

# The pipeline flows through pre-clerkship – the early exposure of medical learners to rural healthcare

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## Abstract

**Introduction:** We sought to investigate the influence of a 1-week rural clinical placement during pre-clerkship on participants' decisions to pursue subsequent rural clinical training and rural practice, and the factors which influenced participants to participate in the placement

**Methods:** A survey was sent to all physicians who: participated in the Rural Ontario Medical Program's (ROMP) 1-week ROMP Week placement between 1999 and 2012; had completed postgraduate training; and were currently practicing medicine in Ontario. Survey items were rated on a Likert scale, and Mann-Whitney U Testing performed to identify differences between groups.

**Results:** Of the 407 surveys distributed, 154 were completed. 23.2% of physicians reported having a rural background, 59.2% completed a rural clinical rotation during clerkship or residency, and 21.3% currently practiced in rural communities at the time of survey completion. The learning opportunity and clinical experiences in rural healthcare were reported as the primary motivating factors for participating in ROMP Week. Better learning opportunities in rural rotations, meeting the communities' needs, and support from rural communities were the primary motivating factors for participating in subsequent rural clinical rotations. Physicians practicing in rural communities at the time of survey completion had higher ratings of attraction to rural communities and desire to gain rural clinical experience as reasons for participating in ROMP Week.

**Conclusion:** A majority of ROMP Week participants subsequently undertook rural clinical rotations, and the proportion of participants currently practicing as rural physicians exceeds the proportion of Canadian physicians practicing in rural communities as a whole. 54% of respondents practicing in a rural community at the time of survey completion did not have a rural background, and ROMP Week may have been their first exposure to rural medical practice. Rural experiences during pre-clerkship offer an opportunity to increase the number learners in the rural physician pipeline.

## Introduction

There exists in Canada a gap in health care resources and services in rural and urban communities, to which the relative scarcity of rural physicians is a contributing factor.<sup>1</sup> The issue of addressing the rural physician shortage is multifaceted, as there are a variety of factors influencing physicians' decisions to practice rural medicine. Medical students who have rural backgrounds are more likely than those who do not to practice in rural communities.<sup>2-4</sup> Additionally, rural clinical training during clerkship and residency programs can guide medical students towards rural practice.<sup>1,4,5</sup> Following undergraduate and postgraduate training, incentives to practice medicine in rural communities have been used to try and draw physicians to rural practice.<sup>6</sup> While these strategies can help to address the rural physician shortage, a largely overlooked opportunity to guide learners towards rural practice is through short rural clinical experiences during pre-clerkship. These experiences can provide additional opportunities to expose future physicians to rural communities and healthcare, ideally developing a positive attitude toward rural medicine and leading students to pursue future training and practice in rural medicine.

Since 1999, the Rural Ontario Medical Program (ROMP) has offered first-year medical students a 1-week experience during their summer break ("ROMP Week") during which students are placed in rural communities in Ontario. The aim of the week is to expose students to rural communities and medicine, to increase their interest in rural practice, and to persuade learners to return to rural communities for future clinical training and practice.

Although ROMP is not the only organization to facilitate rural clinical experiences for pre-clerk learners – which are part of the curriculum at the Northern Ontario School of Medicine and Schulich School of Medicine, and are offered by the Alberta Rural Physician Action Plan – we are not aware of the publication of research on such initiatives. Thus, the findings of this study contribute to the existing body of knowledge regarding rural clinical experiences in medical education.

With 13 years-worth of medical students having participated in ROMP Week, completed postgraduate training between 1999 and 2012, and currently practicing in Ontario (407 physicians),

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an investigation of ROMP Week participants' subsequent rural training activities and practice locations could contribute to the understanding of strategies used to address the shortage of rural physicians. In understanding learners' motivations for participating in such programs, the programs can be created and promoted to students in a way which is more likely to attract them to these initial exposures to rural medicine. Further, by better understanding the influence of such programs on participants' decisions to participate in subsequent rural training and practice, a greater awareness could be gained of how such programs could be used to complement the existing strategies to create rural physicians. Thus, the purposes of this study were to examine the impact of participants' ROMP Week experience on their decision to pursue subsequent rural clinical training and practice, and to identify participants' motivations for participating in ROMP Week.

## Methods

### Participants

Surveys were sent to each physician who had participated in ROMP Week from 1999-2012, who had completed postgraduate training, and who was currently practicing medicine in Ontario and was registered with the College of Physicians and Surgeons of Ontario at the time that the survey was dispatched.

