

## **ACCESS TO PHYSICIANS IN UNDERSERVED COMMUNITIES IN CANADA: SOMETHING OLD, SOMETHING NEW**

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### **INTRODUCTION**

Virtually all countries, both industrialized and developing, experience some degree of geographic variation in the supply of physicians. Such variation has engendered public concern that those living in areas with low physician supply are being "underserved," that underservicing affects the well-being of the population, and that this variation in access to services runs contrary to widely-held principles of social equity (at least in those countries with public health insurance schemes). From the provider perspective, work conditions in underserved areas are a major issue, as the experience in these communities is characterized by heavy workload, burnout, and professional isolation.

Canada's physical geography makes the country fertile ground for debate on what to do about 'underservicing'. Like Australia, Canada is characterized by vast areas of sparsely populated wilderness combined with a number of urban centres concentrated along a relatively thin border (see Table 1). Although Canada and the United States (US) have comparable proportions of the population living in rural areas (22%<sup>1</sup> vs 25%<sup>2</sup>), many of Canada's rural areas are characterized by much greater distances from major metropolitan areas. These factors make the challenges in distributing physicians to remote populations particularly difficult.

**Table 1: International comparison of population distribution**

<b>Country</b>	<b>Surface Area (km<sup>2</sup>)</b>	<b>Population (millions)</b>	<b>Population Density (persons / km<sup>2</sup>)</b>
Canada	9,920,970	31.28	3.2
Australia	7,617,930	19.16	2.5
United States	9,158,960	275.56	30.1
United Kingdom	242,000	59.51	245.9

Source: CIA Factbook.<sup>3</sup>

The fact that the provinces have jurisdiction over provision of health care services in Canada both frustrates and enlightens our understanding of underserved communities. On the one

hand, most of the data analysis that occurs in the country is conducted within each province. National data on physician services are limited by both the quality and depth of information available, and there are no national standards on how to identify, let alone evaluate, underservicing. On the other hand, the existence of ten provincial and two (now three) territorial health care systems allows us to compare the successes and failures of different policies in multiple settings.

This paper presents a broad overview of the physician workforce in underserved areas.<sup>4</sup> First, we review the definition of underservicing and different methods for measuring it. Second, we explore trends in the movement of physicians to and from 'underserved' Canadian regions, and the characteristics of physicians in underserved areas. Lastly, this paper describes initiatives to encourage redistribution of physician resources in Canada.

## HOW DO WE DEFINE AND MEASURE UNDERSERVICING?

### Defining Underservicing

To begin, it is important to consider what we mean by the term 'underserved'. It is clear, from the review of the literature and working definitions of 'underserved' employed by policy makers, that opinions vary widely on what is meant by 'underservicing'. For the purpose of this paper, we propose the following working definition:

Underservicing exists, for a particular community or population served, under the following conditions:

- a. Services being provided by physicians in the community are *appropriate* (ie. lead to an improvement in health status, quality of life, or convenience);
- b. An *efficient* mix of inputs (physicians, nurses, technology) is being used to provide those services;
- c. There are additional services required in the community, that would be appropriate if provided, that would be most efficiently provided by a physician *in that community*, but that cannot be provided because of the unavailability of the relevant physician expertise. Note the emphasis here, meant to reflect the fact that there are many specialist services that require a sufficient critical mass of potential patients (on this, see below).

In Canada today, policy-makers and the public are being increasingly bombarded with claims from various sources that there is, or soon will be, an acute shortage of physicians in the country.<sup>5,6,7,8,9</sup> These sources, mainly representing physician organizations, claim that we cannot rely any more on recruiting from abroad, that expectations about workload have changed<sup>10</sup> and physicians in small communities are not willing to put in unlimited amounts of on-call time, that the mid-1990s, decision to reduce medical school enrolment was a serious mistake<sup>11</sup> and that, in general, more doctors are urgently needed *now*. Seldom do the following seemingly obvious questions enter into the discussions:

- how appropriate are the physician services supposedly in short supply?
- how much improvement in health status are we buying by the addition of one more physician?
- what are the alternatives to adding more physicians?

### Measures of Underservicing - The Old Approaches

The purist definition described above is difficult to apply on a practical basis. The limits to health information are such that in most cases, we cannot identify what we are getting for each new investment in a physician. Given such limitations, what proxy indicators could be counted on to signal situations where appropriate physician services are not available? The most common approach in Canada, as elsewhere, has been to focus on geographic maldistribution of physicians. The assumption is that within a universal health insurance system, all citizens should have 'reasonable' access to care regardless of where they live, and hence, physicians should be equitably distributed according to population need.

The most common measure of geographic maldistribution is the variation in overall physician-population ratio. Attempting to infer anything about underservicing from such comparisons, however, can be misleading for at least the following reasons:

- Variation may be due to overservicing in high supply areas at least as much as underservicing in low supply areas.
- There may be groups of individuals dispersed even within relatively well-supplied regions who have difficulty accessing physicians (eg. within urban areas, ethnic minorities who speak neither official language; homeless persons; drug addicts; or persons with mental health disabilities).
- Regional variations in physician supply may be entirely appropriate for services (eg. cardiac surgery) which must be highly centralized in order to maintain high volumes and good outcomes. In such cases, it is important to measure variations in the rate of use of such services by patient, not physician, location.
- There may be cases of an entire specialty being in short supply, such as psychiatry, anaesthesia, or radiation oncology.
- The counting of physicians can be problematic. The Southam Medical Database has national data on head counts,<sup>12</sup> but no information on differences among physicians in activity level. The National Physician Database contains billing data which can be used to estimate a full-time equivalent measure, but not all physicians bill on a fee-for service basis.<sup>13</sup> Both databases have only limited information on physician specialty.

As Pitblado and Pong point out in their recent review of geographic maldistribution in Canada,<sup>14</sup> the definition of region is important to understanding variations in physician supply. Using a smaller region as the unit of analysis may uncover more of the heterogeneity in physician supply, but the lower population count may mean greater random error in the measurement of both physician supply and descriptors of the region. Furthermore, the smaller the region, the less relevant is the regional physician supply, since more residents will seek care from a neighbouring region or beyond. This clearly diminishes the usefulness of the physician-population ratio as a measure of access.

The description of the region itself is also important, if we are to understand the determinants which influence physician location. *Arguably, the most important descriptor in Canada, given the nation's geography, is rurality.* No other regional descriptor appears to have generated as much controversy and disagreement among policy-makers, physicians

and analysts. Table 2, adapted from Pitblado and Pong's analysis<sup>14</sup> outlines some of the measures in current use.

**Table 2: Definitions of rurality based on population size or distance to urban areas, Canada**

<i>Source</i>	<i>Population Criteria</i>
<b>Statistics Canada<sup>15</sup></b>	<ol style="list-style-type: none"> <li>1. A rural area has population &gt;1,000 or population density &gt;400/km<sup>2</sup>. Urban areas are all areas which do not fit this definition.</li> <li>2. Alternatively, areas may be categorized in the following manner: <ul style="list-style-type: none"> <li>▪ Urban core within a CMA/CA (main city which may have a surrounding area of rural and smaller cities in close economic/social integration with it)</li> <li>▪ Urban fringe within a CMA/CA (smaller city near, but not adjacent to, urban core)</li> <li>▪ Rural fringe within a CMA/CA (rural area surrounding urban core)</li> <li>▪ Urban outside CMA/CA (small city with &lt;10,000 population that is not within the economic/social sphere of a larger city)</li> <li>▪ Rural outside CMA/CA</li> </ul> </li> <li>3. A third possible categorization system would be to distinguish between areas which are within and outside of CMA/CAs.</li> </ol>
<b>Canada Post</b>	Rural area = region whose address has "0" in the second field of the postal code
<b>Interdepartmental Committee on Rural and Remote Canada (1995)</b>	<p>Rural area = population density &lt;150 person/sq.km<sup>2</sup>. Adjacency to metropolitan areas northern hinterlands used to provide sub-categories. Census consolidated sub-divisions (CCS) classified into:</p> <ul style="list-style-type: none"> <li>▪ Agglomerated</li> <li>▪ Intermediate</li> <li>▪ Rural, metro adjacent</li> <li>▪ Rural, non-metro adjacent</li> <li>▪ Rural north</li> </ul>
<b>Ontario Medical Association (Rourke, 1997)<sup>16</sup></b>	<p>Rural = population size &lt;10,000 population. Rural communities are further divided by distance to a community of 50,000+:</p> <p>Group 1 &gt; 80 km Group 2 50-80 km</p>
<b>Canadian Association of Emergency Physicians (1997)<sup>17</sup></b>	<p>Rural = population &lt;10,000. Rural communities are further classified by distance from a major regional hospital:</p> <p>Rural close: &lt;80 km or 60 minutes Rural remote: 80-400 km or 1-4 hrs Rural isolated: &gt;400 km or &gt;4 hrs</p>

CMA = Census Metropolitan Area. A major city with population >100,000 (urban core) and surrounding rural areas and smaller cities in close economic and social integration with the urban core.

CA = Census Agglomeration. A city with population >10,000 (urban core) and surrounding rural areas and smaller cities in close economic and social integration with the urban core.

Modified from: Pitblado JR, Pong RW. "Geographic Distribution of Physicians in Canada".<sup>14</sup>

Increasingly, however, the concept of rurality is seen as a spectrum. The common wisdom is that the greater the rurality, the more difficult it is to attract physicians. This is reflected in the growing call to make incentives (monetary or otherwise) to attract physicians to any given community sensitive to the degree of rurality. Furthermore, the degree of rurality cannot be expressed simply in terms of physical geography, but should take into account the conditions under which the physicians must practice. Functional factors such as the degree to which specialists are available; the frequency of on-call duties; and the sensation of

professional isolation are all part of the contextual mosaic. Table 3 describes a number of attempts to define such an index.

