motivating factor for physicians to have a renewed sense of meaning regarding their chosen medical profession and in many cases relocating their clinical practice to Windsor/Essex County:

I do know that prior to the campus being here, Windsor was experiencing a terrible doctor shortage and that seems to have subsided... the medical campus may serve as an attraction as it may provide a teaching opportunity. [G-030]

There seemed to be a real welcoming on the part of the physicians to have this opportunity to get involved in some research in addition to doing some clinician teaching. And I've lived in Windsor for [many] years, so seeing this sort of vibrancy, and seeing the community involvement in terms of saying, hey, we've got this going on and we've got research affiliating with it... all of that adds to that vibrancy in the community. [E111]

Participants discussed the beneficial impact of the WRMC in providing opportunities for local high school and university students to aspire to be medical learners (residents and students) and to train in the community in

which they intend to practice and with the hopes of helping to improve healthcare delivery:

This is my hometown, and the idea of being able to train here with the people that I will now see as colleagues, is I think, to me, it was a very good experience. And to already feel comfortable in my surroundings and also, I guess, give back to the community that I grew up in. So, I think that was one of the biggest reasons why I wanted to come here, train here, and work here, is work in my hometown. I guess that's why it was pretty important that there's this regional program. [E-023]

Some participants had frequent interactions with patients, they reflected their own experience as a patient or were aware of patient sentiments from their family/friends; this resulted in perceptions of patients being receptive to medical learners involved with their care:

It's nice for the patients... to be talking to a medical student that's actually being trained in their own city. [B-204]

It has been overall, a very positive influence and patients, from everything we hear, generally give us very positive feedback with respect to the fact that [Windsor] is a teaching [community]. I think there is the feeling that it results from their point of view: more eyes on them, better outcomes, better care overall. [H-200]

One unanticipated benefit of the WRMC was the effect on the community's perception of student learners. Participants suggested that community members likely understand more about the training process for physicians now and this in turn has increased the acceptance of the process by patients:

When you're the student, you're going to do the best you can. It might take you longer, but the patient feels, at least I do, that you're being listened to and that you feel important that the care that you're going to get is perfect, meaning that all of the questions have been asked and the right care is the one you're going to get. [E-106]

In summary, participants strongly felt that healthcare has improved because of the WRMC and that the program is profoundly impacting the healthcare workforce. Participants frequently noted the following: i) local healthcare providers are energized, ii) physicians are being recruited from other centres, iii) many graduates of the

WRMC are returning to practice in the region following their residency training, iv) local high school and post-secondary students are increasingly aspiring to study medicine in their home community and v) patients appreciate the benefits of being cared for by highly qualified physicians and medical learners in training.

Enhanced community reputation: Participants frequently shared compelling stories of the local community's general lack of self-confidence prior to the arrival of the WRMC and how this turned to a new optimism, strong sense of pride and community spirit:

We had a tremendous shortage of doctors in the Windsor area. People [were] leaving the area because they can't get a family doctor, so we're missing out on people opening businesses and wanting to move here, and we have nothing in sight that's going to change. We'd like to have a medical school here... so we can alleviate the horrible problem that we have being under-serviced... We just felt neglected.... There's a lot of civic pride now in Windsor and I share that all the time. I'm proud to be somebody who has been involved with this medical school coming. [B-107]

Many viewed the WRMC as a "catalyst" for changing the social fabric of the Windsor/Essex County community:

And then of course in 2008 we started the great recession... This city became a disaster... we're second-class citizens here... The influence of Schulich School of Medicine Windsor Campus was like a trigger at a time when the world, our world here, it was pretty desperate. Young people were leaving... there was no jobs here because that just wasn't around... It goes back to my original comments in that, this was a catalyst that triggered other things. There are so many possibilities that can flow but you need the recognition that you are a learning community. One that is open to ideas, one that is striving in excellence in health and education and that's the critical part and that's the big transition, which I think the Windsor medical campus created [B-100]

Participants also shared how the presence of the WRMC was helping to bring out the best in other organizations. The University of Windsor (the host organization) was frequently identified:

It means a beautiful campus building at the University of Windsor that's trying to rejuvenate itself so it builds up the whole University... I think the medical school

actually started the resurgence of rebuilding the campus which ultimately I think the President of the University really spearheaded. But the medical school and building, that was near the beginning of that. [B-103]

It's kind of put them on the map in terms of you know, "we've got a medical school here; we know what we are doing and we can provide an excellent educational experience...." I would imagine that for the University it's more students paying tuition. [C-203]

In summary, participants shared their perspectives about how a rather devalued community psyche has largely improved given the presence of the WRMC. Participants generally believed that citizens of Windsor/Essex County have a renewed sense of community optimism, pride and confidence which has been stimulated by the WRMC. Participants felt that the WRMC's presence was also a catalyst for this improved community image to be projected to other regions and prospective business partners as well. Additionally, other organizations in Windsor/Essex County appeared to share in the benefits of a medical school, particularly the University of Windsor which, according to study participants, may have experienced an increase in student enrolment, research activity and infrastructure upgrades.