### Surveys

A self-administered questionnaire developed by ROMP was used. The questionnaire addressed: participants' current practice location; rural background and ties; motivations for participating in ROMP Week; rural clinical training subsequent to ROMP Week, and reasons for pursuing (or for not pursuing) rural clinical training; and rural practice intentions. Responses were rated on a five-point Likert scale. Surveys were sent to 407 physicians by Canada Post in June 2015, and responses collected until October 31, 2015.

### Data Analysis

Data are presented as median (1st quartile-3rd quartile) unless otherwise specified. Statistical analysis was performed using SigmaPlot 13. Differences between groups were analyzed by a Mann-Whitney U Test. A value of  $p < 0.05$  was considered significant.

Physicians' practice locations were categorized as urban or rural based on their classification by the Ontario Ministry of Health and Long-Term Care for the purposes of distributed medical education whereby medical education was distributed from the main campus of the medical school (Distributed Medical Education Council of Faculties of Medicine Ontario) and the academic centre. For the purposes of determining participants' rural background, physicians were asked whether they lived in a location during their childhood or adolescence which met the CAIRNS Consensus Statement on Rural Generalist Medicine's description of rural ("The range of community and practice settings which share a context of relative isolation from large population centers and major healthcare facilities").<sup>7</sup>

### Ethics Approval

Ethics approval for the study was obtained from the Georgian College Research Ethics Board.

### Results

A total of 154 physicians completed and returned the survey giving a response rate of 40.3%.

### Rural Background and Practice

38 physicians (23.2%) reported having lived in a rural location during their childhood or adolescence, for a median of 15 years (IQR = 8-18 years). 35 physicians (21.3%) reported currently practicing in a rural area. Of those physicians practicing in a rural area, 20 (54.1%) a full-time rural practice, 6 (16.2%) a part-time rural practice, and 11 (29.7%) rural locums. 16 of the 38 physicians currently practicing in a rural area (45.7%) reported having also lived in a rural area during their childhood or adolescence.

**Table 1.** Participant Characteristics - Rural Background and Practice

	Yes (%)	No (%)	No Response (%)
Rural childhood	38 (23.2)	126 (76.8)	0 (0)
Rural adolescence	29 (17.7)	135 (82.3)	0 (0)
Rural adulthood	22 (13.6)	140 (86.4)	2 (1.2)
Rural practice	37 (22.6)	127 (77.4)	0 (0)

**Table 2.** Scope of Participants' Rural Practice

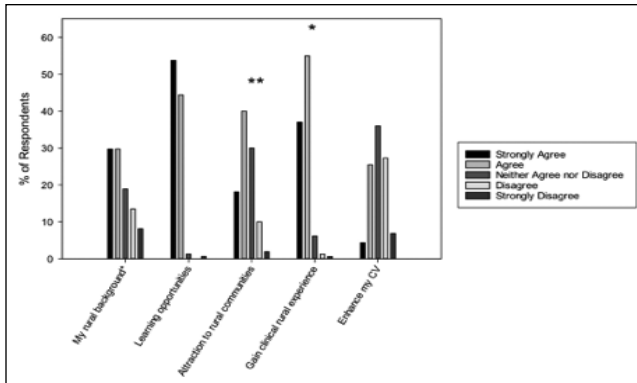
	Respondents	Percent of respondents
Full-time	20	50.1
Part-time rural practice	6	16.2
Locum rural practice	11	29.7

**Table 3.** ROMP Week Participants' Participation in Subsequent Rural Clinical Rotation

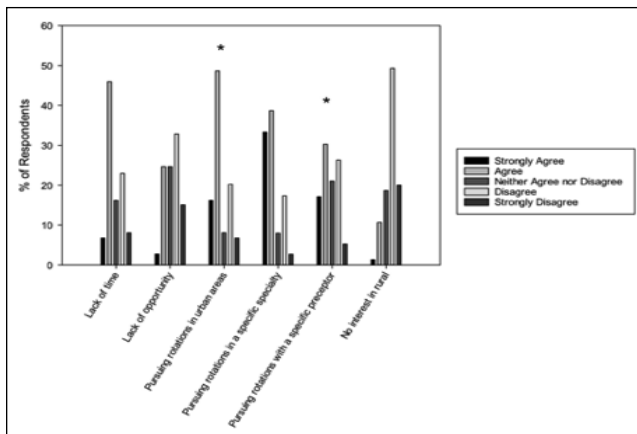
	Respondents	Percent of Respondents
Subsequent rural clinical rotation	97	59.2
No subsequent rural clinical rotation	62	37.8
No answer	5	3.0