**Table 3: Rurality indices based on population, distance to urban areas and practice characteristics, Canada**

Index Name / Author	Indicators Used to Assess Rurality
General Practice Rurality Index <sup>18</sup> (Leduc, 1997)	<ul style="list-style-type: none"> <li>• Remoteness from closest advanced referral centre (&gt; 50km away)</li> <li>• Remoteness from closest basic referral centre (&gt; 25 km away)</li> <li>• Drawing population (2,000 – 40,000 people)</li> <li>• Number of GPs (&lt; 8)</li> <li>• Number of specialists (&lt;6)</li> <li>• Presence of an acute care hospital (&lt;25 km from city centre)</li> </ul>
Functional Classification of Primary Care Physicians <sup>19</sup> (Chan, 1998)	<p>GPs are classified according to those who:</p> <ul style="list-style-type: none"> <li>• work in communities with no specialist backup</li> <li>• work in communities with basic specialist backup (eg. 2-3 general internists/surgeons)</li> <li>• larger communities with access to subspecialists</li> <li>• communities with quaternary teaching centres</li> </ul>
A National Framework of Rurality (Buske et. al, 1999) <sup>20</sup>	<p><u>Primary:</u></p> <ul style="list-style-type: none"> <li>• High level of on-call responsibilities</li> <li>• Long distance to secondary referral centre</li> <li>• Lack of specialist services</li> <li>• Insufficient GP/FPs</li> </ul> <p><u>Secondary:</u></p> <ul style="list-style-type: none"> <li>• Long distance to tertiary referral centre</li> <li>• Absence of equipment such as x-rays and lab services</li> <li>• Difficulty in obtaining locums</li> <li>• No ambulance service</li> <li>• Inability to provide services such as obstetrics and general surgery</li> <li>• Sparsely populated catchment population</li> </ul>
Procedural Skills Index for the Medical Community <sup>21</sup> (Magee, 2000)	<p>Points are awarded for the level of training an individual physician (ranging from medical licensure to specialists). Points are deducted for physicians exempt from call. The total is divided by the ideal number of physicians, which provides the rurality score.</p>

Ultimately, the choice of the regional unit of analysis, and the choice of how to describe the region's rurality, is arbitrary. One method that does not "force" the analyst into making such arbitrary judgements is to examine the distance between patients and the nearest physician. Such a measure takes into account the issue of patient convenience noted in our definition above. Distance to physician may also be correlated with health status, if it is a barrier to access to timely and appropriate medical services. The technique involves identifying straight-line distances between physicians and patients, using the physician's postal code and the patient's census enumeration area as reference points for location. This method was first attempted in 1976 in Canada<sup>22</sup> and has been recently revived by Ng<sup>23</sup> and Pitblado and Pong.<sup>14</sup> The latter examine the proportion of the population that lives beyond 50 km and 80 km of the nearest physician.

## Measures of Underservicing - New Approaches

A number of alternate approaches are currently being developed to quantify the degree of underservicing in the population. Most of these approaches are being initiated at the provincial level, and none have been established to the point of becoming a national standard. We present the following list of measures, supplemented where possible with examples of local or provincial data:

- Number, or proportion, of family physicians accepting new patients in a region. These measures attempt to describe the overall adequacy of access to essential primary care. No physicians accepting patients reflects a critical shortage, while a very low percentage accepting patients or lack of female physicians may indicate undesirable restrictions on the patient's choice of doctor. Table 4 presents sample data used in a recent Ontario factfinder's report on physician human resource planning.<sup>24</sup>

**Table 4: Physicians accepting new patients, selected locations in Ontario**

**Ontarians Looking for Physicians/Physicians Accepting New Patients**  
Results of an Ontario Academies of Medicine Survey

Academy	# of Calls per week (September 99)	Average # of Calls per week over past 2 years	# of doctors accepting new patients (September 99)	# of doctors accepting new patients 2 years ago
Essex County Medical Society	150-200	Situation has gotten worse recently	2 new doctors	0-4
London Academy of Medicine	215		8 (conditions apply*)	12-15
St. Thomas Egin	Only a recording stating there are no physicians accepting patients		Currently, no doctors	Maximum 3 over 2 years
Kitchener/Waterloo Academy of Medicine	2-4 (some may contact the hospital directly)	60-80	2-3	0-2
Wellington County Medical Society	Service not offered	Service not offered	Service not offered	Service not offered
Greater Niagara Medical Society	Have a recording that no doctors are available	25-50	None	None
Lincoln County Academy of Medicine	Have a recording with names and numbers of doctors accepting new patients	25-60	2	2-5
Hamilton Academy of Medicine	150	Problem is worsening	52 (conditions may apply*)	40-50 (conditions may apply*)
Ottawa Academy of Medicine	350-400		31 — only 18 in core area (service restricted to academy members only)	130
Algoma West Academy of Medicine	No calls — People know no new patients are accepted		None	None

\* SOME CONDITIONS on which doctors are or are not accepting patients:

Age (i.e., young families) = Doctor only operates a part-time practice = Only accepting patients new to the community (i.e., do not want patients with an existing physician) =

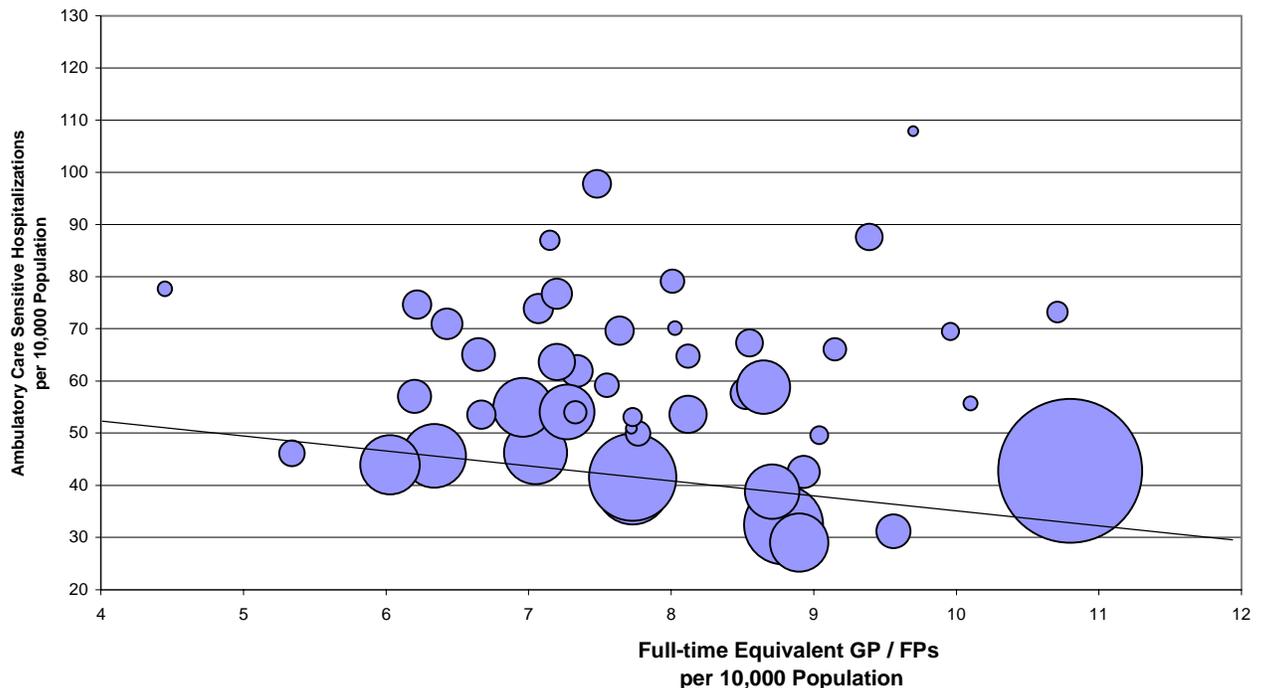
Patients requesting female physicians only = Depends on degree of medical problems = Disability/compensation: won't accept patients with significant medical issues into

an already busy practice = Won't accept patients living outside a specific geographic area = Gender

Reprinted from: McKendry R. *Physicians for Ontario: Too many? Too few? For 2000 and Beyond*. Report of the Fact Finder on Physician Resources in Ontario.<sup>24</sup>

- Ambulatory care sensitive conditions (ACSCs). These are conditions whereby lack of primary care is believed to result in increased hospitalizations. Examples include diabetic ketoacidosis and congestive heart failure. A 1996 expert panel on physician resources in Ontario used ACSCs to strengthen a qualitative argument that certain regions were underserved, but stopped short of specifying any direct, quantifiable link between ACSC rates and the number of physicians needed.<sup>25</sup> Examination of some more recent data, however, indicates a definite relationship between the two variables (see Figure 1). An increase of 1 GP/FP per 10,000 persons is associated with a decline of 2.5 ACS hospitalizations per 10,000 persons (weighted least squares regression,  $p=0.03$ ;  $R^2=0.09$ ). One important limitation of using ACSC rates is that they may also be a function of the quality of physician care and local factors such as access to hospital beds (thus the low  $R^2$ ).

**Figure 1: Relationship Between Ambulatory Care Sensitive Conditions and Primary Care Physician Supply in Ontario, 1997/98**



GP/FP=General Practitioner/Family Physician  
Each dot is a District Health Council; size is proportionate to population

Data sources: Canadian Institute for Health Information,  
Discharge Abstract Database & National Physician Database

- Poor health status. Along with ACSCs, standardized mortality ratios (SMRs) were proposed by the above expert panel<sup>25</sup> as a regional measure of physician underservicing. Although the panel reported SMRs alongside physician-population ratios, it stopped short of recommending any threshold at which a community could be

defined as underserved. This is perhaps not surprising, given the well-known problems with inferring anything very informative from physician supply - mortality relationships.

