

Physician Services in Rural and Northern Ontario



ICES Investigative Report

January 2006

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About ICES

Ontario's resource for informed health care decision-making

ICES (Institute for Clinical Evaluative Sciences) is an independent, non-profit organization that conducts research on a broad range of topical issues to enhance the effectiveness of health care for Ontarians. Internationally recognized for its innovative use of population-based health information, ICES knowledge provides evidence to support health policy development and changes to the organization and delivery of health care services.

Unbiased ICES evidence provides fact-based measures of health system performance; a clearer understanding of the shifting health care needs of Ontarians; and, a stimulus for discussion of practical solutions to optimize scarce resources.

Key to ICES' research is our ability to link anonymous population-based health information on an individual patient basis, using unique encrypted identifiers that ensure privacy and confidentiality. This allows scientists to obtain a more comprehensive view of specific health care issues than would otherwise be possible. Linked databases reflecting 12 million of 30 million Canadians allow researchers to follow patient populations through diagnosis and treatment, and to evaluate outcomes.

ICES brings together the best and the brightest talent under one roof. Many of our faculty are not only internationally recognized leaders in their fields, but are also practising clinicians who understand the grassroots of health care delivery, making ICES knowledge clinically-focused and useful in changing practice. Other team members have statistical training, epidemiological backgrounds, project management or communications expertise. The variety of skill sets and educational backgrounds ensures a multi-disciplinary approach to issues management and creates a real-world mosaic of perspectives that is vital to shaping Ontario's future health care.

ICES collaborates with experts from a diverse network of institutions, government agencies, professional organizations and patient groups to ensure research and policy relevance.

Contents

Authors' Affiliations	ii
Acknowledgments	iii
About ICES	iv
Executive Summary	1
Issue	1
Study	1
Key findings	1
Implications	2
Overview	4
Introduction	4
Background	4
Levels of analysis	5
Geographic framework	5
New approaches	8
Chapter 1. Characteristics of Rural and Northern Communities in Ontario	10
Introduction	10
	10
List of Exhibits	10 10
List of Exhibits Exhibits—Findings	10 10 11
List of Exhibits Exhibits—Findings Discussion	10 10 11 24
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address	10 10 11 24
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues	10 10 11 24
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction	10 10 11 24 25
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits	10 10 11 24 25 25
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits Exhibit—Findings	10 10 11 24 25 25 25 26
List of ExhibitsExhibitsFindings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits ExhibitFindings Discussion	10 10 11 24 25 25 25 26 33
List of Exhibits Exhibits—Findings Discussion. Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits Exhibit—Findings Discussion. Chapter 3. Physician Supply	10 10 11 24 25 25 25 26 33 34
List of Exhibits Exhibits—Findings Discussion. Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits Exhibit—Findings Discussion. Chapter 3. Physician Supply Introduction	10 10 11 24 25 25 25 26 33 34
List of ExhibitsExhibitsFindingsDiscussion	10 10 10 24 25 25 25 26 33 34 34
List of Exhibits Exhibits—Findings Discussion Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues Introduction List of Exhibits Exhibit—Findings Discussion Chapter 3. Physician Supply Introduction List of Exhibits Exhibits Exhibits Exhibits Exhibits	10 10 11 24 25 25 25 25 25 33 34 34 34

Chapter 4. Demographic Profile of the Physician Workforce	41
Introduction	41
List of Exhibits	41
Exhibits—Findings	42
Discussion	47
Chapter 5. Physician Turnover	48
Introduction	48
List of Exhibits	48
Exhibits—Findings	49
Discussion	53
Chapter 6. Location of Medical Training	
Introduction	54
List of Exhibits	54
Exhibits—Findings	55
Discussion	60
Chapter 7. Policy Implications and Next Steps	61
Introduction	61
Policy Implications	61
Next Steps	62
Appendices	63
Appendix A. How the Research was Done	
Data sources	63
Analytic methods	63
Limitations	65
Privacy and confidentiality	66
Appendix B. Glossary of Key Terms	67
Descriptions of physicians	
Descriptions of geography	67
Indicators of physician supply	68
Definitions of Alternate Payment Plans	68
Appendix C. General Practitioner/Family Physician (GP/FP) Supply	
and Turnover by Rural Base Community, 2001/02	69
References	72

Executive Summary

Issue

The Honourable Roy Romanow, in his 2002 report on the future of the Canadian health care system, observed:

"Canada may, in fact, have a very good health care system with health outcomes that are generally among the best in the world. But there are growing signs that this is not the reality for Canadians living in smaller or more isolated communities across the country." *Building on Values: The Future of Health Care In Canada, 2002.*

The Province of Ontario has numerous rural communities and expansive northern regions. These areas are not only a distinctive characteristic of the Province, but also a critical part of the economy and population.

Persons who live in northern and rural regions should expect equitable health status and health care compared to those who live in urban and southern communities of the Province. However, studies have shown that those in northern and rural regions have higher incidence and prevalence rates across a wide range of diseases. At the same time, they face chronic challenges in the recruitment and retention of health care workers to meet their health needs.

Study

This investigative report profiles the rural and northern communities of the Province and the physicians who work there. The data in this study cover the period from 1992/93–2001/02, although most time trend comparisons focus on 1996/97 and 2001/02. This report provides a variety of perspectives about the physicians including their location of training, demographic profile and overall numbers in relation to the population they are serving. The report also documents different government policies used to influence physician recruitment and retention during the study period.

The report offers several new approaches to the study of Health Human Resources (HHR) and rural issues. It offers a definition of "rural" based on number and type of physician rather than traditional measures such as population size or geographic distance. The report applies a new measurement tool for assessing workforce stability called the "turnover index". Finally, it defines community catchment areas based on utilization of Emergency Department (ED) services.