Stimulated economic/community development:

Participants cited the WRMC as a major driver of investment in healthcare, business, and innovation in the Windsor/Essex County community; several mentioned the benefits of having medical students in the community:

As a community member it's great to have young people in the community spending money... it's good for the community in general... I think that it's given us some more credibility as a healthcare system. So, from that perspective I think that it's helped kind of raise the profile of Windsor. I think it's generally been very, very positive. Again, having the students in the community, you're going to see all kinds of different benefits as a result of that. [H-104]

Many participants were grateful of the role the WRMC played and continues to play in the development of a new hospital system in Windsor/Essex County:

Going back to where that evolution of the whole new [hospital system] came from, it started with medical education. I don't know if we would have had that discussion if we didn't have to look at space for new

medical education, it might not have happened at the time... so just that alone drove a \$2 billion investment that is going to be coming to our region. The presence of the medical school on that point alone, from an economic development point of view, speaks volumes. [H-200]

So I think when you have the campus here, when you have plans for a new hospital, I think one of the things you see with the new hospital is the cooperation between the city and the county, which isn't necessarily something you see all the time.... It's shown that this whole Windsor/Essex region really cares a great deal about healthcare and they're willing to put up the money, they're willing to fund it and they're willing to cooperate in ways they haven't done before. [C-109]

We heard that the WRMC plays an important role in bringing people and ideas together for the greater good of the community:

They're just a great partner... brilliant thinkers who are innovative and who understand collaboration and connectivity and strategic partnership development. They're a first stop for a partner in healthcare... Anytime we bring bright minds... it's a richer region and spins off. [C-105]

I think it's probably the most important initiative that I've seen happen in Windsor in decades... Windsor is not as well-served, or was not as well-served as some of the other cities. And it's primarily because they didn't have a teaching hospital or a medical school. I mean those are the two big points. When you have a medical school and you have a teaching hospital you're going to serve the community better, number one and number two, I think a medical school will attract people from other parts of Ontario and parts of Canada and other parts of the world. They stay here so it helps fill a vacuum. [G-043]

Some suggested that the new hospital system will impact many industries including attracting physicians and allied health professionals and provide new research opportunities. Additionally, participants frequently saw the WRMC as a tool for attracting new human talent and businesses to Windsor/Essex County, particularly healthcare companies that would align with a new hospital system such as the pharmaceutical and life science fields:

When we are promoting our region, we need to demonstrate that our region has the assets that innovative and high-tech companies need to ensure success...there is no better evidence than the existence of a medical campus. It is a marvelous asset that we can leverage to both better serve the community and to become an economic engine. [B-201]

Participants anticipated that over time, perhaps combined with the introduction of the new hospital system, the WRMC will help generate an increased priority for medical and scientific research and innovation:

[What] I think we'll see more of in the future is collaboration, the kinds of research collaborations... There's an opportunity to establish some interdisciplinary research teams... clearly we've seen people from nursing, biology, chemistry and biochemistry, but I'm thinking about outside the box, like people from philosophy and people from law – innovative interdisciplinary research teams. [E-111]

In summary, participants gave many examples of how they expect the WRMC to stimulate community development: from encouraging new investments in the community (including the new hospital system development) to facilitating collaborative efforts regarding community improvements. We also heard from participants how there is an increased focus on and participation with various research and knowledge-creation initiatives and that it is thought that the WRMC is closely connected to such initiatives. This includes the recruitment of new human talent and businesses to the area.