### Motivations for Participating in ROMP Week

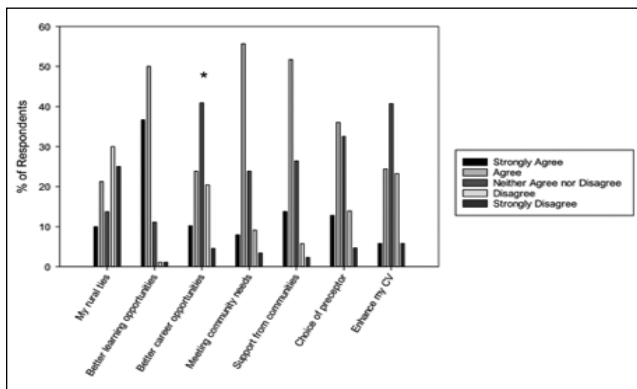
Mann-Whitney testing revealed that physicians' level of agreement with participating in ROMP Week due to their attraction to rural communities was greater for physicians currently practicing in rural areas (Median = 4.0, or "Agree") than for those not practicing in rural areas (Median = 4.0, or "Agree"),  $U = 1631.500$ ,  $p = 0.01$ . Although both groups tended to agree that they participated in ROMP Week to gain rural clinical experience, a difference was observed between physicians currently practicing in rural areas (Median = 5.0, or "Strongly Agree") and those not practicing in rural areas (Median = 4.0, or "Agree"),  $U = 1753.500$ ,  $p = 0.019$ .



**Figure 1.** Participants’ agreement with the statement, “I participated in ROMP Week due to”. \* indicates a difference between physicians who are and are not currently practicing in rural communities; \*\* indicates a difference between both: physicians who are and are not currently practicing in rural communities, and physicians who participated in subsequent ROMP clinical rotations and those who did not. “I participated in ROMP Week due to my rural background” was assessed only for participants who reported living in a rural area during their childhood or adolescence.



**Figure 2.** Physicians’ agreement with the statement, “I did not do a clinical rotation with ROMP due to”. \* indicates a difference between physicians who are and who are not currently practicing in rural communities.



**Figure 3.** Physicians’ agreement with the statement, “I participated in a clinical rotation with ROMP due to”. \* indicates a difference between physicians currently practicing in rural communities and those not.

Physicians who participated in subsequent ROMP clinical rotations tended to have greater agreement with having participated in ROMP Week due to their attraction to rural communities than those who did not do subsequent ROMP rotations (Median = 4.0, or agree, for both groups),  $U=2588.000$ ,  $p=0.031$ .

Of the physicians who reported having done a rural clinical rotation following their participation in ROMP Week, 82 (85.5%) reported having done a rotation organized by ROMP.

Of the physicians who did not complete subsequent ROMP clinical rotations during their medical education, those who are not currently practicing in rural communities were in greater agreement (Median = 4, or “Agree”) than those who are practicing in rural areas (Median = 2, or “Disagree”), that a reason for not completing a ROMP Clinical rotation was because they were pursuing rotations in urban areas ( $U=252.500$ ,  $p=0.014$ ).

Conversely, the physicians who are currently practicing in rural communities agreed to a greater extent (Median = 4.0, or “Agree”) than those who are not (Median = 3.0, or “Neither Agree nor Disagree”) that they did not complete ROMP clinical rotations because they were pursuing rotations with a specific preceptor ( $U=222.000$ ,  $p=0.002$ ).

Mann-Whitney testing indicated that physicians currently practicing in rural communities agreed more (Median = 4.0, or “Agree”) that the career opportunities were a reason that they participated in a ROMP clinical rotation, compared to those physicians who are not practicing in rural areas (Median = 3.0, or neither agree nor disagree),  $U=456.000$ ,  $p=0.012$ .

**Discussion**

**Rural Practice**

As of 2004, approximately 21.1% of Canadians lived in rural communities<sup>8</sup> and 10.8% of first-year medical students in Canadian schools had rural backgrounds.<sup>4</sup> The participants in this investigation were more similar in composition to the Canadian population as a whole than to first-year medical students nationwide, with nearly one quarter of participants reporting having lived in rural areas during their childhood or adolescence.

Notably, over half of the respondents reported having done a rural clinical rotation during clerkship or residence following their ROMP Week experience, and 21.3% reported currently practicing in a rural community at the time of the survey. Respondents practicing rural medicine were not limited to those with rural backgrounds who have traditionally been believed to be more likely to go on to rural practice.<sup>1</sup> Although it is possible that the students who participate in ROMP Week would have been inclined towards rural clinical rotations and practice regardless of their participation in ROMP Week, the possibility that the exposure to rural communities and rural healthcare through ROMP Week influenced these individuals’ future training and practice decisions cannot be discounted.

