

Improving the recruitment and retention of doctors by training medical students locally

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CONTEXT The global shortage of doctors is of concern. This is particularly true in French-speaking regions of New Brunswick, Canada, where there is no medical school. Since 1981, francophone medical students from New Brunswick have been able to undertake part of their training in their province through an agreement with medical schools in another province. We studied the effects of frequency and length of exposure to the province of origin during medical training on the likelihood that a doctor will ever or currently practise medicine in that province.

METHODS A questionnaire was sent to 390 francophone doctors from New Brunswick to collect information on history of medical training and practice. Multivariate logistic regressions were used to identify whether exposure to New Brunswick during medical training at the undergraduate and postgraduate levels affects the likelihood of ever or currently practising in the province.

RESULTS A total of 263 doctors participated. Among family doctors, those with exposure to

their province of origin in 1, 2, 3 or 4 years of undergraduate training were 2.5 (95% confidence interval [CI] 0.8–7.4), 2.5 (95% CI 0.7–8.6), 9.3 (95% CI 1.5–56.9) and 9.3 (95% CI 1.4–60.1) times more likely, respectively, to currently practise in New Brunswick than doctors who had experienced no exposure to the province during undergraduate training. Among specialty doctors, exposure to New Brunswick during undergraduate training had no effect on location of practice. Family and specialty doctors who had been exposed to New Brunswick during postgraduate residency were 5.9 (95% CI 2.3–14.9) and 3.2 (95% CI 0.9–11.6) times more likely, respectively, to practise in the province than doctors without postgraduate exposure.

CONCLUSIONS Greater exposure to New Brunswick during medical training is associated with significantly better odds that doctors will be recruited to and retained in the province. Some effects are perceived for exposure during both undergraduate (most importantly in the final years) and postgraduate programmes.

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 INTRODUCTION

The shortage of practising doctors is of concern around the world, including in Canada.^{1–6} The need for more doctors tends to be greater in rural areas; it has been suggested that this is partly attributable to the fact that medical education programmes are located in urban centres.^{7–12} Studies suggest that students who are exposed to a region during medical training are more likely to establish a medical practice in that region than other students.^{8,13–17} A recent study also indicated that doctors who presently practise in rural areas are more likely to have had rural medical experiences during their training than doctors practising in urban areas.⁷ Whereas some authors suggest that exposure to rural settings during the final year of training is key,¹⁸ others have found that exposure at an early phase of medical training has substantial influence on the possibility that a doctor will return to the same region to establish practice.¹⁶ Along with the timing of exposure, it has also been suggested that there is a positive relationship between the amount of exposure to rural medicine a trainee receives during training and the likelihood that he or she will choose to establish a rural medical practice.¹⁷

Few studies have been able to concurrently study the effects of the length, timing and frequency of exposure to a region. Moreover, although previous studies focused on the effect of rural exposure, the effect of exposure in the same location as place of origin remains elusive. Offering local medical training to local candidates may represent an efficient strategy for recruiting doctors in regions with relatively small populations, large distances between communities, and little means of setting up their own medical schools. The Canadian province of New Brunswick represents an appropriate context in which to examine the effects of length, timing and frequency of exposure to a student's region of origin during medical training on the likelihood that he or she will return and practise medicine in that region.

Historical overview of medical training opportunities for francophones in New Brunswick

New Brunswick, a geographically small and sparsely populated province (population = 750 457), represents Canada's only officially bilingual province. About one-third of New Brunswick's population speaks French as a first language, which means that, on a relative scale, the province represents Canada's largest concentration of francophones outside Quebec. New Brunswick is one of two Canadian

provinces without a medical school and its francophone population is distributed across mostly rural areas. In an effort to resolve the lack of doctors serving francophones, the province maintains an agreement that reserves places for New Brunswick residents in three French medical schools in Quebec since 1967. Average distances between the Quebec medical schools and most francophone communities in New Brunswick range between 700 km and 1000 km. Yet, in 1979, of the 755 doctors practising in New Brunswick, only 132 (17%) were able to address French-speaking residents in their own language.¹⁹ As one of a number of initiatives to correct this deficit, a clinical teaching programme was established in 1981 at Moncton's Dr Georges L Dumont Regional Hospital, New Brunswick's largest francophone hospital. Over the years, more training places for New Brunswickers have been reserved and a system has been put in place to facilitate the better coordination and utilisation of these places. In addition, more clinical rotations at both undergraduate and postgraduate levels have been developed throughout the province. Since 1999, all 24 months of the family medicine programme have been offered in New Brunswick through the University of Sherbrooke. Moreover, since 2006, New Brunswickers entering a medical training programme conducted in French can do so in the province because a fully distributed medical training programme based in Moncton has been initiated through the University of Sherbrooke. These initiatives were developed under the hypothesis that earlier and more frequent exposure of New Brunswickers to their province would increase the likelihood that these candidates would be recruited and retained to work in the province. In this study, we sought to evaluate the success of New Brunswick's local training initiatives to recruit and retain French-speaking doctors originating from the province.