Expanded training opportunities (IPE): Participants discussed the important impact the WRMC is having on interdisciplinary training and the increasing collaboration amongst learners from various faculties/disciplines:

The Interprofessional Education Day: that was a good way to meet different people from schools... it's going to be great for [medicine] to really understand the other professions too. It's not like it used to be.... We're going to have better patient outcomes because of it. We're going to have more efficiency in the institutions too: less layover, less wait times, things like that. More rooms available because you'll be able to get better care, more accurate care. [E-027]

A number of times participants noted the advantage of having nursing and medicine learners in close proximity. During the development of the WRMC, the structure that

houses the medical campus was purposefully connected with the nursing education building in the hopes that would promote IPE collaboration (shared training and resources):

I think one of the great things about the medical program is that it's very closely positioned with the school of nursing and there's an opportunity for students in medicine and nursing to set up some opportunities for co-learning... and I think that's really great. I think it's something that we can do here that's hard to do in many other medical schools. At the end of the day, it's all about the patient. [E-108]

Having simulation for nursing students and medical students together... and also the simulated patients, having them from the same pool really does strengthen that partnership, and it also gives the visual to the... standardized patients, a feeling that they're helping to educate more than a physician or more than a nurse... that they are actually training and helping the medical team develop. [E-106]

Interestingly, some noted that patients' willingness to accommodate allied health discipline learners may have improved because of their experience with and acceptance of medical students and residents involved with their care:

I've seen more acceptance of patient-based populations of student learners. And not just from you guys as well, but a lot of the allied health programs that are running. There was an acceptance of having a student learner before, but it wasn't until there was a med student that that was there... there was some resistance for some of the nursing students and the other allied health professions. But I've seen a pretty steady increase in that acceptance, which is really good. [E-027]

In summary, participants often mentioned IPE as a positive development. Some were aware that there had been an element of intentionality in that the WRMC building was physically connected to the University of Windsor's School of Nursing, thus, they were very pleased to see medicine and nursing working collaboratively on a number of projects. Additionally, work with other community partners such as St. Clair College has been highlighted and that allied-health workers may benefit from the medical school's presence as Windsor/Essex County, including its patients, transition into a centre of medical/health education excellence. Ultimately, participants were optimistic that by training physicians and allied healthcare

professions using an IPE approach that patient outcomes would improve. This area still has much work ahead but based on participants' observations, it seemed that there was some exciting momentum.

Community engagement regarding the WRMC: An interesting outcome of this study was the high degree to which participants felt invested in the WRMC that they made numerous suggestions regarding its ongoing operations. These aligned into what we are calling "branding issues" which focussed on three distinct areas as follows:

- The need for improved communication to the broader community:

Some of the work that's being done at Schulich from the medical students is great. It's inspiring. And I think, just showcasing some of the great things you're doing, to the community at large would be, I think, a huge benefit... if people don't know about it, then it tends to not exist, from a perception perspective. So, just maybe cheerleading for your guys a little bit more overtly than what we're doing, would be a suggestion. [E-112]

It's too well-kept a secret. It should be marketing itself much better than it does.... It's got to become more high-profile. [E-025]

- The need for a cross-border healthcare initiative with partners in Southeastern Michigan:

Look at the idea of branding Schulich as kind of the gateway for Canadian healthcare professionals to get into the U.S... Detroit is hungry for those partnerships. I think that Windsor is geographically in an ideal position to be that gateway so that if you're a healthcare professional you want to become a doctor but you want to have access to what's available in the U.S., what better place than the University of Windsor, the Schulich School of Medicine. [G-043]

- The need to consider if a stand-alone medical school governance model is viable:

This is off the charts and I don't know if we'll ever see it, but it was always something I had always dreamed that someday we could be a stand-alone medical school. I know that there is so much involved with that... that's something I would love for Windsor to have some day and whether that happens or not I don't know, but I think it would be absolutely marvellous if we could. [C-127]

In summary, even though we did not directly seek ideas for improvement, participants had a number of suggestions regarding how the WRMC might best accomplish its mission. Amongst these were the need i) to improve the WRMC's ability to communicate with the general public and its stakeholders, ii) to explore some form of international cross-border healthcare initiative and iii) to revisit the governance structure at some stage to at least consider if a stand-alone medical school would be in the best interests of the local community. The frequency and depth of participants' comments suggest a high degree of community engagement regarding the WRMC.

Comparison to BC's Northern Medical Program

There are many similarities between the NMP and WRMC programs, however, there are two significant departure points which relate to setting and the timing of the studies. First, the NMP is a smaller urban centre situated in a fairly remote part of northern BC (population density for the metropolitan area of Prince George is less than 5 per square kilometer) where the closest urban area of comparable size is a substantial distance away (a 500+ kilometer journey). The WRMC on the other hand is within the heavily populated Southwestern Ontario region (population density of Essex County is over 1850 per square kilometer) with several communities that rival Prince George's population within a radius of 250 kilometers and which could be easily travelled on divided highways. Second, the NMP study took place roughly three years following its opening whereas the WRMC study took place roughly nine years following its creation.