In comparison with previous rural studies, this work tries to provide a more detailed level of analysis, providing comparisons between the following groups at the specialist and family physician level:

- Rural base communities aggregated by District Health Council (DHC) area;
- Rural base communities in Northern and Southern Ontario;
- Five large northern centres individually; and,
- Urban centres (which do not include the large northern centres), rural communities and five combined large northern centres.

Key findings

This report identifies almost 100 rural communities with hospitals and an even greater number of small affiliated towns. These communities have diverse population sizes and are located throughout the Province at varying distances from their nearest urban centres. The communities in the North were typically the most isolated and at a much greater distance from the next level of care (e.g., tertiary care). Rural economies had a heavy reliance on natural resource use with forestry and mining activities common in northern areas and agricultural-related industry in southern areas.

In 2001/02, the 14% of Ontario general practitioners and family physicians (GP/FPs) and 2.5% of Ontario specialists who were practising in rural areas cared for almost 20% of the Ontario population. Most of these rural GP/FPs and specialists lived in the southern parts of the Province. Urban areas had a higher number of physicians per 100,000 population in both 1996/97 and 2001/02 for both family physicians and

specialists. However, northern rural areas had higher physician to population ratios than southern rural areas, and the ratio in the north rose significantly between 1996/97 and 2001/02 to almost reach parity with urban areas.

Rural GP/FPs were more likely to be less than five years in practice, while their urban counterparts were more likely to be female and trained outside of Canada. Among rural family physicians, those in the Northwestern Ontario DHC area were much more likely to be more recent graduates and female. A greater proportion of rural specialists had been in practice more than 30 years compared to all other settings.

Rural areas had the highest levels of turnover compared to all other settings for both specialists and GP/FPs. This was true for the periods 1993–1996 and 1997–2001. Two of the northern DHC areas (Northwestern Ontario and Algoma-Cochrane-Manitoulin-Sudbury) had the highest consistent rates of turnover among all DHCs. This speaks to the relative instability of the physician workforce in these areas.

Physicians showed a preference for practising near the location of their medical school training. The southwestern part of the Province that does not have a medical school relied heavily on international medical graduates (IMGs), particularly for rural specialists, while the northern areas drew heavily on those graduating from medical schools outside of Ontario. Among Ontario medical schools, the University of Toronto trained approximately twice as many rural physicians than any of the other four schools—a finding that may relate to the historically larger class size of the Toronto school.

These patterns occurred in the context of numerous government policies aimed at improving the recruitment and retention of physicians to rural, and particularly northern rural, areas. Representing an investment of millions of dollars, these programs fall loosely into four categories: alternative models of care; promotion of rural/northern medicine; financial incentives or disincentives; and, educational programs for future physicians.

Implications

1. The rural South is facing greater challenges than the rural North

While the physician to population ratio for GP/FPs in the North is approaching that of urban centres, the ratio for rural communities in the south lags well behind. Policymakers may want to consider extending some of the recruitment tools traditionally available in the north into other rural areas of clear need. This needs to be done while recognizing the historically greater challenges of physician supply in the north.

2. Location of training is important

This study confirms that medical school location is strongly related to practice location, albeit more for rural GP/FPs than for rural specialists. This suggests that recent policy decisions to establish the Northern Ontario School of Medicine and a Windsor campus of the University of Western Ontario may help improve rural GP/FP supply in those regions of the Province.

3. Uniqueness of the large northern centres

The five large northern centres play an important role in northern health care delivery. The vast majority of the northern specialist physician population is located there. Also, these communities have profiles (demographic, turnover levels, physician to population ratios) that are typically different from both urban and rural communities. While not eligible for many of the targeted rural programs, issues such as their geographic location and broader clinical scope can lead to problems with physician recruitment and retention. Programs specifically addressing these five centres, with enough flexibility to reflect the differences among them, may be helpful.

4. Physician workforce strategies

There has been a wide range of initiatives. However, the fact that many of these are focused more on recruitment than on retention may be contributing to higher turnover rates in northern and rural communities. More research needs to be done to identify ways of reducing turnover.

5. Role of IMGs

The evidence in this study suggests that rural communities have had some success in attracting specialist IMGs. If policymakers want to increase rural specialist supply, then one important source could be IMGs. However, IMGs are a relatively less important source for rural GP/FP supply. To increase the supply of GP/FPs, policymakers may wish to consider other means, such as providing more domestic training of rural physicians. Alternatively, policymakers could make changes to existing IMG entry programs to better tailor them to bringing IMGs to rural areas.

6. Rural specialists are diminishing in numbers

The number of rural specialists is small and declining. Furthermore, rural specialists tend to be older and many are approaching retirement age. If this trend continues, then the model of care that provides rural physicians with local access to specialist back-up may gradually disappear. Policymakers may allow this trend to continue and expect local residents to travel to larger centres or try to provide resources locally through innovations such as telemedicine. To reverse the current trend, policymakers may either aim to bring in more IMGs to rural areas as noted above, or develop other policies such as training specialists for, and in, rural areas.

7. Role of alternate payment models for primary care

The increase in the numbers of both young and female family physicians in areas where new alternate payment models have been introduced suggests that these new models of remuneration may be important recruitment tools. Governments should consider expanding these successful models to other rural areas.

8. New tools for HHR research

This report offers researchers new approaches for the collection of needed data, including an HHRbased definition of rural, a measure of workforce stability called the "turnover index", and a definition of catchment population utilizing local ED services.

9. Future directions

Future research should consider the issue of recruitment and retention of providers other than physicians, such as nurses, nurse practitioners, and health therapists and other allied health professionals. HHR research, rural and otherwise, should incorporate the calculation of full-time equivalency and scope of practice.

Overview

Introduction

Ontario has extensive rural and northern regions. These areas face significant and unique challenges in the recruitment and retention of physicians. The goal of this report is to provide a nuanced understanding of the communities in these areas, and the general practitioners and family physicians (GP/FPs) and specialists who work there.