- Waiting lists to see a physician or obtain surgery or other procedures. A recent Health Canada sponsored survey of Canadian hospitals and regional health authorities found that waiting lists were described as being 'usually' or 'always' a problem for consultations with psychiatrists (43% of respondents), coronary artery bypass graft surgery (38%), hip/knee replacements (38%) and radiation oncology (12%).<sup>26</sup> However, the authors of the same report note that "with rare exceptions, waiting lists in Canada, as in most countries, are non-standardized, capriciously organized, poorly monitored, and (according to most informed observers) in grave need of retooling." Waiting list measures can be very misleading, as they may not reflect the appropriateness of the service in the first place. Physicians may also use a wide variety of criteria to determine whether and when a patient should be placed on a list.
- Access modelling.<sup>24</sup> Under this approach, a target level of access to a particular service is identified, which can be either age-sex-adjusted utilization rates in previous years or some threshold identified in the literature. (An example might be "x" family practice visits per person per year, or "y" cataract surgeries per 100 persons over age 65 per year.) A reasonable workload of the number of such services per physician is then estimated (which, again, may simply be the historical average services per physician), and the number of physicians needed, both in the future and in specific regions, can be calculated. The method can also estimate how many physicians will be needed to bring an area with low access to service up to an acceptable norm.
- Benchmarking. If it is possible to identify all regions where there is general agreement that the supply of a particular specialty is sufficient to meet the needs of its residents, then the lowest supply among those adequately supplied regions could be used as a benchmark against which to evaluate the situations in other regions. Such an approach must adjust for differences in health needs (underlying health status) across regions (which may be, in practice, very difficult to accomplish).
- Solicited feedback from physician groups at the regional and/or specialty level on the number of physician resources needed. Such an approach has obvious serious limitations. In effect, it invites providers to generate their own definition of what constitutes underservicing, and it may not address issues of inappropriateness of care or efficient use of other providers. Proponents of such an approach would argue that it allows planners maximum flexibility to take into account local factors such as environment, disease prevalence and local preferences for workload among existing providers. Despite the shortcomings, this approach was used in Alberta's recent physician human resource plan<sup>27</sup>.

While a number of these approaches show promise, each has serious limitations, and it will probably be necessary in the future to use a 'cocktail' of different indicators. The choice of indicator may also be dictated by availability of data. Furthermore, none of the above

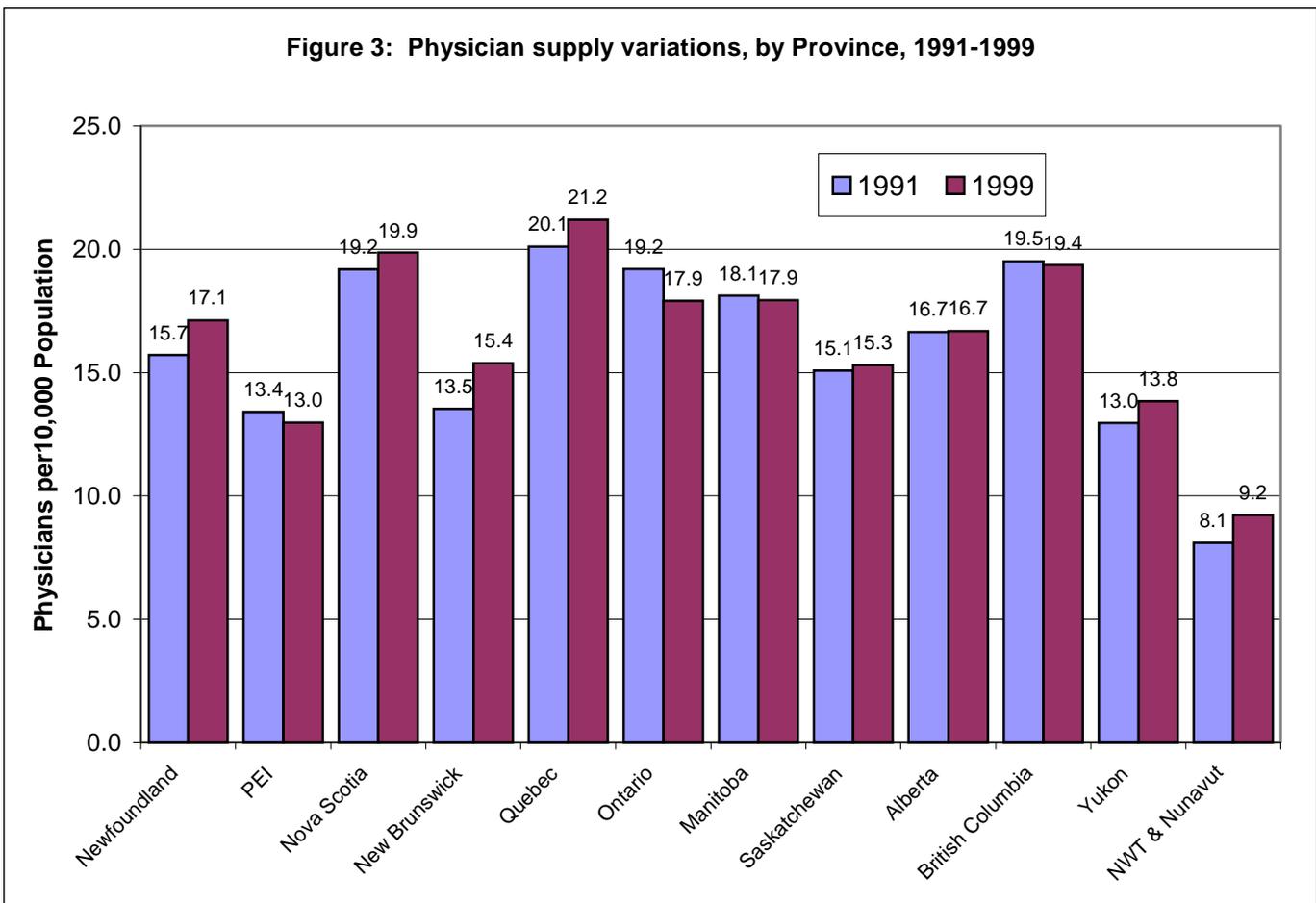
approaches, except perhaps benchmarking, take into account the potential to reduce an observed shortage in physicians through either reducing inappropriateness or using alternate health providers. The lack of consensus on what constitutes “underserved” and on what constitutes a legitimate geographic unit within which to attempt to identify such underservicing, makes the policy challenge all that more daunting. Nevertheless, practical decisions are made in every jurisdiction, which reflect a wide variety of implicit ‘understandings’ about both.

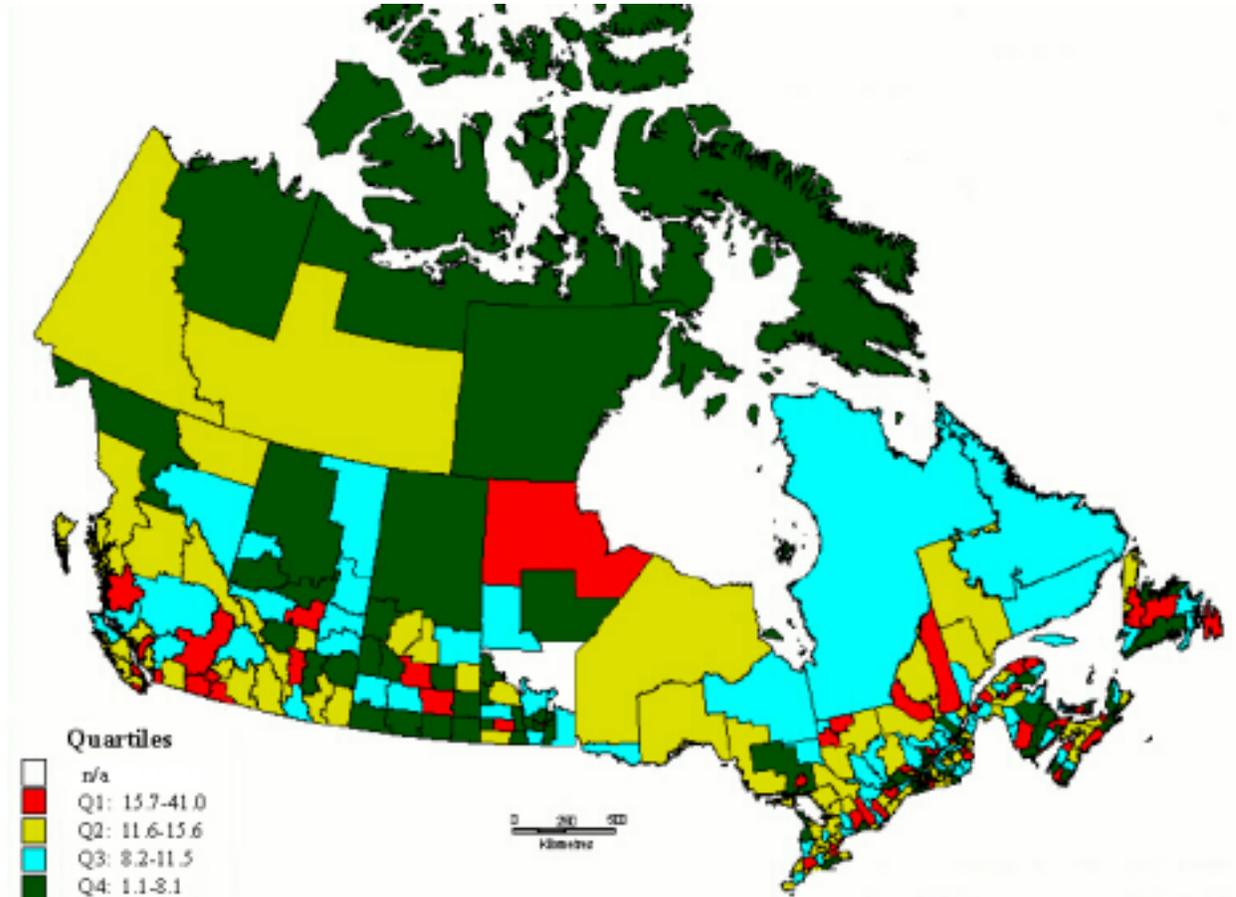
**THE CURRENT LANDSCAPE - THE RURAL PHYSICIAN WORKFORCE IN CANADA**

**Trends in the Physician Workforce in Canada for Underserved Regions**

There is significant geographical variation among provinces in the supply of physicians. The number of physicians per 1000 population in 1999 ranged from 13.0 in Prince Edward Island to 21.2 in Quebec (Figure 3). Supply was even lower in the remote territories. (Note that data do not reflect the creation of a third territory, Nunavut, carved from the eastern half of the Northwest Territories in 1999.) Significant variation also exists within provinces. Figure 4 indicates the variation across the country in physician supply by census division (counties or similar geographical entities). Figure 5 highlights those census divisions where a significant proportion of the population must travel at least 50 km to get to a GP/FP. In both Figures 4 and 5, the physician workforce distribution concerns appear to increase as one moves further north.