 METHODS

Study population

We studied all 410 candidates who were admitted to study medicine through the Quebec–New Brunswick agreement between 1973 and 2000. The study was conducted between October 2007 and July 2008. An explanatory letter was mailed or faxed to all participants. This was followed by telephone calls to establish the best way for each participant to answer the questionnaire. Participants were given the option of replying to the survey by telephone or in writing (either by returning the pre-addressed and

pre-stamped envelope or by fax). Second and third telephone calls were made if necessary. A paper questionnaire was sent to those who had not responded after the telephone calls. Two study nurses were standardised to help participants reply to the questionnaire efficiently (in 5–10 minutes) in an unbiased fashion.

Our questionnaire was partly based on two surveys: the 2004 National Physicians Survey conducted among doctors by the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and the Royal College of Physicians and Surgeons of Canada (RCPSC),⁶ and the 2004 Memorial University of Newfoundland Faculty of Medicine survey of past graduates.²⁰ The questionnaire was reviewed by a statistician and methodologist for content and face validity. It was also pilot-tested on four local practising doctors to assure clarity. All questionnaires were administered in French. The study received ethical approbation from the regional health authority's institutional review board.

Study variables

Two outcomes (i.e. recruitment and retention) were studied. The first, recruitment, represented whether or not the respondent had ever practised medicine in New Brunswick. This was established by the item: 'For how many years did you practise medicine in New Brunswick?' Participants were categorised as having returned to New Brunswick if the number of years they had practised medicine in the province was > 0. They were categorised as not having returned if they reported having practised in the province for '0' years.

Retention, the second outcome, referred to whether or not the respondent currently practised medicine in New Brunswick. Responses were obtained to the item: 'Where do you currently practise medicine?' Participants who gave answers that included the name of any community in New Brunswick were categorised as currently practising in New Brunswick. Participants whose answers indicated current practice outside New Brunswick were categorised as not currently practising in the province.

Undergraduate medical training

Exposure to New Brunswick during medical training was measured in several ways. The total number of months spent in New Brunswick during undergraduate training was obtained by summing answers to the item: 'During your undergraduate medical training, for approximately how many months did you come to

New Brunswick for clinical rotations in [respectively] your first year? second year? third year? fourth and fifth years?' These questions were also used to identify whether or not participants had come to New Brunswick for clinical rotations in each year of undergraduate medical training. Answers to the same questions also allowed us to calculate the number of years during which the participant had received at least some exposure to New Brunswick during his or her undergraduate medical training.

Postdoctoral medical training

Participants were categorised as having completed postdoctoral medical training in family medicine or in a specialty according to their responses to the item: 'In which discipline have you conducted your postdoctoral studies?' Response options were: 'Family medicine' and 'Specialty'. Depending on their answers to this question, participants were directed to different sections of the questionnaire. Both sections (one for family doctors and one for specialty doctors) contained the questions described herein.

The total number of months of residency medical training spent in New Brunswick during postdoctoral studies was ascertained by summing answers to the questions: 'During your postdoctoral medical training, for approximately how many months did you come to New Brunswick for your residency in [respectively] your first year? second year? third year? fourth year? fifth year?' (Family doctors were asked about their first and second years only.) These questions also enabled us to identify whether or not participants had been exposed to residency training in New Brunswick.

Other covariates

Data on covariates, including sex, number of years of medical practice and university attended, were also obtained by the questionnaire. In addition, participants reported the city or town in which they had lived while attending secondary school. This was merged with the publicly accessible Government of Canada's Community Information Database (<http://www.cid-bdc.ca/>) to determine if participants originated from an urban (population > 10 000) or rural community according to Statistics Canada's census subdivisions.²¹ Participants indicated their top three reasons for selecting their current place of practice from 11 response options: availability of medical resources; family or partner influence; liking the region; positive experiences in the region during training; potential for university affiliation; career

advancement opportunities; only option to establish a practice; cultural or social reasons; financial incentive at recruitment; non-financial incentive at recruitment, and the existence of a teaching centre.