Specifically, this report explores the following questions:

- 1. What are the characteristics of the different rural and northern communities in Ontario?
- 2. What are the government initiatives and policies that address rural and northern physician issues?
- 3. What is the supply of physicians relative to the catchment population and how has this changed over time?
- 4. What is the demographic profile of physicians in different rural and northern communities?
- 5. What is the frequency of physician turnover in different communities during different time periods?
- 6. Where did rural and northern physicians train?

The answers to these questions will be helpful to those interested in rural health care delivery at the local, regional or provincial level. The information can help guide Health Human Resources (HHR) policy development, allocation of resources and future research.

Background

Canada is a geographically vast country with large rural areas. Ontario is the most populous and second largest province in the country, representing an area of more than one million square kilometres. Northern Ontario alone has a surface area similar in size to France. While most of Ontario's population is concentrated in a few large urban centres in the South, there are dozens of rural communities spread across the Province. Compared with urban areas, rural areas suffer from higher rates for many diseases and score lower on many health indicators.¹ Delivering medical services to a relatively small population dispersed across a wide geographic area remains a major challenge for policymakers and health care providers.

Meeting the health needs of rural and northern areas requires an adequate number of appropriately trained health professionals. However, these communities have had chronic challenges in the recruitment and retention of these professionals. Physicians and other health care workers in these areas face unique professional issues including isolation from colleagues; appropriate and accessible continuing medical education; and, fewer resources.² There are also specific geographic challenges, such as transferring acutely ill patients in inclement weather and dealing with accidents related to the farming, mining and lumber industries that are unique to rural areas.

These challenges are not unique to Ontario, and similar problems have been documented in other Canadian territories and provinces.³ Many other countries around the world also face similar challenges in ensuring adequate supply of physicians to rural and remote areas.⁴

In Ontario, there have been a variety of strategies aimed at addressing this problem. Government initiatives include training nurse practitioners and the opening of the Northern Ontario School of Medicine in 2005. In addition, there has been a range of community, hospital, private sector and other stakeholder efforts to create a sustainable physician workforce in rural and northern areas. Despite these efforts, there is growing concern about the availability of physicians and other health professionals in all regions of the Province. Three studies commissioned by the provincial government in the late 1990s^{5,6,7} and reports from other stakeholders⁸ support the perspective that there is a need to increase the number of physicians to provide care in all settings. Given the growing needs in urban areas, there is concern that the persistent challenges of rural and northern areas will be exacerbated.

This report describes the evolving state of the physician workforce in rural and northern areas during the period 1992/93 to 2001/02. We examine not only rural areas in Northern Ontario, which have traditionally received the greatest amount of attention from policymakers, but also five large centres in Northern Ontario and rural areas in Southern Ontario. Furthermore, this report examines, for the first time, changes in physician supply at the individual community level. Past Institute for Clinical Evaluative Sciences (ICES) studies on physician human resources have examined physician supply at the level of the planning region, District Health Council (DHC) area and county.^{5,13} By profiling physician supply trends at such a fine unit of analysis, we can begin to identify rural communities that serve as best practice models of recruitment and retention of health professionals.

This report does not try to define what the appropriate number of physicians should be. Similarly, it does not try to identify whether a community has a "shortage" or if it is "underserviced". That would require a different set of definitions and methodologies.

Levels of analysis

We used the following levels of analyses:

- 1. GP/FPs in rural base communities aggregated by DHC area.
- 2. Specialists in rural base communities aggregated by DHC area.
- 3. GP/FPs in northern rural base communities compared with southern rural base communities.
- 4. Comparison of GP/FPs in the five large northern centres.
- 5. Comparison of specialists in the five large northern centres.
- 6. Comparison of GP/FPs and specialists across rural communities, large northern centres and urban centres.

Additional details for certain analyses are provided in Appendix C.

Geographic framework

The location of rural communities and large northern centres, with the DHC boundaries overlaid, are indicated on Map 1 (next page). DHCs included in the definition of "Northern" are highlighted. Not included on the map are affiliate communities and urban centres.





New approaches

This report offers new approaches to the study of rural populations and HHR research:

Defining rural and urban communities

The approach to defining rural communities taken in this report is unique because it is based on the local physician workforce and the presence of supporting infrastructure. "Rural base community" was defined as any census subdivision (CSD) that contained a hospital but had fewer than five sub-specialists resident in the community during the time period. It should be noted that there was no limit to the number of core specialists, such as obstetricians or pediatricians, that a rural community could have (see Appendix B for definitions of core and sub-specialists). CSDs with resident physicians but no hospital with an Emergency Department (ED) in both time periods were designated "affiliate communities", and their physicians were assigned to the nearest rural base community. CSDs with a hospital and five or more sub-specialists were classified as "urban centres" with the exception of North Bay, Sault Ste. Marie, Sudbury, Thunder Bay and Timmins, which were designated "large northern centres". These large northern centres were not included in the "urban centres" category.

Given that the focus of this report is on understanding HHR issues, this approach was felt to have advantages over definitions based on population size or distance from an urban setting. The latter are important characteristics of rural communities but do not necessarily define rurality in a context that reflects the status of their physician services.

The other advantage of using an HHR-based definition of rural is that it ensures that the communities are similar in the characteristic of interest—in this case, the availability of physician services. One can then examine the homogeneity or heterogeneity among these communities in consideration of other aspects, such as geographic location, distance from an urban centre or the use of alternate payment plans. This, in turn, should lead to better targeting of programs designed to address various HHR issues than would be possible using a simple geographic or population size-based definition of rural.

One disadvantage of this approach is that as physician numbers change, a community may gain or lose its rural designation. However, significant changes in the number of sub-specialists do not occur frequently. Comparing 2001/02 to 1996/97, only five communities in the Province changed designation (three from rural to urban and two in the other direction). One way to create a more stable definition would be to define a fixed criterion and base year (e.g., less than five sub-specialists in 2001/02), and allow annual fluctuations within a small range (four to six sub-specialists) around this point without changing categories. Only larger shifts or changes that persisted over a period of years would lead to reclassification of a community.