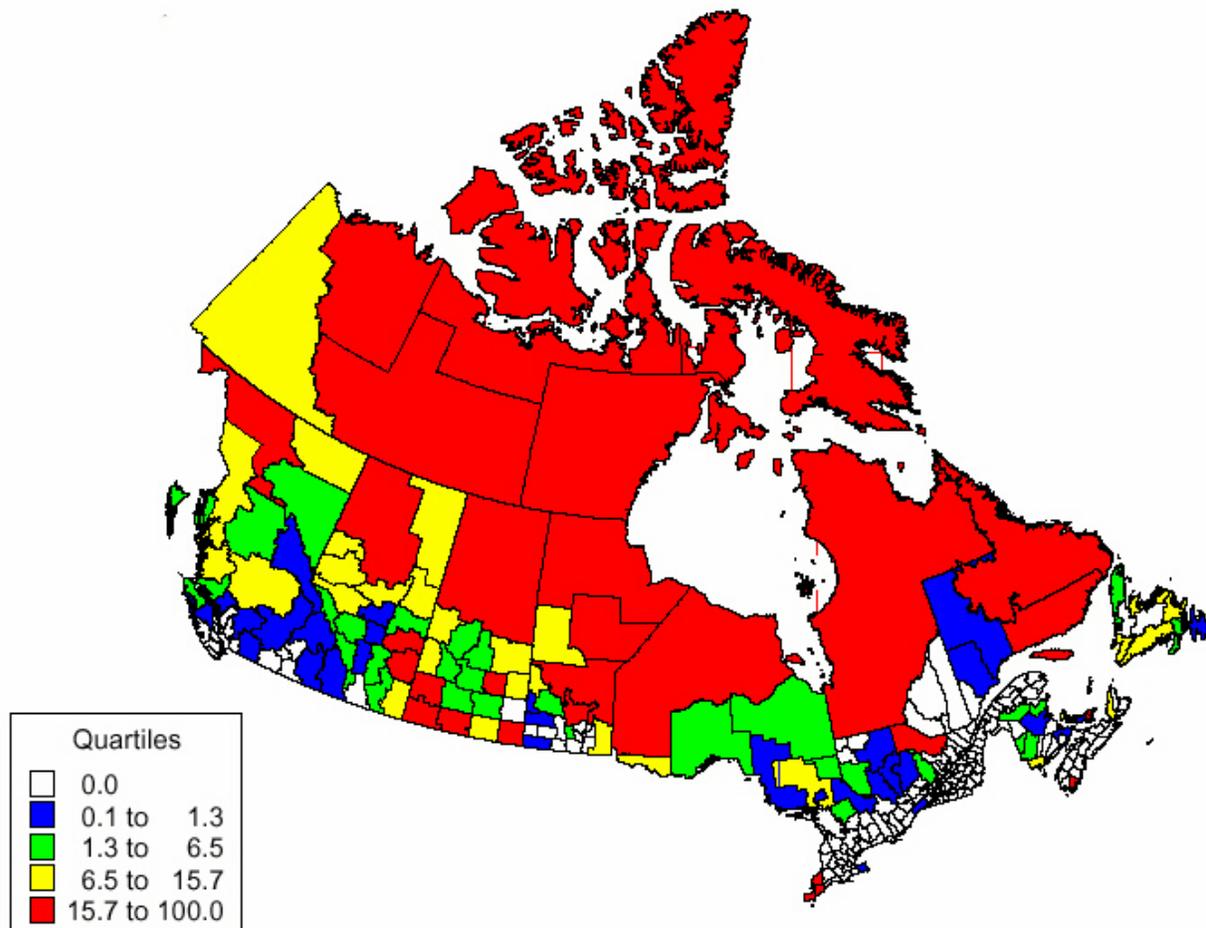
**Figure 3: Physician supply variations, by Province, 1991-1999**



**Figure 4: Physician-Population ratios, by Census Division, Canada, 1996**

Reproduced with permission from: Pitblado RJ, Pong RW. "Geographic Distribution of Physicians in Canada".<sup>14</sup> Physician data based on head counts from Southam medical database. Quartiles expressed in terms of physicians per 10,000 population.

**Figure 5: Proportion of Population within 50 km of a physician, by Census Division, Canada, 1996**



Reproduced with permission from: Pitblado RJ, Pong RW. "Geographic Distribution of Physicians in Canada".<sup>14</sup> Physician data based on head counts from Southam medical database. Quartiles expressed in terms of proportion of population in a census division within a 50 km straight-line distance of a physician.

From 1991 to 1999, there has been a modest nationwide increase in the supply of rural physicians per capita and a modest decline among urban physicians (see Table 4). Three jurisdictions, New Brunswick, Alberta and the Northwest Territories experienced a decline in rural physicians. It is important to note, however, that much of this increase in national rural physician supply took place in the rural areas located in close proximity to major urban centres (rural fringe of CMA/CA; see Table 5).

**Table 4: Changes in the physician workforce, by Province and rural/urban location, Canada, 1991 to 1999**

Region	Number of Physicians			Population		Physicians per 10,000 Persons	
	1991	1999	% change	1991	1999*	1991	1999
<b>Canada</b>							
Urban	49,882	53,608	7%	20,907,957	23,448,015	23.9	22.9
Rural	2,935	3,369	15%	6,388,902	6,383,541	4.6	5.3
<b>Newfoundland</b>							
Urban	805	816	1%	304,451	319,578	26.4	25.5
Rural	105	111	6%	264,023	223,594	4.0	5.0
<b>Prince Edward Island</b>							
Urban	158	156	-1%	51,813	64,580	30.5	24.2
Rural	17	24	41%	77,952	73,434	2.2	3.3
<b>Nova Scotia</b>							
Urban	1,511	1,616	7%	481,508	507,933	31.4	31.8
Rural	248	254	2%	418,434	407,274	5.9	6.2
<b>New Brunswick</b>							
Urban	863	1,034	20%	345,214	369,865	25.0	28.0
Rural	146	130	-11%	378,686	377,129	3.9	3.4
<b>Quebec</b>							
Urban	13,490	14,661	9%	5,351,211	5,750,887	25.2	25.5
Rural	744	932	25%	1,544,752	1,539,025	4.8	6.1
<b>Ontario</b>							
Urban	19,321	19,808	3%	8,253,842	9,410,257	23.4	21.0
Rural	780	909	17%	1,831,043	1,773,450	4.3	5.1
<b>Manitoba</b>							
Urban	1,889	1,927	2%	787,175	807,897	24.0	23.9
Rural	122	127	4%	304,767	319,405	4.0	4.0
<b>Saskatchewan</b>							
Urban	1,366	1,436	5%	623,397	629,458	21.9	22.8
Rural	141	136	-4%	365,531	361,584	3.9	3.8
<b>Alberta</b>							
Urban	4,066	4,679	15%	2,030,893	2,212,907	20.0	21.1
Rural	283	291	3%	514,660	579,051	5.5	5.0
<b>British Columbia</b>							
Urban	6,342	7,386	16%	2,640,961	3,338,133	24.0	22.1
Rural	332	438	32%	641,100	683,223	5.2	6.4
<b>Yukon Territory</b>							
Urban	32	32	0%	16,335	19,843	19.6	16.1
Rural	6	10	67%	11,462	12,864	5.2	7.8
<b>Northwest Terr.</b>							
Urban	39	57	46%	21,157	31,989	18.4	17.8
Rural	11	7	-36%	36,492	37,319	3.0	1.9

Source: Southam Medical Database, courtesy of the Canadian Institute for Health Information. Figures represent physician head counts. 1999 population is based in a post-censal straight-line projection using 1991 and 1996 Census data. Statistics Canada definition of rural used (population >1,000 or population density >400/km<sup>2</sup>).

**Table 5: Changes in physician workforce, by type of region, Canada, 1991 to 1999**

Region Type	1991	1999	% change
<i>Definition 1:</i>			
Rural	2,935	3,369	15%
Urban	49,882	53,608	7%
<i>Definition 2:</i>			
Urban core (of CMA/CA)	45,872	49,297	7%
Urban fringe (of CMA/CA)	542	616	14%
Rural fringe (of CMA/CA)	1,101	1,358	23%
Urban areas outside a CMA/CA	3,468	3,695	7%
Rural areas outside a CMA/CA	1,834	2,011	10%
<i>Definition 3:</i>			
Inside CMA/CA	47,515	51,271	8%
Outside CMA/CA	5,302	5,706	8%

Source: Southam Medical Database, courtesy of the Canadian Institute for Health Information. Figures represent physician head counts. 1999 population is based in a post-censal straight-line projection using 1991 and 1996 Census data. See table 2 for detailed description of different region types.