Data analysis

Univariate and multivariate logistic regression models were developed to test the hypothesis that earlier and greater exposure to medical training in New Brunswick is associated with a higher likelihood that a practitioner will return to the province to practise medicine and will currently practise medicine in New Brunswick. Separate models were created for the various exposures of interest because of co-linearity (they are all based on answers to the same questions). Frequency *Z*-tests for proportions were used to describe the most important reasons for selecting a place of practice. All analyses were conducted using SAS Version 9.1 (SAS Institute, Inc., Cary, NC, USA).

RESULTS

Of the 410 potential participants on our list, 20 were not eligible because they had started medical training before or after the period of interest. Contact information could not be found for 57 participants;

no contact could be established with another 54 doctors and 15 refused to participate. One of the 264 questionnaires returned contained incomplete responses and thus we achieved a final sample of 263 participants (representing 67% of eligible doctors and 79% of those for whom contact information was available). Responses were provided by mail ($n = 136$), telephone ($n = 72$) and fax ($n = 55$). The median year of admission to medical school was 1990. A total of 70% of participants were practising medicine in New Brunswick at the time of the survey and 77% had practised medicine in the province at one time or another (Table 1). About two-thirds of participants were family doctors and one-third had trained in a specialty. Compared with doctors who participated in this study, non-respondents included a similar proportion of women (53%) and had a similar median year of admission (1991). Approximately half of the non-respondents for whom we had contact information had an address in New Brunswick (49%) and most of them had trained in a specialty other than family medicine (56%).

Recruitment: exposure during undergraduate training

Overall, the condition of having spent an additional 1 month of undergraduate clinical rotation in New

Table 1 Characteristics of study participants

	All participants ($n = 268^*$)	Family doctors ($n = 174$)	Specialty doctors ($n = 100$)
	n (%) or median [IQR]	n (%) or median [IQR]	n (%) or median [IQR]
Returned to practise in NB, yes	204 (77%)	142 (82%)	67 (67%)
Currently practise in NB, yes	183 (70%)	132 (75%)	56 (56%)
Length of practice in NB, years	5 [0.5–11]	5.5 [1.5–12]	3.5 [0–10]
Undergraduate rotations in NB, months	3 [1–4.5]	3 [1–5]	2.5 [1–4]
Postgraduate residency in NB, months	1 [0–18]	8 [0–21]	0 [0–0]
Time in practice, years	9 [4.5–14]	10 [5–17]	8 [4–12]
University attended			
University of Sherbrooke	107 (40%)	72 (41%)	38 (38%)
Laval University	99 (37%)	63 (36%)	39 (39%)
University of Montreal	61 (23%)	39 (22%)	23 (23%)
Community of origin, rural	130 (49%)	87 (50%)	47 (47%)
Sex, female	151 (56%)	109 (62%)	45 (45%)

* Six participants reported having undertaken postdoctoral training in both family and specialty medicine
IQR = interquartile range; NB = New Brunswick

Brunswick was associated with an increase of about 30% in the odds of ever practising medicine in the province (Table 2; the estimate of a 30% increase in odds is derived from the adjusted odds ratio of 1.3). Among family doctors, exposure to New Brunswick during each of the first 3 years of medical training did not influence the odds of ever practising in the province. However, family doctors who had undergone some training in New Brunswick in their last year of undergraduate training were nearly five times as likely to ever work in the province as family doctors

who had not experienced a provincial rotation in their last year of undergraduate study. Cumulative exposure to New Brunswick during undergraduate training was an important determinant of whether or not a graduate would ever return to work as a family doctor in the province. Compared with family doctors who had had no undergraduate training in New Brunswick, the odds of ever working in the province were over 3.5 times greater among those with exposures to the province in at least 1 or 2 years of their medical degree training. The odds were even greater

Table 2 Crude and adjusted odds ratios for having ever practised medicine in New Brunswick in relation to having received medical training in the province