Measuring workforce stability

Snapshots of the workforce, even repeated over time, do not provide a picture of the change in individual physicians. There are likely benefits to the patients as well as to the local health care system in having a stable physician workforce.

This report uses an indicator called a "turnover index" to measure the stability of the workforce over time. Explained in detail in Appendix A, this index takes into account both the number of new entrants and exits to a community's physician workforce over a given time period. A higher number indicates more change in the system. This tool can be used to help evaluate the success of retention initiatives. It can also identify communities that, despite a consistent number of physicians, may have local workforce problems resulting in high turnover.

Defining catchment populations by ED utilization

It is helpful to interpret workforce numbers in relation to the population that utilizes their services. Census or municipal boundaries do not necessarily reflect where patients seek care. In the same way that rural base communities were defined by the presence of a hospital and the number and type of specialists in the community, the community's population is defined using patterns of ED utilization. Further details of how this was done can be found in Appendix A. In a few cases, amalgamated hospitals with sites in several rural communities had to be treated as single entities because it was impossible to assign the ED

visits to individual sites. So, for example, Minden and Haliburton had to be combined, and Thessalon and St. Joseph (Richard's Landing) were included with Sault Ste. Marie.

Defining catchment populations in this way illustrates the burden on communities' physicians both in terms of the absolute numbers of patients they must serve and as a ratio of the physician numbers to the population numbers. It also provides an aspect of the patient's perspective by indicating access patterns and how far individuals must travel to seek emergency care.

Chapter 1—Characteristics of Rural and Northern Communities in Ontario

Introduction

This chapter lists the communities that were included in this study and highlights some of their defining characteristics. Important characteristics that relate to access to care include whether communities are served only by general practitioners or family physicians (GP/FPs) and how far patients need to travel for care. Other important features include the size of the population served by the local Emergency Department (ED); the main industries that support the economy; and, the role of non-traditional compensation models for physicians.

List of Exhibits

- **Exhibit 1.1** Organization of rural base communities in Ontario with their affiliates and closest large (referral) northern centres, by District Health Council (DHC) area, 2001/02
- Exhibit 1.2 Profile of rural base communities in Ontario, 2001/02
- **Exhibit 1.3** Organization of large northern centres in Ontario with their affiliates, by District Health Council (DHC) area, 2001/02
- Exhibit 1.4 Distribution of physicians in Ontario, 2001/02

Exhibits–Findings

Exhibit 1.1 Organization of rural base communities on Ontario with their affiliates and closest large (referral) northern centres, by District Health Council (DHC) area, 2001/02

Algoma-Cochrane-Manitoutin-SudburyImage of the subset of the	District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
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McNab3Braeside5Pakenham13Barry's Bay-Pembroke7812,964Killaloe22Airy42Eganville45Deep RiverPembroke529,720Renfrew-Pembroke5524,223Horton4Bagot and Blythe12II-Cobden23III		Arnprior			Nepean	64	20,521
Braeside5666Pakenham13111Barry's BayPembroke7812,964Killaloe2211Airy4211Eganville4511Deep RiverPembroke529,720Renfrew4111Horton411Bagot and Blythe1211Cobden2311			McNab	3			
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Eganville45Image: Constraint of the second se			Airy	42			
Deep RiverPembroke529,720RenfrewPembroke5524,223Horton4Bagot and Blythe12Cobden23			Eganville	45			
RenfrewPembroke5524,223Horton4Bagot and Blythe12Cobden23		Deep River			Pembroke	52	9,720
Horton4Bagot and Blythe12Cobden23		Renfrew			Pembroke	55	24,223
Bagot and Blythe12Image: Cobden12Cobden23Image: CobdenImage: CobdenImage: Cobden			Horton	4			
Cobden 23			Bagot and Blythe	12			
			Cobden	23			

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
	Winchester			Nepean	47	33,969
		Chesterville	9			
		Finch	20			
		Morrisburg	25			
		Iroquois	27			
DHC Total						118,377
Average			20		57	
Durham-Ha	liburton-Kawartha-Pine	Ridge				
	Minden and Haliburton**			Lindsay	70*	30,958
		Somerville	38			
	Campbellford			Trenton	28*	29,115
		Percy	12			
		Norwood	17			
		Marmora and Lake	32			
		Madoc	34			
		Tweed	43			
		Kaladar, Anglesea and Effingham	68			
	Clarington (Bowmanville)			Oshawa	19	57,178
	Cobourg			Peterborough	53	47,994
		Port Hope	10			
		Норе	15			
		Millbrook	31			
	Scugog (Port Perry)			Whitby	31	26,436
	Uxbridge			Newmarket	31	23,213
DHC Total						214,893
Average			30		34	
Essex-Kent	t-Lambton					
	Leamington			Windsor	52	55,053
		Mersea	1			
		Gosfield South	10			
		Kingsville	12			
		Tilbury West	20			
		Romney	20			
		Harrow	27			
		Tilbury	27			
	Petrolia	Discreta	45	Sarnia	15	16,607
		Plympton	15			
	Mallaashirr	Forest	21	Chatha		24.074
	vvallaceburg			Chatham	29	24,971
DHC Total			40			96,631
Average			18		32	
Grand Rive	F Duppyillo			Wolland	20	22,022
	Durinville				38	22,023
		Now Credit	14		44	23,87 I
		INEW CIEUIL	14	1	1	1