There is some concern that with a relatively inelastic supply of physicians willing to work in underserved areas, various incentives may be simply shuffling physicians from one underserved region to another. In Ontario, for example, there has been a remarkable increase of 7% in GP/FP supply in Northern Ontario over the past seven years, compared with a 1% decline among the rural District Health Councils in Southern Ontario.<sup>28</sup> Preferential incentives to encourage physicians to settle in the North, such as higher financial incentives, generous alternate payment plans for group practices and local training programs may have driven a fixed supply of FPs able and willing to work in rural areas northwards, and exacerbated the shortages in rural southern Ontario. In British Columbia, a recent tentative settlement with physicians in Prince George had the immediate effect of threatening the supplies in other northern communities without a comparable pot-sweetener. As of the time of writing, the Prince George agreement was still not consummated, and a more general agreement with other northern communities has been offered up by the provincial Ministry of Health (see Case Study I).

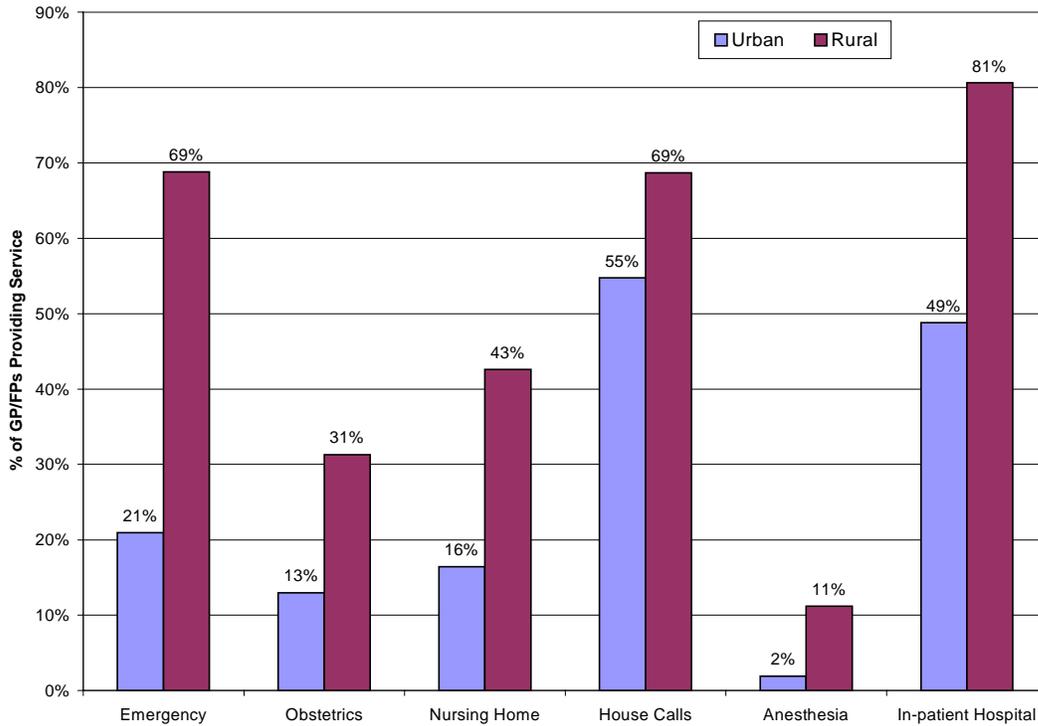
### Characteristics of Physicians in Rural Areas

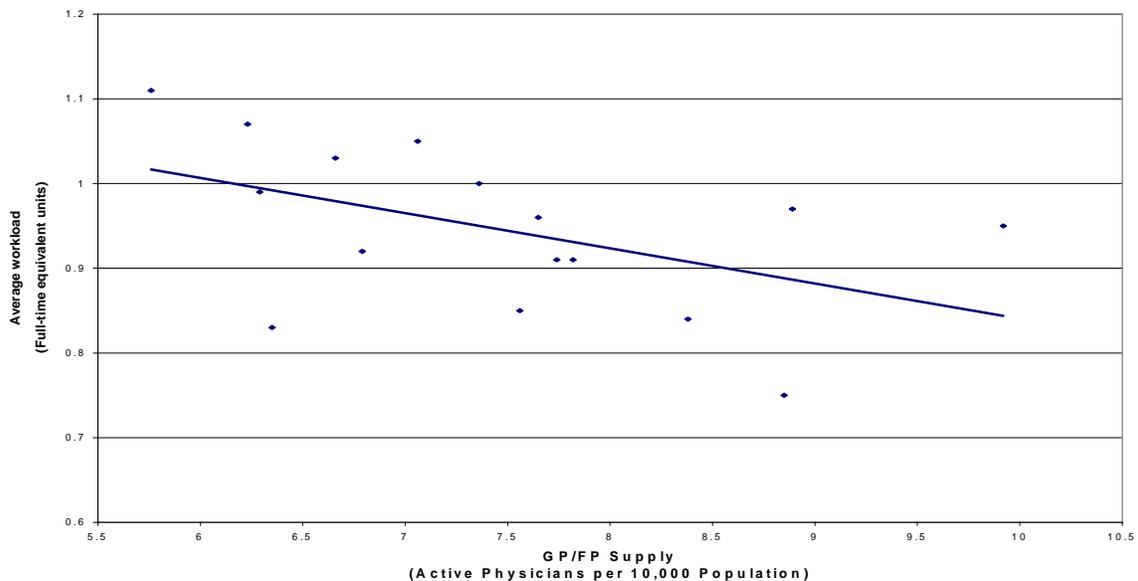
Physicians who work in rural areas tend to provide more comprehensive care than their urban counterparts. They are much more likely to practice in emergency departments, hospital settings, nursing homes and provide obstetrical deliveries (see Figure 6). This trend emerges despite the strong evidence that, overall, primary care physicians have significantly reduced their participation in these activities, preferring instead to focus more on their office-based practices.<sup>28</sup>

Because physicians in low supply areas are responsible for a larger number of patients, they tend to have greater workloads (see Figure 7). One interesting trend noted in Ontario is that from 1991/92 to 1997/98, several regions which had some of the lowest physician supply statistics at the beginning of the study period actually lost ground over the period.<sup>28</sup> Such a

finding may be indicative of a 'vicious cycle' phenomenon, where low physician supply leads to more burnout, more physicians leaving, and further declines in physician supply.

**Figure 6: Comprehensiveness of primary care in Ontario, 1997/98**



**Figure 7: Workload and physician supply, Ontario 1997/98**

Source: National Physician Database. GP/FPs=general practitioners/family physicians.

Data Source: National Physician Database. GP/FPs=general practitioners/family physicians. Reproduced from: Chan B. *Supply of Physicians Services in Ontario*. 1999.<sup>28</sup>

Rural physicians are also more likely to be from rural areas originally. In one recent study of graduates from Queen's University in Kingston, Ontario, physicians raised in rural communities were found to be 2.3 times more likely to work in a rural area after graduation.<sup>29</sup> An older, 1985 study from Manitoba also found that rural practice location was related to rural high school education, having a spouse who grew up in a rural area, and having a father who was either a farmer or a health professional.<sup>30</sup> These findings are consistent with the experience in other jurisdictions outside Canada.<sup>31,32</sup>

Medium-sized rural communities have tended to rely heavily on "generalist" specialists, such as general internists and general surgeons. In small communities (defined as being outside a census metropolitan area/census agglomeration), almost three-quarters of the medicine and surgery specialists are "generalists", compared with one-third in large communities (see Table 6). Increasingly, however, the number of such generalists has declined as more and more subspecialists are trained. Furthermore, a larger proportion of these small-town generalists in Ontario are over the age of 65 years.<sup>33</sup> This raises concerns about what will happen when these physicians retire, since few medium-sized communities have sufficient populations to support many of the sub-specialists who would be needed to cover off the range of services provided by the generalist specialists. While the research cited here is based only on Ontario, we suspect a similar situation exists across the country.

**Table 6: Medical and surgical workforce trends in large and small Ontario communities, 1991-92 to 1997-98**

Community Size	Specialty Group	1991-92	1997-98	% change
Large Communities (CMAs/CAs)	General internists	1187	872	-27%
	Subspecialist in internal medicine	1016	1571	55%
	General surgeons	650	578	-11%
	Subspecialist surgeons	1254	1221	-3%
	Total	4107	4242	3%
Small Communities (Outside CMAs/CAs)	General internists	25	21	-16%
	Subspecialist in internal medicine	3	18	500%
	General surgeons	43	47	9%
	Subspecialist surgeons	13	7	-46%
	Total	84	93	11%

CMA = Census Metropolitan Area; CA = Census Agglomerations

CMAs and CAs together include urban core areas with >10,000 population and the surrounding urban and rural areas which are closely integrated socially and economically.

Source: National Physician Database

The medical school attended also appears to influence where a physician practices (Table 7). For example, the University of Toronto, Canada's largest medical school located in Canada's largest city, has one of the lowest proportions of its graduates working in smaller communities. This finding echoes the experience in other jurisdictions.<sup>34</sup> The school of training may dictate the degree of curricular and post-MD exposure to rural communities, and the level of prestige given to rural medicine compared with other forms of practice. Graduates also tend to practice close to where they train.<sup>35</sup> Lastly, there may be a self-selection bias; those prospective physicians who come from large urban areas and have no interest in rural practice may be drawn to certain institutions. Interestingly, graduates of foreign medical schools are, in general, no more likely to practice in rural areas than Canadian graduates, although they may be more likely to begin their Canadian experiences in such areas.<sup>36</sup>

**Table 7: Location of physician practice in Ontario, by medical school**

Medical School	Number of graduates practicing in areas outside of CMAs/CAs	Total graduates in practice	% not in CMAs/CAs
University of British Columbia	19	170	11.2%
Queen's	146	1420	10.3%
University of Western Ontario	218	2220	9.8%
Calgary	17	176	9.7%
Ottawa	115	1374	8.4%
McMaster	104	1301	8.0%
Alberta	22	277	7.9%
Memorial	17	236	7.2%
Manitoba	30	442	6.8%
USA Graduate	10	167	6.0%
Laval	9	151	6.0%
McGill	67	1154	5.8%
Montreal	11	190	5.8%
Dalhousie	23	428	5.4%
Foreign Grad-British Commonwealth	112	2165	5.2%
Toronto	245	5727	4.3%
Saskatchewan	6	159	3.8%
Foreign Grad - Other	84	2890	2.9%
Sherbrooke	1	98	1.0%

CMA = Census Metropolitan Area; CA = Census Agglomerations

CMAs and CAs together include urban core areas with >10,000 population and the surrounding urban and rural areas which are closely integrated socially and economically.