**Motivating Factors for Participating in ROMP Week and Rural Clinical Rotations**

Participants’ rural background or lack thereof did not appear to be important in motivating them to participate in ROMP Week. Even among the 37 students with a rural background, only 22

“Agreed” or “Strongly Agreed” that they participated in ROMP Week due to their rural background.

The learning opportunity of a week-long rural clinical experience, on the other hand, was influential in participants’ decisions to participate in the program. Nearly all participants indicated that the learning opportunities and gaining rural clinical experience influenced their decision to participate in ROMP Week.

Interestingly, although the physicians’ attraction to rural communities did not appear to be influential in participants’ decisions to participate in ROMP Week, a difference was observed between the responses of participants who did and did not do a subsequent rural clinical rotation, and between participants who are and are not currently practicing in rural communities. Participants who did subsequent rural rotations, and those practicing in rural communities, tended to agree more strongly that their attraction to rural communities was a motivating factor in participating in ROMP Week than those who did not do rural rotations or who are not practicing in rural communities.

The educational value of rural clinical experiences with respect to students’ learning is reflected by its incorporation into medical school curriculums across the world, and recommendations to include it in medical education from international organizations such as the World Organization of Family Doctors.<sup>9</sup> Although participants indicated their ROMP Week experience – and their subsequent rural clinical rotations – to be positive learning experiences, the medical education aspect of these clinical experiences was not different between those physicians who went on to train or practice in rural locations and those who did not. Rather, it was factors related to participants’ interest in rural communities and rural healthcare which were associated with participants’ subsequent return to rural healthcare, both for clinical training and for medical practice. The findings of this investigation suggest that, in addition to the educational benefits of rural clinical experiences being important, the potential of these types of experiences in increasing students’ interest in rural communities and rural healthcare also appear to be beneficial in ultimately increasing the number of rural doctors.

Although the present study did not address whether short rural placements change students’ attitudes towards rural communities or practice, similar interventions have been shown to be effective in this regard. As little as a single day spent in a rural clinic with a small group of peers and a preceptor can have the effect of increasing the number of first-year students interested in rural practice and who report having a good understanding of the roles of rural physicians – even among those students who prefer large cities to rural communities.<sup>10</sup> Similarly, week-long rural placements can increase students’ understanding of, and interest in, rural life and increase their interest in rural clinical placements.<sup>11</sup> Longer rural placements can be similarly effective in influencing students’ views of rural medicine. A three-week rural program for medical students – most of whom had urban backgrounds – had a positive influence on students’ views about careers in rural medicine, increased their interest in rural practice, and improved their reported knowledge of rural health and communities.<sup>12</sup>

These findings may be important in the context of meeting the need for rural physicians, providing an additional strategy to produce rural practitioners outside of the approaches which have traditionally been taken. Previous research has found that

medical students with rural backgrounds are more likely than those without to practice in rural communities, as are learners who are exposed to rural communities and healthcare during the clinical years of their undergraduate studies and during their postgraduate education.<sup>1,4,5,14-18</sup> Return-of-service programs has been shown to be effective in recruiting physicians to rural areas, but less successful with respect to the long-term retention of physicians.<sup>6</sup> On the other hand, physicians who choose to practice in rural communities independent of a return-of-service program are more likely to stay longer in the community.<sup>6,13</sup> What the present study contributes to the existing body of knowledge is that brief rural placements early in learners’ medical education, during pre-clerkship, may be an additional tool in increasing the likelihood of students ultimately going on to practice in rural communities.

## Conclusion

Despite the efforts of some medical schools to target applicants of rural origin, the pool of rural origin students entering medical school is diminishing and targeted recruitment alone cannot meet the demand for rural physicians.<sup>21,22</sup> Thus, it is important that initiatives are pursued to not only retain rural-origin students, but also attract students without rural backgrounds towards rural practice and communities.

There is evidence that having a rural background and taking part in longer rural clinical experiences during clerkship are associated with an increased likelihood of subsequent rural practice, although there is an interaction effect of having a rural background and having rural clinical experiences during clerkship.<sup>23-27</sup> The findings of this investigation suggest that short, rural clinical experiences during pre-clerkship may provide another opportunity to increase the number of medical learners flowing through the physician pipeline to rural communities. These experiences can add to the rural pipeline, drawing learners with urban backgrounds towards rural practice. Further, they can help sustain the flow of learners with rural backgrounds through the pipeline, providing opportunities to maintain contact with rural healthcare during medical training.

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