	All participants		Family doctors	Specialty doctors
	Crude OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Undergraduate medical training				
Clinical rotations in NB, months*	1.2 (1.1–1.4)	1.3 (1.1–1.5) [†]	1.4 (1.1–1.8) [†]	1.1 (0.8–1.4) [†]
Year with rotations in NB, yes versus no [‡]				
Year 1	0.9 (0.4–1.8)	0.7 (0.3–1.5) [†]	0.6 (0.2–2.0) [†]	0.5 (0.1–2.0) [†]
Year 2	0.7 (0.3–1.4)	1.0 (0.5–2.2) [†]	2.0 (0.5–7.5) [†]	0.7 (0.2–2.1) [†]
Year 3	1.8 (0.8–3.7)	3.6 (1.5–8.4) [†]	2.6 (0.6–11.8) [†]	1.6 (0.5–5.8) [†]
Year 4	2.2 (1.2–4.1)	1.9 (1.0–3.1) [†]	4.7 (1.6–13.5) [†]	0.8 (0.3–2.5) [†]
No. of years with rotations in NB				
0	Reference	Reference	Reference	Reference
1	1.7 (0.8–3.9)	1.8 (0.7–4.8) [†]	3.8 (1.1–12.3) [†]	0.5 (0.1–3.4) [†]
2	1.0 (0.4–2.4)	2.2 (0.8–6.1) [†]	3.8 (1.0–14.6) [†]	0.4 (0.1–2.7) [†]
3	1.4 (0.6–3.5)	2.2 (0.7–6.8) [†]	14.2 (1.7–118.1) [†]	0.3 (0.1–1.8) [†]
4	3.0 (0.9–10.1)	3.0 (0.7–12.0) [†]	6.6 (1.0–44.9) [†]	0.5 (0.1–5.6) [†]
Postgraduate medical training				
No. of months of residency in NB	1.2 (1.1–1.3)	1.2 (1.1–1.3) [§]	1.2 (1.1–1.3) [§]	2.1 (1.0–4.3) [§]
Residency in NB, any versus none	4.7 (2.4–9.2)	6.2 (2.9–13.2) [§]	5.5 (2.1–14.5) [§]	4.1 (1.0–16.8) [§]
Other covariates				
No. of years in practice	1.0 (1.0–1.0)			
University attended				
University of Sherbrooke	Reference			
Laval University	1.3 (0.7–2.5)			
University of Montreal	1.0 (0.5–2.1)			
Place of origin, rural versus urban	1.5 (0.8–2.7)			
Sex, female versus male	0.7 (0.4–1.3)			

* Odds ratios on this line offer a comparison between participants with a 1-month difference in the length of total exposure to NB during undergraduate training. For example, we find that on average, an additional 1 month of exposure to NB during undergraduate training is associated with 30% greater odds (adjusted OR of 1.3) of ever practising medicine in NB once other covariates have been taken into account

[†] Adjusted for number of months of residency in NB, number of years in practice, university attended, community of origin and sex

[‡] Duration of rotations is 1–2 weeks in Year 1, 3 weeks in Year 2 and 16 weeks in Years 3 and 4

[§] Adjusted for number of months of rotations in NB, number of years in practice, university attended, community of origin and sex
OR = odds ratio; 95% CI = 95% confidence interval; NB = New Brunswick

for trainees who had received exposures in 3 or 4 years of their undergraduate studies.

No meaningful or statistically significant relationships between exposure to New Brunswick during undergraduate training and the likelihood of ever practising in the province emerged for specialty doctors.

Recruitment: exposure during postgraduate training

Both family and specialty doctors were more likely to have practised medicine in New Brunswick if they had undertaken a residency programme in the province. Compared with participants who had undertaken no residency training in New Brunswick, family and specialty doctors with some experience of New Brunswick during residency training were, respectively, five and four times more likely to have worked in the province.

Retention: exposure during undergraduate training

On average, an additional 1 month of clinical rotation in New Brunswick during undergraduate medical studies was associated with an approximate increase of 40% in the odds of currently practising medicine in that province (estimate derived from an adjusted odds ratio of 1.4 in Table 3). Although the effects of in-province clinical training in the first 2 years of medical studies were not significant, family doctors with training in New Brunswick in their third and fourth years were approximately four and three times more likely, respectively, to currently practise in the province than doctors with no provincial exposure in those years. Family doctors who had undertaken clinical rotations in New Brunswick in at least three of their years of undergraduate medical training had approximately 10 times greater odds of currently working in the province than colleagues without undergraduate exposure to New Brunswick. The participation of specialty doctors in provincial undergraduate clinical rotations had no effect on the likelihood that they would currently work in New Brunswick.