Source: National Physician Database

## CANADIAN APPROACHES TO PHYSICIAN RECRUITMENT AND RETENTION<sup>37</sup>

### Barriers to Practicing in Underserved Areas

The barriers to recruitment and retention of physicians in underserved communities are well known to analysts and policy-makers concerned about physician supply issues. They include:

- *lack of adequate training for the unique circumstances associated with practicing medicine in rural environments.* Many newly minted physicians continue to emerge from the Canadian medical training experience without having had sufficient exposure to rural and non-tertiary practice situations during medical and intern/resident training, to feel comfortable practicing in such settings. New primary care practitioners, for example, may not be accustomed to dealing with the range of clinical situations and expectations required in environments where tertiary specialist support is not in the next block, or even across town.<sup>38</sup>
- *remuneration issues.* While these are commonly rated as relatively unimportant<sup>39</sup>, issues such as adequate compensation for extraordinarily heavy on-call scheduling (as is frequently found in small communities) are in the forefront of today's Canadian debates (see, for example, the case study below on northern British Columbia).

- *onerous on-call duties and, more generally, heavy workload leading to burnout.* Many physicians are simply not prepared to cope with 1 in 3 (or often worse) on-call schedules and patient loads far heavier than would be found in most urban practices.
- *professional isolation.* Professional support and back-up (including access to specialists and on-call relief), the availability of facilities such as a community hospital or medical centre, and continuing education opportunities, are often cited as reasons for physicians' hesitance in embracing rural practice opportunities.
- *spousal employment opportunities.* Many physicians have partners for whom it is often difficult to find suitable career opportunities in more rural and remote areas.
- *children's education and extracurricular opportunities.* Once children reach school age, and beyond, physicians' families may find the opportunities in rural/remote areas as quite constricted relative to options available to them in larger centres.
- *climate, recreational and cultural opportunities.* While some physicians welcome the unique (particularly winter) opportunities afforded by rural/remote locations in Canada, for many, the climate and a community's amenities may not mesh well with their preferred "lifestyle".
- *distance from family, friends.*

Among these factors, increasing recognition is being given to spousal and family considerations as the critical determinant of where a physician will practice.<sup>40</sup> The willingness of a spouse to locate in a rural or remote area will depend on the spouse's personal background (including whether (s)he grew up in such a community), as well as cultural, recreational, and employment opportunities. A significant number of physicians are married to spouses with their own professions and career aspirations. Suitable professional opportunities are often unavailable for the spouse in more rural and remote areas<sup>41</sup>. For some families, spending some time in a rural area is fine while there are no children, or while the children are small. Once they reach the age of school, when quality and breadth of education, and limited extracurricular opportunities become apparent, the pressure to relocate grows.

For many of these key barriers, developing effective policy responses is difficult if not impossible, in Canada as elsewhere. Education, recruitment practices, practice opportunities and support facilities, working conditions, and financial support are all "modifiable factors"<sup>39</sup>. Finding means of addressing the spousal and family concerns remains a more daunting challenge. Furthermore, some modifiable factors, particularly medical school and residency training, may have less effect than is often presumed, or hoped.<sup>42,43</sup>

## Canadian Responses

Recruitment and retention of physicians in rural and remote communities in Canada is a preoccupation of every provincial Ministry or Department of Health across the country. The situation is particularly acute and contentious in British Columbia as this paper is being written (see below). All jurisdictions, however, have had a long history of developing policies, sometimes uncoordinated, aimed at changing the geographic distribution of physicians. Many regions have had a variety of initiatives in place for decades, with questionable success. In a late 1980s survey of provincial health policy-makers, this was viewed as one of the most serious health care system problems facing Canadian provinces and territories.<sup>44</sup> It remains so today.

Table 8 provides a highly summarized overview of current policies. For most categories and jurisdictions, the table reflects the situation in each jurisdiction in 1999, the most recent comprehensive national canvassing of policy initiatives addressing these issues. The approaches have been grouped for expository convenience into six generic clusters:

- regulatory/administrative;
- funding/payment;
- education-related funding;
- education/training;
- market-based; and
- other (including communication technology).

In practice, these clusters are highly interdependent and overlap each other. For example, many financial incentives are rooted in enabling legislation, but are classified within both regulatory/administrative and funding/payment clusters. Many of the education/training-related initiatives, which fall within both the funding/payment and the education/training clusters, include financial incentives to medical students and residents. A billing numbers policy, which restricts the issuance of 'rights' to bill a provincial medical plan for services rendered, could be viewed as a financial incentive of zero payment.

Provinces and territories are experimenting with a wide range of different policies. This is illustrated by the number of rows with at least one ✓, each such row representing a different lever being attempted somewhere in the country. Most provinces/territories currently employ policies from more than one of the generic clusters. A few of the rows in the table, however, contain no ✓. They are included in the table because they are used in other countries and there is no practical reason why such policies could not be tried in Canada.

Despite the variety of incentives under consideration, financial incentives appear to be the predominant policy instrument in Canada. The funding/payment cluster has the largest number of rows, and many of these rows have ✓ marks in most, if not all jurisdictions. Particularly noteworthy here are the number of jurisdictions offering: a) either subsidized incomes or guaranteed minimum income contracts for physicians practicing in rural/remote/isolated areas; b) "return-of-service" bonuses and grants; c) funded rural area *locum* programs; d) specific funding for rural area on-call coverage; e) student loans, grants and bursaries tied to "return-of-service" commitments; and f) funding to allow rural/remote

physicians to take advantage of continuing education/skills upgrading opportunities. There is an increasing number of policies based on alternative methods of payment (eg. salaried or contract positions, non-fee-payments for on-call), although many of the more-widespread funding/payment initiatives intended to improve access to care in rural or remote areas are still tied to fee-for-service reimbursement. A more recent push, not yet reflected in the table for most jurisdictions, appears to be additional monies for specialists' on-call time in these communities.

Despite their widespread deployment, questions remain about the effectiveness of financially-based initiatives. For example, the general experience of provinces providing return-of-service-tied grants, loans and bursaries to students and residents is that the recipients often buy their way out of the service commitment (although some provinces such as Manitoba appear to have been more successful than others). Even when recipients complete their terms, these initiatives have limited effect on longer-term retention. This largely mirrors the American experience with the National Health Services Corps.

In contrast to the plethora of funding/payment-based incentives, there is comparatively less being done in the education/skills areas. Aside from most provinces now offering dedicated rural area training/exposures during the years of undergraduate medical education, and a fair number of opportunities for rural residency experiences, particularly for family practice, other initiatives are less common. A recent survey of family medicine programs across the country found a significant increase in re-entry opportunities, a significant share of which are made available for physicians intending to return to practice in rural areas.<sup>45</sup>

A promising development has been the recent re-emergence of interest in nurse practitioners. Three provinces have established training programs, and other jurisdictions are either planning or considering such programs. However, confusion still exists over what types of individuals ought to be trained, and for what purposes. In part, the debate is over whether one should train "advanced clinical nurses" with highly specialized nursing skills, but whose focus continues to be the "nursing function", or practitioners in primary care. The latter can provide some of the services usually the domain of physicians, including making diagnoses, ordering tests and prescribing.<sup>46</sup> There are multiple 'standards' which have an effect on where or whether graduates of certain programs can be deployed in certain locations. For example, Health Canada's Medical Services Branch (MSB) has a peer review committee that evaluates training programs; only graduates of programs that meet that committee's standard can be employed by MSB or jurisdictions that adopt the MSB standard. Provinces appear to have different conceptions of how independently, and in what situations, they would like such extended scope personnel to practice.

As of 1999, three provinces had made amendments to existing Acts (subsets of Acts governing the practices of nursing, prescribing pharmaceuticals, and laboratory and radiology diagnosis) so that practitioners other than licensed physicians were legally able to perform a limited range of primary care functions. Other provinces, such as Manitoba and Saskatchewan, were contemplating, or in the process of enacting, similar regulatory changes.

The apparent lack of activity at the local level in raising funds to support recruitment or retention is misleading. Our impression from speaking with our provincial/territorial contacts is that some of this occurs virtually everywhere, but little of it is as a result of official government policy.<sup>47</sup> Indeed, most Departments/Ministries would prefer this sort of uncoordinated initiative did not exist, because it creates a 'whipsaw' effect in many situations and, in turn, puts additional pressure for resources on the central Departments/Ministries.

Two of the rows containing no ✓ represent initiatives related to spousal support or education support for children. This is not surprising on the one hand, and ironic on the other. These tend to be among the least 'policy-ameliorable' of the factors affecting physicians' decisions to locate or stay in rural/remote areas. Yet at the same time, they are among the most important considerations in those decisions.<sup>38,40</sup>

It is interesting that the continued heavy reliance on financial instruments in Canada comes despite research on determinants of locational decision-making which suggests that other factors outweigh financial considerations. The fact that Canadian provinces have relied so heavily on these instruments, and that the problems remain so evident, and so high-profile, would seem to provide *prima facie* evidence that different approaches are going to be needed if progress is to be made in the future.<sup>48</sup> Nevertheless, financial incentives continue to be featured prominently in the latest menu of policies to improve access to care for residents of rural and remote areas in Canada.

