

## Short Report: Scope of family practice in rural and urban settings

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Family physicians in all settings provide a variety of procedures.<sup>1,2</sup> Rural doctors tend to provide a greater number or variety of procedures than their urban counterparts.<sup>1,2</sup> What has not been studied well is where practice patterns differ on the rural-urban continuum and the relative importance of variables that contribute to the differences. Our hypothesis was that geography is the predominant predictor of scope of practice and might be a more significant predictor than physicians' age<sup>1,2</sup> or sex.<sup>3</sup>

Primary data source for this study was the 1997 College of Family Physicians of Canada's National Family Physician Survey.<sup>4</sup> A practice breadth score was calculated by totaling the survey responses from each of 16 questions on procedures and eight on on-call activities. Geographic location of practices was determined using the postal codes provided by the 2981 respondents matched with 1996 census data and geography. Straight-line distances were computed between practice location and nearest hospitals and communities of various sizes.

The practice breadth score was modeled using independent variables: sex, age, practice type,

straight-line distance to large referral hospital (>299 beds), municipal population size, and general region (Atlantic, Quebec, Ontario, Prairies, Alberta, British Columbia, Northern). Multivariate logistic regression was done to confirm independence of variables and to determine the relative weight of each parameter in determining the total practice breadth score. A sum of squares analysis was done to determine how close the model fit to observed variation in practice breadth. In smaller centres, 21 of the 24 procedures and on-call items were found to be more common (**Table 1**).

When all 24 items were combined in the practice breadth score, a progression (**Figure 1**) was noted in association with increasing distance from a large city (>100 000 population).

A multivariate statistical model based on factors of sex, age, practice type, distance to large hospital, municipal population, and region was found to explain 38% of the variation in practice breadth score. Pearson correlates to practice breadth were strongest for the geographic variables of distance to large hospital (0.401,  $P < .01$ ), community size (-0.363,  $P < .01$ ) and region (0.184,  $P < .01$ ), which together accounted for 30% of the variation. An additional 8% of the variation in practice breadth was explained by personal characteristics of sex (0.172,  $P < .01$ ), age (-0.123,  $P < .01$ ), and type of medical practice (-0.083,  $P < .01$ ).

Our analyses suggest that, as geographic isolation increases, Canadian family physicians provide an increasingly broad spectrum of services. Our study confirms earlier work that male sex,<sup>3</sup> youth of physician,<sup>1,2</sup> and FP group practice<sup>5</sup> are associated with increased breadth of practice. Focusing

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Cet article a fait l'objet d'une évaluation externe.

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**Table 1. Univariate analysis of procedures or on-call activities by census subdivision population (conventional splits): All listed procedures and on call areas were significant (ANOVA) at  $P < .001$ .**


PROCEDURES/ON-CALL AREA	PARTICIPATION OF FAMILY PHYSICIANS IN PROCEDURES AND ON-CALL ACTIVITIES BY COMMUNITY SIZE (%)		
	< 10 000	10 000 - 99 999	> 100 000
	N = 597	N = 881	N = 1103
Suturing	96	87	82
Pap smears	94	87	88
Musculoskeletal injection and aspiration	91	79	66
Minor surgery	78	68	61
Casting and splinting	78	58	40
Biopsy	77	65	52
Electrocardiogram interpretation	58	45	41
Diagnostic needle aspiration	57	46	42
Lumbar puncture	44	28	13
Intrapartum care (obstetrics)	36	28	17
Pulmonary function testing	25	16	23
Dilation and curettage aspiration	21	10	5
Endoscopy	15	8	6
Inpatients on call	64	55	34
Emergency room on call	64	32	15
Inpatients with chronic diseases on call	52	44	28
General on call	51	43	50
Nursing home on call	46	39	25
Palliative care on call	40	33	25
Obstetrics on call	37	30	19

only on these differences might be misleading, as these personal variables are only weakly predictive of practice breadth. Much more important as a predictor is geography when expressed in terms of community size and isolation from large hospitals.