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
	Paris			Brantford	12	22,599
	Simcoe			Brantford	43	52,476
		Nanticoke	10			
		Delhi	14			
		Norfolk	26			
		Norwich	32			
DHC Total						120,969
Average			19		34	
Grey-Bruce	e-Huron-Perth					
	Chesley	Holland	27	Owen Sound	47	4,995
	Durham			Owen Sound	47	6,095
	Exeter			Stratford	48	19,229
		Hensall	10			
		Stephen	11			
	Goderich	Colborne	5	Stratford	74	17,769
	Hanover			Owen Sound	63	14,369
		Bentinck	8			
	Kincardine			Owen Sound	85	18,406
		Huron	8			
	Lion's Head			Owen Sound	67	4,710
		St. Edmunds	37			
	Listowel			Stratford	54	14,757
	Markdale			Owen Sound	40	15,887
		Flesherton	10			
		Artemesia	10			
	Meaford			Owen Sound	27	13,152
		St. Vincent	2			
		Thornbury	12			
	Seaforth			Stratford	39	9,718
		Mitchell	19			
	Southampton			Owen Sound	38	21,681
		Port Elgin	7			
	St. Marys	Biddulph	19	Stratford	20	13,524
		Lucan	23			
		Lobo	39			
	Tuckersmith (Clinton)	Bavfield	20	Stratford	50	10,671
		ыуш	23			
	Walkerton			Owen Sound	68	13,903

Physician Services in Rural and Northern Ontario Chapter 1. Characteristics of Rural and Northern Communities in Ontario

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
		Mildmay	10			
		Teeswater	18			
	Wiarton			Owen Sound	35	12,805
-		Amabel	14			
	Wingham			Stratford	88	14,604
		Lucknow	18			
DHC Total			10			226,275
Average			16		52	
Halton-Pee	I			– .	1.0	
	Halton Hills			Brampton	19	57,120
	Milton			Oakville	20	52,772
DHC Total						109,892
Average					20	
Niagara						
	Fort Erie			Niagara Falls	33	24,413
	Grimsby			Hamilton	29	48,644
		Lincoln	10		10	
	Port Colborne		40	Welland	12	27,841
		vvaintieet	12			400.907
			44		25	100,697
Average	harraa		11		25	
Northern S	Procebridge			Orillia	56	22.221
	Diacebiluye	Gravenhurst	15	Unina	50	32,221
		Muskoka Lakes	19			
	Englehart			Timmins	166	5,269
		Larder Lake	28			
	Huntsville			Orillia	94	45,288
		Burk's Falls	36			
		Lake of Bays	16			
		South River	59			
		Sundridge	51			
	Kirkland Lake			Timmins	148	14,673
	Mattawa			North Bay	67	5,020
	New Liskeard			North Bay	145	20,386
		Haileybury	7			
		Cobalt	12			
		Temagami	52			
	Parry Sound		_	Orillia	122	26,533
		McDougall	6			
	Sturgeon Falls	Casimir, Jennings and Appleby Cosby, Mason	37 48	North Bay	39	12,896
DHC Total		and Martiand				162 285
Average			30		105	102,200

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
Northwest	ern Ontario					
	Atikokan			Thunder Bay	188	4,456
		Ignace	73			
	Dryden	Machin	31	Thunder Bay	329	16,330
		Kenora, unorganized	42			
	Emo	, 0		Thunder Bay	372	1,094
	Fort Frances			Thunder Bay	326	13,667
	Geraldton			Thunder Bay	264	6.478
	Jaffrav and Melick (Kenora)			Thunder Bay	460	21.738
	······································	Kenora	4			
		Keewatin	10			
	Manitouwadge			Thunder Bay	355	2,970
	Ū	White River	74			
	Marathon			Thunder Bay	264	4,772
	Nipigon			Thunder Bay	114	4,944
	Rainy River			Thunder Bay	418	2,637
	Red Lake			Thunder Bay	516	5.420
		Ear Falls	51			-, -
	Sioux Lookout			Thunder Bay	357	6,178
	Terrace Bay			Thunder Bay	206	2.840
	· · · · · · · · · · · · · · · · · · ·	Schreiber	13			,
DHC Total						97,979
Average			37		321	
Simcoe-Yo	ork					
	Collingwood			Barrie	56	48,186
		Wasaga Beach	13			
		Clearview	13			
		Penetanguishene	38			
	Midland			Orillia	51	52,144
		Тау	3			
		Tiny	9			
	New Tecumseth (Alliston)			Barrie	30.1*	35,643
		Essa	15			
DHC Total						135,973
Average			15		53	
Southeaste	ern Untario			NIE		40.054
	Almonte			Nepean	55	12,354
			22			
	Deperet	vvest Carleton	25	Determent	407	10.040
	Bancrott	Rudoich and		Peterborough	107	18,649
		Anstruther	45			
	Carleton Place			Nepean	54	19,826

Physician Services in Rural and Northern Ontario Chapter 1. Characteristics of Rural and Northern Communities in Ontario

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
	Kemptville			Nepean	183	19,191
		Oxford-on-Rideau	6			
		Mountain	14			
		Osgoode	24			
		Russell	36			
	Perth			Brockville	65	23,872
		North Elmsley	8			
		Bathurst	9			
		Drummond	12			
		Lanark	16			
		Bastard and South Burgess	26			
		North Crosby	26			
		Newboro	28			
		Oso	35			
	Picton			Belleville	35	29,537
	Richmond (Napanee)			Belleville	42	58,648
		Napanee	3			
		North Fredericksburgh	4			
		Deseronto	9			
		Newburgh	12			
		Camden East	17			
		Sheffield	24			
		Hungerford	30			
	Smiths Falls			Brockville	50	
		Montague	3			
		Merrickville	14			
DHC Total						182,076
Average			18		74	
Thames Va	alley					
	Ingersoll			Woodstock	16	26,695
		Zorra	12			
		North Dorchester	15			
	Newbury			Strathroy	43	15,312
		Bothwell	8			
		Glencoe	10			
		West Lorne	18			
		Watford	30			
		Dresden	33			
	Tillsonburg			Woodstock	38	33,860
		Port Burwell	25			
DHC Total						75,868
Average			19		32	

District Health Council (DHC) Area	Rural Base Community	Affiliate Community	Distance to Rural Base Community ¹ (km)	Closest Large Centre	Distance to Large Centre ¹ (km)	Estimated Emergency Department (ED) Catchment Population, 2001/02
Waterloo F	Region-Wellingt	on-Dufferin				
l	Fergus			Guelph	21	36,303
		Elora	5			
		Eramosa	19			
		Arthur	19			
		East Luther Grand Valley	24			
	Mount Forest			Guelph	66	12,057
		Egremont	10			
		Harriston	13			
(Orangeville			Brampton	37	66,210
		Mono	7			
		Erin	16			
		Shelburne	20			
		Dundalk	36			
		Osprey	48			
	Palmerston			Stratford	66	10,478
		Maryborough	13			
		Drayton	17			
DHC Total	(excludes those	e with missing data)				112,990
Overall av	erage - North		32		202	
Overall av	erage - South		19		45	
Overall av	erage		22		81	

¹Distances calculated using Mapquest® unless highlighted with an asterisk (*).