**Table 8: Contemporary Canadian policy approaches, by Province/Territory** <sup>37</sup>

Policy Approaches	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I	Nfld.	Yuk.	N.W.T.
<b>Regulatory/ Administrative</b>												
Billing numbers							✓	✓				
Provincial medical license tied to return of service in rural area												
Foreign medical Graduates with restrictions on practice location	✓	✓	✓	✓	✓					✓		
Enabling legislation for expanded role physician extenders/nurses		✓			✓					✓		
<b>Direct Funding – Practice-related</b>												
Subsidized income or guaranteed minimum income contract	✓			✓	✓	✓		✓		✓	✓	
Differential fees – bonus for practice in under-serviced region	✓			✓	✓	✓		✓		✓		
Differential fees – pro-ration for practice in over-serviced region					✓	✓			✓		✓	
Salaried and other 'alternate payment' positions	✓		✓	✓			✓	✓	✓	✓		
Grants/bonus tied to return of service	✓	✓	✓		✓	✓		✓		✓		
Special travel allowances for rural practice	✓		✓		✓	✓	✓			✓	✓	
Special program/funding for locum support	✓	✓	✓	✓	✓			✓	✓	✓		✓
Assistance with practice establishment costs			✓			✓						
Financial support for vacation (paid time off)					✓		✓			✓		
Special on-call payments for specialists	✓					✓				✓		
Special on-call payments for emergency coverage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
<b>Direct Funding – Education Related</b>												
Undergraduate/post-graduate student loans/grants/bursary with return of service			✓	✓	✓	✓				✓		✓
Special funding or loans for residency and specialty skills development	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Special travel allowance for students to get to summer placements or residencies		✓	✓	✓	✓							
Financial support for continuing medical education	✓	✓	✓	✓	✓	✓	✓	✓	✓			

**Table 8: Contemporary Canadian policy approaches continued**

Policy Approaches	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I	Nfld.	Yuk.	N.W.T.
<b>Education/Training</b>												
Rural training/exposure for undergraduates	✓	✓	✓	✓	✓	✓	✓			✓		
Rural placements/teaching units in association with a rural practice residency or specialty	✓	✓		✓	✓		✓			✓		
Special (re-entry) access to residency and/or new specialty skills development		✓	✓	✓			✓	✓		✓		
Special recruitment policies/criteria for new undergraduate medical students, eg. aboriginals, rural		✓	✓	✓	✓							
Special recruitment policies/criteria for graduate level residency training	✓											
Development of continuing education capacity using new communication technologies		✓	✓					✓		✓		
Promotion of rural practice in medical schools				✓			✓	✓		✓		
Nurse practitioner or similar program			✓	✓	✓					✓		
<b>Market-based Initiatives</b>												
Recruitment fairs/tours		✓	✓		✓	✓	✓	✓		✓		
Allow locally raised funds to directly support provision of physician services (eg. housing subsidy etc.)						✓		✓		✓		
<b>Other Initiatives</b>												
Funding for new remote diagnostic technologies eg. tele-radiology etc.	✓	✓	✓		✓		✓	✓		✓		
Spousal support initiatives												
Education support for children (eg. boarding school for older children etc.)												
Physician Resources Co-ordinator			✓							✓		

In what follows, we provide 3 case studies reflecting a cross-section of recent Canadian attempts to address rural/remote access problems.

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**Case Study 1: Prince George, BC - A King's Ransom for Doctors' Services?**

For much of the current year, the British Columbia Ministry of Health has been embroiled in a bitter dispute with physicians in many of its northern communities. Trouble first erupted in Prince George in May, against a backdrop of two recently consummated agreements between the British Columbia Medical Association (BCMA; which claims to represent the physicians of the province in economic matters) and the Ministry. The first agreement, ratified by the BCMA members in March, stipulated that there would be no further 'job action' during the life of the agreement. Over the preceding two years, doctors had used 23 "Reduced Activity Days" (RADs)<sup>49</sup> to protest government policy. The second agreement, ratified in May by about 400 physicians from smaller, historically underserved communities in British Columbia, provided additional funds for on-call relief and to recruit new physicians or locums.<sup>50</sup> Yet almost before the ink was dry on that second agreement, physicians in Prince George (one of the larger northern British Columbia communities) threatened to withdraw all services except emergency care. They were protesting the rapidly deteriorating physician supply situation in the community, and the resulting increasing on-call load for those remaining physicians.

When no agreement could be reached on the Northern Medical Society's proposal to inject an additional \$30 million into medical care in northern communities (half of it for Prince George physicians), Prince George physicians began to withdraw services in mid-June. After the crisis had festered for seven days, the Ministry agreed to provide \$10 million targeted solely at physicians in that community. The tentative agreement included \$5.2 million in extra funding for recruitment and retention (largely structured as an increase in fees ranging from 7.5% in the first year, to 17.5% in the fifth year of the agreement) and \$3.2 million for on-call payments. It also included smaller amounts for bonus money for new recruits, and medical training. This resulted in dramatic increases in income, in the order of 40% for a specialist billing \$300,000 annually and 20% for a general practitioner billing \$200,000.<sup>51</sup> As of the time of writing, the agreement is still not signed. The Prince George physicians have reacted vehemently to changes in the contract language relating, in part, to the right of physicians to withdraw services during the life of the agreement, which they claim was introduced after the fact and was not in keeping with the original agreement.

Although the ostensible crisis in Prince George was related to the inability of current incentives to recruit new physicians to that community, a significant share of the proposed settlement would be distributed to those physicians who were already there. The physicians argue that the monies are needed to stem the outflow of physicians. It is obviously too soon to tell how effective the additional funds will be in attracting new physicians (assuming an agreement is eventually signed).

Several other communities have since criticized the proposed settlement. Their concern is that Prince George could siphon physicians from other northern communities, many of which are in equally bad, or even worse circumstances. Some physicians in those communities have been publicly vocal about considering a move to Prince George because they could not afford *not* to move. By settling with one site, rather than negotiating a comprehensive agreement with all rural and remote regions in the province, the Ministry has set a precedent difficult to match elsewhere. As one specialist noted at the time, "I think it was an excellent solution for Prince George but it's unlevelled the playing field for everyone else in the province".<sup>52</sup>

A threatened physician strike in the small community of Williams Lake in July forced the government's hand again, and additional monies were provided to physicians there. At the time of writing, physicians in a number of communities have withdrawn some services, and others are considering similar action. The Ministry has put a \$40 million comprehensive settlement offer on the table, but physicians in the communities have not yet been given details. It seems inevitable that if the proposed inducements are not comparable with those offered to Prince George and Williams Lake physicians, it will be a hot fall and winter in many of this province's smaller communities.

Unlike many other earlier physician work stoppages, in British Columbia and elsewhere, these actions appear to have the strong support of the affected communities. Residents are scared about disappearing medical resources, and sympathetic to the on-call plight of their remaining physicians. Policy-makers are hamstrung by a lack of up-to-date information on the numbers and types of physicians actually departing these communities, where they are going, and the reasons for their departure. With the government in power trailing badly in the polls, a provincial election required by 2001, and new federal money promised for health care, physicians are in a strong bargaining position. Given the history of financial policy in this arena, however, it remains to be seen whether the supply situation on the ground will be any different a year from now.

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**Case Study II: Marathon, Ontario - A Long Run Solution to Physician Retention?**<sup>53,54,55</sup>

Marathon is a remote mining community on the north shore of Lake Superior in Ontario, with a catchment population of 7000. Like many small Canadian communities, Marathon has had a long history of difficulties in retaining physicians. Over a 10-year span, no fewer than 75 GP/FPs had spent varying amounts of time in the community. The physician supply issue reached a crisis point when, in the fall of 1995, the town went from 3 permanent physicians to 1.

The community's sole physician, Gordon Hollway, had just returned to Marathon after a 7-year absence. His previous stint was characterized by burnout from a 1 in 3 call schedule. Hollway's return to Marathon was driven by a love for the northern wilderness, and was conditional on structural changes to the organization of physician services in the community. Central to these conditions was a refusal to take call more frequently than one in four, even during the community's one-physician crisis.

Local community leaders formed a 'Doctor Crisis Coalition' with the aim of attacking what they believed were the root causes of the physician retention problem: quality-of-life, finances and professional support. On the first issue, increasing the target number of physicians was paramount to improving workload conditions and on-call frequency. After much effort, including a community-wide letter-writing campaign, the Ministry agreed to increase the town's medical complement to 5 physicians. On the financial issue, Marathon applied for an alternative payment plan (APP). Mayor McKay also convinced the town to contribute \$10,000 for each new doctor.

On the issue of professional support, a triage system was also established in the emergency department, in order to minimize inappropriate use during after-hours. The success of this system hinged on the switch to flat-fee payments for emergency services. The pre-existing fee-for-service system paid high premiums to physicians for seeing inappropriate patients during after-hours, which, ironically, contributed to burnout.<sup>56</sup>

A husband and wife, graduates of the Family Medicine North residency program who were attracted by the town's commitment to limit workload to a reasonable level, were the first to join the group practice. Two additional couples followed suit, and in the span of 8 months the town went from having 1 permanent physician to the prospect of having 7. Hollway had some concerns this might, in fact, be too many. He remembered a time during his earlier stint in Marathon when 2 doctors left because they did not think they were getting enough work. "After meeting them, however, I quickly realized that this was a different group of professionals, with very different expectations about hours of work and community involvement."

With the arrival of the new doctors in September 1996, Marathon was taken off the critical list for health services. Ironically, the biggest problem facing the town involved its overachievement: it was suddenly considered overserved by the Ministry of Health. This, in turn, complicated negotiations with the Ministry on the development of the APP. Despite this, Marathon ultimately negotiated a globally funded group practice agreement in April, 1999 for five positions. This was expanded in April, 2000 to six positions. These agreements stipulate not only the number of funded positions (and hence, the expectations for call), but also indicate the Ministry's expectations for 24-hour comprehensive primary care, emergency and in-patient services.