Retention: exposure during postgraduate training

An additional 1 month of residency in New Brunswick increased the odds that family and specialty doctors would currently practise in the province by 20% and 70%, respectively. On average, family and specialty doctors were, respectively, six and three times more likely to practise in New Brunswick if they had had some residency training in that province than if they had not.

Reasons for current place of practice

Among the participants' top three reasons for selecting their current place of practice, the most frequently reported were influence of family or partner (23% of participants), liking the region (18%), and availability of medical resources (12%). All other potential reasons were identified by fewer than 10% of participants. The same three reasons were also the most popular in responses to an item asking how participants had selected their respective places of practice. The influence of family or partner was the top reason for 50% of participants, and liking the region and the availability of medical resources were selected as top reasons by 18% and 10% of participants, respectively. There were no notable differences in top reasons for selecting a place of practice between family and specialty doctors. However, doctors who currently practised outside New Brunswick were relatively more likely than doctors practising in New Brunswick to report the influence of family or partner as a top reason for selecting a place of practice (65% and 49%, respectively; $p = 0.03$). Liking the region was reported as a top reason by 8% of doctors practising outside New Brunswick and 22% of those practising in New Brunswick ($p = 0.02$). There were no differences in the frequency distributions of the other reasons for selecting a place of practice between doctors practising within or outside New Brunswick.

DISCUSSION

In this study, we show that each of length, timing and frequency of exposure to the region of origin during medical training are positively associated with the likelihood that a doctor will be recruited and retained in that region. These findings remain statistically significant after controlling for known determinants of recruitment and retention, including number of years since graduation, sex and whether participants originate from urban or rural areas. This may be the first study to concurrently report the effects of three aspects of exposure to a region on the recruitment and retention of both family and specialty doctors. The study of exposure to a region that is the participants' region of origin also contributes to the uniqueness of this analysis. Our results are nevertheless consistent with those of previous reports. For example, recent studies indicate that undertaking a greater proportion of residency training in rural regions is linked to a greater likelihood that a doctor will establish a medical career in the same area.^{17,22}

Table 3 Crude and adjusted odds ratios for currently practising medicine in New Brunswick in relation to having received medical training in the province

	All participants		Family doctors	Specialty doctors
	Crude OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Undergraduate medical training				
Clinical rotations in NB, months*	1.2 (1.1–1.4)	1.2 (1.0–1.4) [†]	1.4 (1.1–1.8) [†]	1.0 (0.8–1.2) [†]
Year with rotations in NB, yes versus no [‡]				
Year 1	0.8 (0.4–1.6)	0.7 (0.3–1.5) [†]	0.9 (0.3–2.6) [†]	0.3 (0.1–1.1) [†]
Year 2	0.7 (0.4–1.5)	1.0 (0.5–2.2) [†]	1.6 (0.5–5.2) [†]	0.9 (0.3–2.9) [†]
Year 3	2.6 (1.3–5.4)	3.6 (1.5–8.4) [†]	3.7 (1.0–14.3) [†]	2.8 (0.7–10.5) [†]
Year 4	2.5 (1.4–4.4)	1.9 (1.0–3.7) [†]	2.8 (1.1–7.1) [†]	1.0 (0.3–3.1) [†]
No. of years with rotations in NB				
0	Reference	Reference	Reference	Reference
1	1.9 (0.9–4.0)	1.7 (0.7–4.2) [†]	2.5 (0.8–7.4) [†]	1.2 (0.2–6.0) [†]
2	1.2 (0.6–2.7)	1.9 (0.7–5.0) [†]	2.5 (0.7–8.6) [†]	0.7 (0.1–3.4) [†]
3	1.7 (0.7–3.9)	1.9 (0.7–5.3) [†]	9.3 (1.5–56.9) [†]	0.4 (0.1–2.0) [†]
4	5.2 (1.6–17.1)	4.4 (1.1–17.0) [†]	9.3 (1.4–60.1) [†]	0.8 (0.1–7.9) [†]
Postgraduate medical training				
No. of months of residency in NB	1.2 (1.1–1.2)	1.2 (1.1–1.2) [§]	1.2 (1.1–1.2) [§]	1.7 (0.9–2.9) [§]
Residency in NB, any versus none	4.9 (2.7–9.0)	6.2 (3.1–12.7) [§]	5.9 (2.3–14.9) [§]	3.2 (0.9–11.6) [§]
Other covariates				
No. of years in practice	1.0 (0.9, 1.0)			
University attended				
University of Sherbrooke	Reference			
Laval University	1.3 (0.7–2.3)			
University of Montreal	0.9 (0.4–1.7)			
Place of origin, rural versus urban	1.6 (0.9–2.7)			
Sex, female versus male	0.9 (0.5–1.6)			