Data sources: Institute for Clinical Evaluative Sciences – ICES Physician Workforce Database; Ministry of Health and Long-Term Care – Ontario Health Insurance Plan and Registered Persons Database; Statistics Canada – *Annual Demographic Statistics*, Catalogue no. 91-213-XMP

- Using the criteria outlined in the Overview chapter, 93 communities were defined as rural base communities. Thirty-seven percent of these are located in Northern Ontario. Two DHC areas, Hamilton and Toronto, had no rural base communities and four areas had fewer than ten.
- The rural base communities serve a further 144 rural affiliate communities. The distance between affiliate communities and their nearest rural base community ranged from 1 to 74 km, with an average of 22 km. The average distance between rural affiliates and their base communities was 32 km in Northern Ontario and 19 km in Southern Ontario.
- The average distance between rural base communities and the next level of care was 81 km, with a range of 16 km to 516 km. Northern residents of rural communities had to travel more than four times farther than their southern counterparts (202 km in the North vs. 45 km in the South).
- The ED catchment populations of the rural base communities and affiliates ranged from 1,000 to more than 60,000 persons. Together, these rural communities comprised approximately 20% of the provincial population. The five large northern centres served 4% of the population.

District Health Council (DHC) Area	Rural Base Community	General Practitioner/ Family Physician (GP/FP) Only?	Alternate Payment Plan (APP) for Primary Care ¹	Core Economic Activity
Algoma-Cochrai	ne-Manitoulin-Sudbury			
	Black River-Matheson Blind River Camarvon (Mindemoya) Chapleau Cochrane Elliot Lake Espanola Hearst	Y Y Y Y N Y N Y N	CSC(A)	Mining Manufacturing, Health Forestry, Rail Forestry Retirement Living Program, Business Manufacturing Forestry
	Hornepayne Iroquois Falls Kapuskasing Little Current Michipicoten Smooth Rock Falls	Y Y N Y Y	CSC NGFP; CSC (A) NGFP	Rail, Forestry, Health Forestry Forestry, Hydro Service, Tourism Forestry Forestry
Champlain				
	Alexandria Arnprior Barry's Bay Deep River Renfrew Winchester	N N Y N N	CSC(A)	Agriculture Pharmaceutical, Manufacturing, Light Industry Forestry, Tourism Atomic Energy, Tourism Light Industry, Tourism Agriculture
Durham-Halibu Pine Ridge	rton-Kawartha-			
	Minden and Haliburton Campbellford Clarington (Bowmanville) Cobourg Scugog (Port Perry) Uxbridge	N N N N N N		Tourism, Forestry Agriculture, Manufacturing, Tourism Manufacturing, Retail Trade, Health, Social Services Manufacturing, Retail Trade, Health, Social Services Agriculture, Manufacturing Agriculture
Essex-Kent-Lar	nbton			
	Leamington Petrolia Wallaceburg	N N N		Agriculture, Manufacturing Oil Refining Automotive
Grand River				
	Dunnville Haldimand Paris Simcoe	N N Y N		Commerce, Power Generation Agriculture Agriculture, Manufacturing

Exhibit 1.2 Profile of rural base communities in Ontario, 2001/02

Physician Services in Rural and Northern Ontario Chapter 1. Characteristics of Rural and Northern Communities in Ontario

District Health Council (DHC) Area	Rural Base Community	General Practitioner/ Family Physician (GP/FP) Only?	Alternate Payment Plan (APP) for Primary Care ¹	Core Economic Activity
Grey-Bruce-Hu	ron-Perth			
,	Cheslev	Y		Agriculture
	Durham	Y		Hvdro
	Exeter	Y		Agriculture. Manufacturing
	Goderich	Ν		Mining, Manufacturing, Tourism, Agriculture
	Hanover	N		Manufacturing, Agriculture
	Kincardine	Ν		Hvdro
	Lion's Head	Y		Tourism
	Listowel	Y		Manufacturing
	Markdale	N		Agriculture, Manufacturing
	Meaford	Ν		Agriculture, Manufacturing
	Seaforth	Y		Agriculture
	Southampton	Y		Tourism
	St. Marvs	Ν		Service Industries. Tourism
	Tuckersmith (Clinton)	Ν		Agriculture
	Walkerton	Ν		Agriculture
	Wiarton	Y		
	Wingham	Ν		Manufacturing
Halton-Peel				, i i i i i i i i i i i i i i i i i i i
	Halton Hills	N		Manufacturing, Agriculture
	Milton	N		Automotive Darte Manufacturing
	WIIton	IN		Aerospace Engineering
Niagara				
	Fort Erie	Ν		Aerospace Engineering, Manufacturing, Tourism
	Grimsby	N		Agriculture, Wineries
	Niagara-on-the-Lake	N		Tourism, Wineries
	Port Colborne	N		Manufacturing, Agriculture
	Bracebridge	N		Tourism
	Englehart	Y	NGFP	Manufacturing
	Huntsville	N		Tourism, Forestry
	Kirkland Lake	N		Mining
	Mattawa	Y		Forestry, Tourism
	New Liskeard		NGFP (A);	Agriculture, Forestry,
		N	CSC (A)	Manufacturing, Mining
	Parry Sound	N		Tourism
	Sturgeon Falls	N		Forestry
Northwestern C	Intario	X		
	Atikokan	Y	NGFP; CHC (A)	Power Generation, Forestry, Tourism
	Dryden	N	CSC (A)	Forestry
	Emo	Y	NGFP	Agriculture