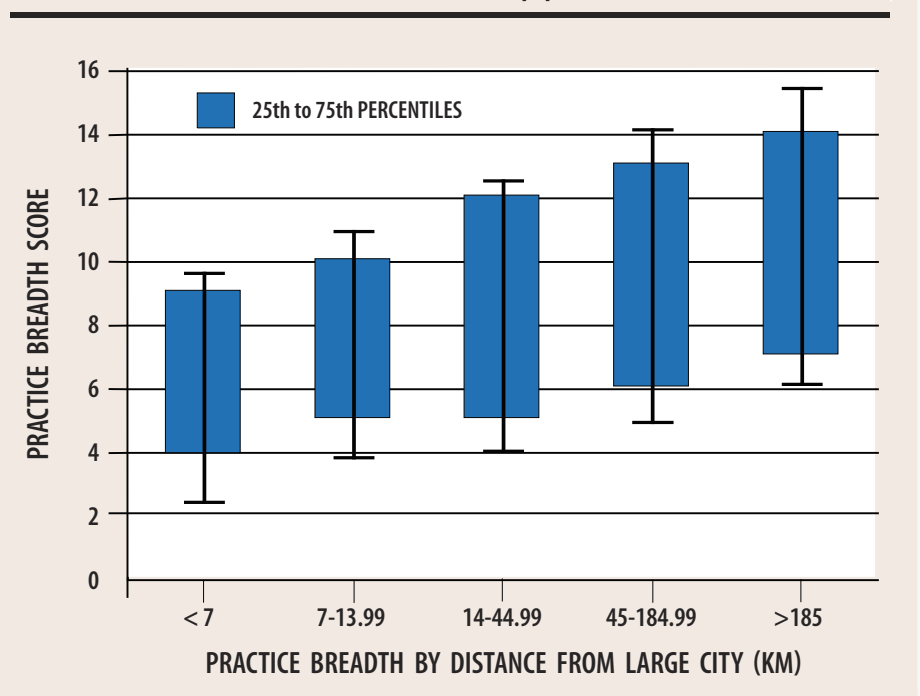
One limitation of our study is that response rate to the survey was lower among physicians who did not belong to the College of Family Physicians of Canada. Non-members might have had practice characteristics different from those of members, as researchers found in British Columbia.<sup>6</sup> Another limitation results from generating

practice locations based on postal codes. Unlike urban postal codes, rural postal codes can be associated with rural routes of dozens of kilometres. Thus measurements of distance are less precise in rural regions.

Even through this initial analysis, it is clear that the scope of practice of most rural family physicians involves significantly more procedures. This demonstrated need for procedural training for rural practice is a challenge for training programs and continuing medical education. Special attention might need to be paid to procedural curriculums and evaluation to ensure that family practice graduates can continue to practise in all settings.

Almost one third of the variation in the number of procedures and on-call services provided by Canadian general practitioners and family physicians can be predicted simply by examining community size (based on population counts) together with distance to the nearest large full-service hospital and region of the country. Thus geography is the predominant predictor of scope of practice and plays a greater role in practice breadth than physicians' sex, age, or type of medical practice. 

**Figure 1. Practice breadth score (standard deviation and 25th to 75th percentile range) by distance in kilometres from cities of more than 100 000 population**



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### Contributors

Dr Hutten-Czapski as principal author designed and executed the study, drafted the manuscript, and gave final approval for the manuscript. Dr Pitblado linked geographic with survey data. He provided assistance in drafting the manuscript, particularly with regard to analysis of data, and approved the final version. Mr Slade linked geographic with survey data, provided initial data analysis, and approved the manuscript.

### Competing interests

The study was carried out under a grant administered by the Ontario Medical Association from a fund provided by the Ontario Ministry of Health and Long Term Care.

#### EDITOR'S KEY POINT

- Geography is the prominent predictor of scope of practice. It plays a much larger role than physicians' age, sex, or type of practice.

#### POINT DE REPÈRE DU RÉDACTEUR

- Plus que l'âge, le sexe ou le type de pratique du médecin, c'est la géographie qui détermine le champ de ses activités médicales.

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