Table 2 displays the major findings of the NMP study and compares these with the current findings from the WRMC study. By way of background, both the NMP and WRMC are 4-year "combined" RMC models⁵ and comprised of dual university partnerships.

The methodologies used in the NMP and WRMC studies were remarkably consistent including the fact that they had the same number of study participants ($n = 23$) and the sector demographics of participants was also very similar: NMP had slightly more from the health sector while WRMC had more representation from the education sector (although, each study recognized that participants could be affiliated with more than one sector). Both studies reported that there was broad consensus that the shortage of physicians had largely been addressed at the time of the interviews; this in turn led to optimism in the respective communities regarding their future. Both communities appeared to experience a rejuvenated spirit as the RMCs

brought with them increased potential of economic growth and diversification. Participants in the NMP study spoke of their logging/natural resource-oriented economy and history while the WRMC cohort repeatedly mentioned the industrial/manufacturing/agricultural history of Windsor/Essex County. In each case, there was a sense that these communities had been overlooked in the past by governments and funding agencies.

Not surprisingly, with an influx of physicians, a majority of participants felt that the delivery of healthcare was much improved (and would remain so): Prince George’s participants also expressed that they thought their health status was elevated in part because there was an improvement in long-term patient-physician relationships. The WRMC study participants commented about revitalized physicians given their new roles as clinical mentors and teachers.

Both studies suggested that the local host university was the beneficiary of increased credibility and reputation. In the case of WRMC, participants indicated that it may have stimulated a significant infrastructure investment such as the construction of new buildings and significant campus improvements. Participants in both studies described how young people now had improved career options which included medicine and that enrollments were positively impacted at the respective host universities.

The NMP study suggested that the fairly quick influx of medical learners had a drawback in that it created a new demand on scarce resources; in some cases, this created tensions and competition. The WRMC interestingly did not find this even when participants were prompted about any negative effects of having a medical campus present. Some were aware that professional jealousies were possible in situations like this but saw no evidence of it taking place regarding the WRMC. There were however, suggestions for improvement at the WRMC most notably i) the need to continue expanding IPE opportunities (even though efforts at IPE development were applauded) and ii) improve communication of the program’s accomplishments so that it is better understood by and connected to the local community. This was in spite of evidence suggesting that medical students’ socially accountable activities in the community were positively viewed by local residents.

Table 2. Comparison of NMP and WRMC programs and outcome study findings

	NMP	WRMC
Opened/Study Date	2004/2007	2008/2017
University Sponsors	UBC/UNBC	Western/Windsor
Total campus cohort of medical students	128	152
Population of area	84,323 (2011 Prince George metro)	398,718 (2016 Windsor/Essex County)
Population Density	4.9/sq.km.	1,850.9/sq.km.
Study participants (interviewees could represent more than one sector – accounts for NMP study over counting)	Health sector – 8 Business sector – 5 Social services sector – 5 Political sector – 3 Education sector – 2 Media sector – 2 23 semi-structured interviews – averaging 40 minutes	Health sector – 4 Business sector – 5 Community sector – 4 Government/Political – 3 Education sector – 7 23 semi-structured interviews – averaging 60 minutes
Data Collection		
Main Findings	<p>↑ physician supply Improved healthcare/health & wellbeing ↑ long-term patient/physician relationships</p> <p>↑ local university credibility</p> <p>↑ local students’ interest in medicine/health disciplines as career option ↑ local pride/confidence Placed a burden on resources and created some tensions</p> <p>↑ development of novel cultural amenities</p>	<p>↑ physician supply</p> <p>Improved healthcare: ↑ energized physicians as mentors and teachers</p> <p>↑ local university credibility Possibly a catalyst for large infrastructure projects throughout the campus</p> <p>↑ local students’ interest in medicine/health disciplines as career option ↑ local pride/confidence</p> <p>More attention is needed to better communicate accomplishments ↑ role in community development: new hospital system; research; attracting new business ventures; collaboration catalyst ↑ patient receptivity for learners ↑ IPE support; more needed Some support for a cross-border health initiative with US partners Some interest in revisiting the governance model</p>

Another interesting difference in outcomes concerns the NMP being a catalyst for the development of “novel cultural amenities”. These appear to suggest economic investments, but this was not specifically cited in the NMP study. The WRMC study on the other hand had participants mentioning significant investment outcomes including a proposed new \$2B hospital system, research, new business ventures and collaborative partnerships (some of these have been further articulated elsewhere²⁷).