* Odds ratios on this line offer a comparison between participants with a 1-month difference in total exposure to NB during undergraduate training. For example, we find that on average, an additional 1 month of exposure to NB during undergraduate training is associated with 20% greater odds (adjusted OR of 1.2) of currently practising medicine in NB when accounting for the other covariates

[†] Adjusted for number of months of residency in NB, number of years in practice, university attended, community of origin and sex

[‡] Duration of rotations is 1–2 weeks in Year 1, 3 weeks in Year 2 and 16 weeks in Years 3 and 4

[§] Adjusted for number of months of rotations in NB, number of years in practice, university attended, community of origin and sex
OR = odds ratio; 95% CI = 95% confidence interval; NB = New Brunswick

Later exposure to a region appears to be more strongly associated with future practice in that region than early exposure. This corroborates earlier findings that students who choose a rural focus in their final year of training usually select a rural area for their practice.¹⁸ Although our findings show that exposure in the first 2 years of undergraduate medical training has little influence on recruitment and retention, it should be noted that training programmes in those particular years include very few rotations. For example, students at the University of

Sherbrooke undertake a 3-week initiation to clinical work in the first year of medical training and have the option of undertaking a 2-week rotation in their second year. These rotations are intended to expose students to the daily life of doctors and to experiences with patients and with the nursing aspects of care. In light of these and previous findings⁹ suggesting that early exposure is important, it will be interesting to assess the effect of the in-province distributed medical education programme launched in 2006.

Our findings suggest that effects of exposure to the region of origin during undergraduate medical training may be more strongly related to recruitment and retention in this region among family doctors than among doctors with specialty training. This may reflect the fact that most undergraduate clinical rotations were supervised by family doctors until recently and family doctors play a major clinical role in New Brunswick hospitals. This interpretation is consistent with the findings of a study suggesting that increased exposure to practising family doctors during training improves the likelihood that a graduate will choose to embark on a career in family medicine once he or she graduates.²³

Given that students from New Brunswick are given a degree of priority in the selection of where they undertake clinical rotations, it is possible that our estimates are overly confident. For example, medical students who desire to return to New Brunswick after training may take greater advantage of opportunities to train in the province than other students may do. Nevertheless, we can speculate that local training was an important contributor because internal reports indicate that the proportion of Quebec-trained doctors from New Brunswick who return to the province has risen steadily and concurrently with increases in local opportunities for training over the past decades.²⁴ Local training may also contribute to improved recruitment because the timeframe during which medical training occurs for most students corresponds to the period during which they find a lifetime partner and make decisions about where to establish themselves.¹⁵ Consistent with previous reports, we found that the influence of family members and friends is an important contributor to recruitment and retention outcomes.²⁵ Our results suggest that the majority of participants who practise outside New Brunswick do so because of partner or family influences.

The cross-sectional design of this study limits the assessment of causality. It is nevertheless unlikely that problems of recall are responsible for the effects estimated. Any bias of our results by the non-participation of potential respondents would require a large proportion of non-participants to have been highly exposed to New Brunswick during training and then to have practised elsewhere, or to have had little exposure to New Brunswick and then have returned to the province. Moreover, half of the non-respondents in this study did not participate because we were unable to obtain contact information for them. Of these 13% of potential participants, many may have been

inaccessible because they had dropped out of medical school. Estimates for medical school dropout rates range from 7% to 15%.^{26,27}

CONCLUSIONS

It has become essential that small and rural regions respond to doctor shortages by creating effective recruitment and retention strategies. This study supports the hypothesis that recruitment and retention efforts in a province without a medical school are potentially improved by the provision of local training opportunities for local candidates. Our results suggest that higher frequencies and longer durations of exposure to the region of origin contribute to improving the recruitment and retention of both family and specialty doctors in that region. This study also indicates that exposure during the later stages of medical training may be associated with the highest likelihood that a doctor will establish practice in the region.

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