District Health Council (DHC) Area	Rural Base Community	General Practitioner/ Family Physician (GP/FP) Only?	Alternate Payment Plan (APP) for Primary Care ¹	Core Economic Activity
	Fort Frances	Ν		Agriculture, Manufacturing, Forestry
	Geraldton	Y	NGFP	Forestry, Mining, Tourism
	Jaffray and Melick (Kenora)	Ν	NCED	Forestry, Tourism
	Manitouwadge	Y	CSC (A)	Forestry, Tourism
	Marathon	Ý	NGEP	Forestry Mining
	Nipigon	Ý	NGEP	Forestry
	Rainy River	Ý	CSC	Rail
		•	NGFP:	i teli
	Red Lake	Y	CSC (A)	Mining
	Sioux Lookout	N		Government, Health
	Terrace Bay	Y	CSC	Forestry
Simcoe-York				
	Collingwood	N		Tourism
	Midland	Ν		Manufacturing
	New Tecumseth			Agriculture, Manufacturing,
	(Alliston)	N		Construction
Southeastern C	Intario			
	Almonte	N		Agriculture
	Bancroft	Y		Tourism, Forestry
	Carleton Place			
		Y		Light Industry, Tourism
				Farming, Agricultural Supplies,
	Kemptville	N		Education
	Perth	N		Light Industry, Tourism
	Picton	N		Tourism, Fishing, Light Industry
	Richmond (Napanee)	N		
	Smiths Falls	N		Light Industry, Tourism
Thames Valley				
	Ingersoll	N		Automotive
	Newbury	N		Manufacturing
	Tillsonburg	N		Agriculture, Automotive
Waterloo Region-Wellington-Dufferin				
	Fergus	N		
	Mount Forest	N		Manufacturing
	Orangeville	N		Manufacturing
	Palmerston	Y		Agriculture, Manufacturing

¹ CSC – Community-Sponsored Contract; NGFP - Northern Group Funding Plan; CHC - Community Health Centre; (A) indicates that the APP applies to one or more affiliates only.

Data sources: Institute for Clinical Evaluative Sciences - ICES Physician Workforce Database; see Appendix A for sources for APP and Core Economic Activity data

- In 2001/02, 41 rural base communities were served by GP/FPs without local specialist back-up, while 62 had at least some core specialists. In Northern Ontario, 67% of rural base communities (26 of 39) had no local specialist back-up, while in Southern Ontario, this percentage was 23% (15 of 64).
- At least 40 rural base communities have been participating in fee-for-service payment alternatives for primary care since the mid-1990s. Examples of such models include the Group-Sponsored Contract, the NGFP, CHCs and CSCs. Brief explanations of these programs and their eligibility criteria are included in Appendix B.
- Beyond physician workforce and access issues, this Exhibit highlights key elements of Ontario's rural economies. Typically, they share a common reliance on industries such as mining, forestry and agriculture.

District Health Council (DHC) Area	Large Northern Centre	Affiliate Community	Distance from Affiliate to Large Northern Centre (km)	Alternate Payment Plan (APP) for Primary Care ¹	Estimated Emergency Department (ED) Catchment Population, 2001/02
Algoma-Coc	hrane-Manitoul	in-Sudbury			
Sault Ste. Marie					97,282
		Richard's Landing/St. Joseph	39		
		Bruce Mines	48		
		Thessalon	66		
	Sudbury				160,771
		Nickel Centre	12		
		Valley East	16		
		Walden	17		
		Rayside-Balfour	18		
		Capreol	26	CSC	
		Onaping Falls	33		
		Sudbury, Unorganized, North Part	41		
	Timmins				47,720
		Timiskaming, Unorganized, West Part	116		
Northern Sh	ores				
	North Bay				72,795
		North Himsworth	14		
		Powassan	27		
		Bonfield	27	CSC	
Northwestern Ontario					
	Thunder Bay				134,695
		Conmee	29		

Exhibit 1.3 Organization of large northern centres in Ontario with their affiliates, by District Health Council (DHC) area, 2001/02

¹CSC – Community-Sponsored Contract

Data sources: Institute for Clinical Evaluative Sciences – ICES Physician Workforce Database; Ministry of Health and Long-Term Care – Ontario Health Insurance Plan and Registered Persons Database; Statistics Canada – *Annual Demographic Statistics*, Catalogue no. 91-213-XMP.

• Five large northern centres were examined separately in this report. Most have affiliate communities nearby that have physician practices but no local hospital. The average distance between large northern centres and their affiliates was 31.3 km. Sudbury had the most affiliates, compared with other large northern centres.



Exhibit 1.4 Distribution of physicians in Ontario, 2001/02

Data source: Institute for Clinical Evaluative Sciences – ICES Physician Workforce Database

- Across the Province in 2001/02, 52% of all physicians were specialists. Specialists represented 55% of the physicians in urban areas, 51% in large northern centres and 16% of the physicians in rural areas (data not shown).
- Physicians overwhelmingly practice in urban centres. In 2001/02, 82% of GP/FPs and 93% of specialists
 were located in urban areas, with the remainder in the rural base communities and the large northern centres.

Discussion

Using an Health Human Resource (HHR)-based definition of rural, this report identifies and profiles the communities in rural and Northern Ontario. There are nearly 100 rural communities with hospitals, and an even greater number of smaller, affiliated towns without hospitals. This represents a significant investment in health care infrastructure across the rural parts of the Province despite a succession of hospital amalgamations and closures between 1996/97 and 2001/02.⁹ Rural health care services are often a central feature of rural communities and rural economies.^{10,11} In seeking the next level of care, patients, particularly those in the North, have to travel significant distances.