Lastly, two additional issues were identified within the WRMC study that did not surface in the NMP. The first concerns governance: initially, many in Windsor/Essex County anticipated that the Ontario government would open a new medical school to address the local physician shortage. Even though this was not to be, it seems many locals continue to hold on to that aspiration. Others meanwhile have become very comfortable with having Western University involved and see the various merits of such. The desire for a stand-alone medical school is a narrative that continues (at least for some) even after a decade of the WRMC model. The second issue concerns a rather strong local desire to see the WRMC actively engaged with like-minded organizations in Detroit, Michigan to enable an international cross-border health alliance of some type. There have been many similar initiatives to date and some that even have involved the WRMC. No doubt this too will be a topic that the WRMC leaders may need to address in the future.

Discussion

RMCs have existed for half a century¹ but there have been substantial increases in their numbers over the past 15 years. In 2016 alone, 16 new RMCs opened in the US²⁸ with similar expansion taking place in Canada.²⁹ Indeed, 37 percent of medical schools in North America now have at least one RMC and as of 2016, they account for over 9,100 medical students and 34,000 faculty.⁶ In short, RMC's have a well-established track record and, we believe, hold promise for communities facing long-standing physician shortages.

That said, much of what we have learned about RMCs has been highly influenced by geographic and cultural contexts of rural and remote communities. We are just beginning to fully appreciate how RMCs can impact a range of communities and that physician shortages can also occur in urban communities. A recent call to learn as much as we can “about how DME [distributed medical education] programs impact the health care professionals, the

healthcare systems and the communities with which they intersect”³⁰ reinforces the need to remain inquisitive and open to new discoveries.

Community stakeholders whom we consulted provided very passionate accounts and strong support for the WRMC and its contributions to and impact upon the local urban community. We are unable here to share all of their viewpoints but “strong support” is clearly substantiated by the data we collected. The stories they have shared regarding the WRMC are not only compelling, they are also informative and help identify important issues for medical educators to consider.

Just as the NMP team heard from their stakeholders that community pride and a more confident attitude had grown, that health and well-being were improved as a result of their RMC and that local youth were increasingly considering medicine as a career choice, we too have heard similar stories. Our study's participants strongly believe that local healthcare has improved as a result of the WRMC. They felt that physicians have been recruited to the area, some retained (including graduating trainees) and many more professionally energized. Participants also spoke about an abundance of new prospects who are now aspiring to careers in medicine and further, that they desire to learn at the WRMC. These are important findings in that little has been published to date to document the contributions of RMCs in urban communities.

Future studies should help to augment these stories, but until then, the perceptions of our participants are in many ways supported by various tracking measures we have informally undertaken. For example, it has been estimated that 70 percent of all post-graduate Family Medicine trainees at the WRMC remain to practice in or near Windsor/Essex County.³¹ We found that post-graduate medical residents visiting Windsor provided high marks for their training experience: over 90 percent said they were happy to have trained in Windsor and about three-quarters said the housing/accommodations provided for them improved their training experience¹³. Data we have collected with incoming WRMC medical students regarding their site preference suggests they increasingly favour the RMC versus main campus option (from 20.8 percent in 2008 to 39.5 percent in 2017).³² Scholarly activity is also an active area for WRMC learners and faculty even though we cannot confidently comment on its growth curve: in response to a call in April 2018, we were able to comprise a list of scholarly activities that spanned 53 single-spaced pages (400+ publications and 214 conference

presentations, poster presentations, unpublished reports and so forth).³³ Of course none of these quantitative indicators prove that RMCs work in urban areas, however, they help triangulate what we have heard from our community stakeholders; they paint a picture of a vibrant medical education/academic network having a variety of impacts within the larger community.

Our participants' stories provided the nuanced perspective as we had hoped. One example concerns stakeholders' perspectives of enhanced reputations for the community and the host university. We heard how the WRMC might have been a catalyst for its host university to begin a significant campus infrastructure and redevelopment initiative (which ultimately will total close to \$360M³⁴). We may never exactly know the extent to which the WRMC impacted those decisions at the University of Windsor, but the question as raised by several of our study participants is worth considering. We wonder too if the UNBC campus in Prince George might have had similar experiences and whether this could be something that those considering the development of an RMC might anticipate. Clearly the decisions regarding enhanced infrastructure and new buildings within a university campus are delicate and complicated matters, nonetheless, we make the point that RMCs could be important catalysts. We welcome the opportunity for existing RMCs to continue a dialogue regarding such experiences.