The additional physicians have allowed Marathon to offer a broader range of more specialized services in obstetrics, paediatrics, chemotherapy and palliative care. Four members of the group practice engage in teaching activities with family practice residents from the Northern Ontario Medical Program. The group practice is planning to apply for funded positions for nurse practitioners, the exact number of which remains to be determined.

Although patients in Marathon have enjoyed an unprecedented level of continuous service for five years now, the problem of physician retention has not been entirely slain. Two of the group's original members left in 1997 for the larger but still northern community of Thunder Bay. A second couple left in 1999, followed by a fifth physician who accepted a posting in an even smaller community. The first four vacancies, however, were filled almost immediately and the fifth took several months to fill. One important reason for successful recruitment is the town's reputation for promoting a healthy lifestyle for physicians. Another critical success factor is that the community's teaching activities put it in contact with many prospective physicians who may someday choose to work in Marathon.

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**Case Study 3: Beechy, Kyle and Lucky Lake - Good Fortune for Three Saskatchewan Communities?**<sup>57,58</sup>

Beechy and Kyle are two farming communities about 200 km southwest of Saskatoon. In 1993, these communities were faced with the shock of losing their acute care hospital services. A sweeping health reform program across the province resulted in discontinuation of funding for acute care in 52 rural facilities with very low volumes. Beechy, like many other communities facing this outcome, had an average daily census of less than one patient. The savings from these closures were intended for reinvestment in other sectors of the health care system.

Beechy's physician at the time was Dr. Tony Hamilton, a South African graduate who had been practicing in the region since 1979. As part of an effort to bolster the community's health services, a nurse practitioner was introduced into Beechy in 1995. The first recruit was Joanne Perry, a registered nurse in the district with 18 years of experience and one of the first graduates of the newly created advanced clinical nursing program at the Saskatchewan Institute of Advanced Technology.

In 1997, the neighbouring community of Kyle lost its only physician to retirement. Two years later, Lucky Lake lost its physician to illness. In 1999, two additional nurse practitioners were added to Beechy. The town's health centre now serves all three communities, and has a catchment population of approximately 5,000. Having now experienced working with three nurse practitioners, Dr. Hamilton believes that the previous model of one solo practitioner per small town is untenable in today's climate. His current arrangement allows him to look after twice as many patients as an average family doctor.

Dr. Hamilton notes that since implementation of the nurse practitioner collaborative practice model, there have been no services which have been cut (other than the small amount of local hospital care noted above), and the level of health promotion and prevention activities has increased. Notoriety about the community's style of care has spread, to the point where patients from areas outside the three communities have begun visiting the centre. The main attractions have been the thoroughness of the medical assessments, and the availability of female practitioners.

On-call services are shared among physicians in other neighbouring communities up to one hour away, and the call frequency is 1 in 3. Negotiations are under way, however, for Beechy to have the nurse practitioners provide call coverage. The key obstacle is the availability of funding for the nurse practitioners to work after hours.

Dr. Hamilton describes two critical success factors to Beechy's model. First, acceptance by physicians is a key prerequisite. There are two other communities in the district that would also like nurse practitioners, but the model has not been adopted because of resistance from the physicians. Turf protection is still a significant issue. Second, both Dr. Hamilton and the nurse practitioners are paid on a salary from the region's health authority. Such an arrangement reduces the competitive pressure for patients which a fee-for-service system engenders.

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**Emerging Initiatives**

The Canadian Medical Association recently released a policy document on rural and remote practice issues.<sup>59</sup> Although many of its recommendations echo the above list in terms of adequate compensation and financial incentives, new directions include the following:

- early exposure to rural practice for all undergraduate medical students;
- opportunities for rural physicians to obtain full faculty status in medical schools;
- a minimum of two physicians in any community, regardless of community size;
- a maximum on-call requirement on weekends of 1 in 5; and
- development of guidelines on basic medical infrastructure (eg. hospital beds, diagnostic equipment, paramedical staff, etc.) that should be available in any rural or remote community to support physician practice.

Of particular note is the fact that the Canadian Medical Association's policy prescription makes no mention of the use of nurse practitioners, or other collaborative models of practice.

Presently, a proposal for a rural medical school has become a contentious topic of debate in Ontario. The recent Fact-Finder Report on physician services in Ontario<sup>24</sup> was critical of the failure of existing medical schools to produce graduates interested in rural practice. The report proposed a dedicated medical school, with a principle mission of training physicians for rural practice, and which would select physicians on the basis of their willingness to work in such areas. Such a medical school could draw on the resources of existing medical schools for teaching of the basic sciences in the first or second year, but would locate all clinical training to rural on-site training bases. Community leaders and organizations have strongly endorsed the idea in principle<sup>60</sup> and the federal government has recently provided funding to develop a detailed proposal. The exact option chosen - status quo, a new rural medical school, or some form of radical decentralization of existing training programs to rural areas - is ultimately the decision of the provincial government.

The fact that the community where a prospective physician is raised is a strong predictor of eventual rural practice, as noted in section 3, suggests that medical schools ought to give preference to students of rural origin. Such a policy, however, could be vulnerable to a court challenge on the basis of a violation of the Canadian Charter of Rights and Freedoms, or other anti-discrimination legislation.

## **CONCLUSION**

The problem of geographic underservicing has existed in Canada for decades now. Canada is certainly not unique in this regard, but our geography certainly has not helped the situation. Over the past decade, Canadian policy approaches to addressing geographic maldistribution of physicians have been dominated by financial incentives directed at medical students, post-graduate trainees, new physicians, and physicians already practicing in rural/remote areas. Have these policies been effective? Evaluative evidence is hard to come by and, in any case, it is virtually impossible to control for the many variables in the wider policy and personal landscape that affect such decisions. For example, in the early 1990s, Alberta mounted what was at the time arguably the most comprehensive package of policies in the country to improve the distribution of physicians. It included a variety of financial incentives. But early in the life of the Plan, along came the Clinton reform initiatives, with their new (for the US) emphasis on primary care. And with that the recruiters came north. A subsequent evaluation of the Alberta situation concluded that the Alberta plan had not improved rural area supply, but had nevertheless limited the damage.<sup>61</sup> Were one to have examined the numbers alone, without understanding the landscape, one might have concluded that the Plan had been a failure. In general, physicians, like all individuals, respond to some degree to economic incentives, and we do not know how much worse any particular situation would be, compared with the status quo, if Canadian provinces did not have the kinds of policies in place now.

What can be said with some certainty, however, is that there has been little progress made in the past decade. Physician supply in rural areas is much the same, perhaps slightly better in some instances, but not by much. This leads us to conclude that whatever merit financial incentives may have, we are at the point of rapidly diminishing returns; whatever gains are to be had from the use of financial instruments have largely been captured. There is clearly a need to look to alternate approaches. The picture that now appears in Canada is one of an increasingly inelastic supply of physicians interested in, or capable of, taking on rural medicine. Financial incentives appear to be shifting physicians within the pool, from one underserved community to another. Each shift occurs in response to the latest crisis, the result of short-term fixes and competing, uncoordinated incentives.

Future approaches will need to look at how to expand the pool of physicians capable of taking on rural practice. The findings documented in section 3 suggest a number of strategies for more successful recruitment and retention of physicians in underserved areas. Clearly, the skill set required for rural practice is greater. Rural physicians need to be able to handle a higher level of acuity of care and be multi-functional in different environments, such as those described in Figure 6. Training needs to be sufficient to develop these skills. A physician who does not have the skill and intestinal fortitude to handle a major trauma in an emergency department without specialist backup will not work in a rural area, no matter how much money is offered. Ideally, these skills should be present when he or she completes training, but this does not appear to be happening consistently. Some physicians might be tempted to take on additional training to develop these skills, but this would be contingent on the availability of programs, not only to make this possible, but to make it an attractive option.

On this front, there are grounds for optimism. Many family practice training programs have recently initiated new efforts to ensure that more of their graduates are exposed to the unique and challenging circumstances of rural/remote practice. Other disciplines, such as general surgery, are following suit. Groups across the country are, for perhaps the first time, engaged in serious discussions about developing new medical school capacity outside urban centres. Again, it is too early to know what, if anything, will come of these discussions, but the fact that they are taking place at all is a breakthrough of sorts for this country.

Workload continues to be a significant barrier to having a sustainable physician pool in underserved areas. Our data confirm the obvious, that there is more work per doctor when there are fewer doctors to share the burden. Two of the case studies offer insight into how to break the cycle of low physician supply, burnout and further hemorrhaging of doctors. The alternate funding plans offered in Marathon also represent a significant financial incentive, but with a different philosophy. They provide a respectable income, remove incentives to maintain heavy, sometimes inappropriate patient volumes, and guarantee a reasonable lifestyle. The combination of these three would not have been possible under a fee-for-service system. The nurse practitioner model, although applicable in a variety of settings, is particularly useful in very small communities where the population cannot support more than one or two physicians.

Such a model of health care delivery - non-fee-for-service remuneration, comprehensive care with 24-hour coverage, a reasonable on-call schedule and workload, use of nurse practitioners - is the foundation of primary care reform projects currently being evaluated across Canada. Both British Columbia and Ontario have recently initiated major pilot projects, funded by the federal government, which involve the development and evaluation of new models of primary care organization and funding. The recent increase in national capacity to prepare nurse practitioners for practice in remote areas of the country, is another reason for encouragement. Whether these initiatives will lead to more widespread acceptance of the Marathon and Beechy/Kyle/Lucky Lake models is the key question. Getting beyond pilots has always been a problem in the contentious area of primary care reform.

Despite some bright spots on the horizon, what seems to be missing still in Canada is a collective willingness to embrace serious overhaul of how medical care is conceived, regulated, organized and funded. Such commitment needs to originate from both the political and medical community. Until Canada makes further headway down that difficult road, something new will continue to be buried by something old.

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