Questions also arise concerning the noted tensions at the NMP apparently due to medical learners' demands on healthcare resources. It is possible that this finding could be a function of the more remote nature of that campus. We suspect that medical students likely place similar demands on healthcare systems regardless of location (urban versus rural/remote), however, this could be an area for closer investigation in the future. We do wonder if the tensions, conflicts and competition noted in the NMP study might have been an expression of simple growing pains of a relatively new medical program (possibly as clinical clerks were appearing for the first time). The WRMC study took place many years after clinical clerks were already training in the hospitals; had we conducted our study when they first appeared, we might have heard similar stories of tension. In this way, the timing of the studies may account for these different findings.

Another plausible explanation could be a dynamic whereby rural/remote communities have a smaller platform of resources upon which to operate and that they do not have the same ability to adjust to ebb and flow demands as do

larger urban centers where perhaps resources are less scarce. At a minimum, this issue raises some interesting questions for those contemplating the creation of a new RMC to consider: what is the current resource base upon which the RMC will be built and is it sufficient to remain stable once the RMC is fully operational and increased demands are made of the healthcare system by learners? Should the status of relationships amongst community leaders and inter-organizational relationships be a consideration regarding whether to establish RMCs in communities? Do prospective partners have a history of successful inter-organizational collaborations? Is there a perspective, perhaps rooted in history and/or geography, where more isolated communities (with a long history of "being overlooked" and needing to fight for public funds for needed services) will default to certain strategies and conduct if/when challenges arise with the creation of the RMC? Similarly, are there reasons why a larger urban community would be so keen to have its own stand-alone medical school that the discussion regarding governance continues ten years after opening its RMC? We did not hear similar stories within the NMP study so we wonder why this would occur at an urban site and not a rural one; does geographical setting even have a role to play in that conversation?

We did not examine these issues and to our knowledge, neither did our NMP colleagues; they had not been on our radar until we began the analysis of this data within this study. These issues therefore should be important areas for further scientific enquiry. It appears that this study not only presents us with new understandings regarding RMCs but also many new questions.

Limitations

Our methodology was purposefully meant to mimic that of the NMP study which was conducted over a decade ago. Similar to that group, there might have been selection bias involved with our purposeful and snowball sampling processes. Thus, we cannot be certain of how reflective these perspectives are of the general public. That said, we did not hear anything from participants that did not have the "ring of truth" based on what we know from our day-to-day interactions with the public. We also may have limited our ability to obtain a wider viewpoint in that we were collecting data during the summer months when some were unavailable due to vacations. We also wonder if some results were biased given the timing of our study (nine years after its creation versus NMP's study occurring

three years after opening). As interesting as these data are, they should not be applied to another community without considerable caution; we simply do not know how generalizable the data are.

Conclusions

This study provides a very positive endorsement of a RMC in a mid-sized urban community after almost a decade of operations. Key community stakeholders representing health, education, business, community and government/politico sectors believed that there were positive outcomes associated with healthcare, the community was more optimistic of its future and proud to have a medical campus in its midst. The RMC also appears to have played a role in substantial infrastructure investments as well as a range of other community developments (research programs, IPE programs, inter-organizational collaborations). Perhaps as an indication of their investment in the WRMC, these stakeholders also cited ways to improve the WRMC's operations; in particular, it should increase its attention to communicating with the general public.

These findings were compared with those of a similar RMC program located within a remote community. While the findings largely paralleled each other, some differences exist. This discussion might be of particular interest to those contemplating the establishment of a RMC in their community.

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Appendix A.

1. Semi-structured interview questions (abridged from the NMP study)
2. When did you first learn about the Schulich Medicine Windsor Campus?
3. How closely have you followed the development of the program?
4. Have you or do you contribute to the Windsor Campus in any way. Have you or are you involved with any aspect of the Windsor Campus?
5. What does it mean to you to have a regional medical campus in Windsor?
6. What are your expectations of the Schulich Medicine Windsor Campus? Have these changed since the program's implementation in September 2008?
7. From your perspective, how do you think the Schulich Medicine Windsor Campus has impacted the community? (Probes positive, negative and neutral impacts; participant's sector, other sectors)
8. Can you suggest the names of other leaders or representatives in the community who you feel would help us better understand the impact of the Schulich Medicine Windsor Campus?
9. Are there any other comments you would like to share with us?