While primary care reform efforts such as Family Health Networks and Family Health Teams have gained increased profile in urban settings in recent years, alternate remuneration models have been commonplace for many years in northern rural areas.

Consistent with previous studies, the proportion of the physician population located in rural areas is less than the proportion of the general population that is located in rural areas.

Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Introduction

There have been many efforts to improve physician recruitment and retention in rural and northern areas. This chapter chronologically documents many of the initiatives that occurred during the study period, grouping them into broad categories: alternative models of care; promotion of rural/northern medicine; financial incentives or disincentives; and, educational programs for future physicians. The policies and program initiatives listed are government-funded, but not necessarily government-run. Other efforts by hospitals, community organizations and physician groups are not reflected here.

List of Exhibits

Exhibit 2.1 Government-funded policy initiatives to address rural and northern physician issues in Ontario, by program type, 1969–2005

Exhibit–Findings

Exhibit 2.1 Government-funded policy initiatives to address rural and northern physician issues in Ontario, by program type, 1969-2005

Title	Start Date	Program Description	Program Type
Northwestern Ontario Program (NOMP)	1975	Program created to coordinate physician training and research programs in Northwestern Ontario.	Education
Rural Ontario Medical Program (ROMP)	1988 1995 – Received MOHLTC support	Responsible for coordinating a group of training, education and research programs in/for rural Southern Ontario.	Education
Northeastern Ontario Family Medicine Network	tario 1991 – Steering Committee announced 1993 – Active Family medicine training program based in Sudbury and affiliated with the University of Ottawa, now administered through NOMEC (see below).		Education
Northwestern Ontario Family Medicine (NOFM)	1991	Family medicine training program based in Thunder Bay, affiliated with McMaster University and administered through NOMP.	Education
University of Western Ontario Rural and Regional Family Medicine Program	1991 – Start 2000 – Distinct Program in Canadian Residency Matching Service (CaRMS)	Family medicine training program based in southwestern communities and affiliated with the University of Western Ontario.	Education
Northeastern Ontario Medical Education Corporation (NOMEC)	1995	Responsible for coordinating training, education and research programs in Northeastern Ontario.	Education
Re-entry Program	1996	Opportunities for established physicians to return to school for additional or different training. A return- of-service obligation to northern, rural and underserviced communities is required upon completion of training. In 1996, there were 25 positions, and in 2001, there were 40 positions.	Education
Southwestern Ontario Rural Regional Medicine (SWORRM)	Ontario I 1996 To develop and run family and specialty rural training, rural education research and recruitment/retention initiatives for Southwestern Ontario.		Education
Northern Academic Health Sciences Network	1996 – Developed 1999 – Funded	Project to coordinate educational efforts across northern Ontario.	Education
Increase in Undergraduate Training Positions	2000	Increased undergraduate medical enrolment, but not necessarily targeted to rural, northern or underserviced areas. In 2000, there were 40 such positions; in 2001, there were 73 positions; and, in 2002, there were 47 positions.	Education

Physician Services in Rural and Northern Ontario Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Title	Start Date	Program Description	Program Type
Eastern Regional Medical Education Program (ERMEP)	2000	Responsible for coordinating a group of training, education and research programs in/for rural Eastern Ontario.	Education
Rural and Northern Clerkship Program	2000	Opportunity for third- and fourth-year medical students to undertake clinical rotations in rural and northern Ontario. Covers the cost of travel and accommodation. Coordinated regionally through NOMP, NOMEC, ERMEP, ROMP and SWORRM.	Education
Northern Ontario School of Medicine	2001 – Announcement 2005 – First class	New medical school to be based in Sudbury and Thunder Bay. First class enrolled in 2005 with 55 students.	Education
Increase in Post-Graduate Training Positions	2002	Increased post-graduate enrolment: in 2002, there were 25 such positions; in 2003, there were 60 positions; and, in 2004, there were 25 positions.	Education
Advanced Skills Residency Training for Family Medicine	2002	25 post-graduate positions for family physicians to pursue specific additional skill sets.	Education
Northern Incentive Grants	1969	Grants eligible to general practitioners/ family physicians (GP/FPs) and psychiatrists establishing practice in designated northern underserviced areas. Applies to the first four years in practice.	Financial
Southern Incentive Grants	1971	Grants available to GP/FPs establishing practices in designated Southern Ontario underserviced areas that have been unsuccessful in recruitment efforts for at least one year following underserviced area designation.	Financial
Basic and Northern Medical Specialist Incentive Programs (NMSIP)	1979	Grants available to specialists establishing practices in designated Northern Ontario underserviced areas.	Financial
Service Retention Initiative (Formerly known as Specialist Retention Initiative)	1992	Allows physicians to earn income above the provincially contracted level without penalty. May be allocated on an individual physician/community basis or Province-wide in an area of sub- specialization. Traditionally, has been a privilege allocated on an annual basis.	Financial
Ontario Medical Association (OMA) Continuing Medical Education (CME) Program for Rural and Isolated Physicians	1994	Initially designed to cover the costs for rural physicians to attend CME courses. Also offers support for clinical traineeships, visiting speakers, computer training and research grants. Program expanded in 2001 to provide benefits to Northern Physician Retention Initiative- eligible physicians (see below for NPRI).	Financial

Physician Services in Rural and Northern Ontario Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Title	Start Date	Program Description	Program Type
Sessional Fee for Rural Emergency Departments (EDs)	1995	Hourly fee to reimburse physicians for on- call evening and weekend coverage in rural EDs as recommended in "Report of the Fact Finder on the Issue of Small/ Rural Hospital Emergency Department Physician Service" by Graham Scott. ²⁸	Financial
Community- Sponsored Contracts (CSC)	1996	Alternate funding plan for underserviced communities designated for one to two physicians.	Financial
Fee Discounts	1996 – Program no longer active	In their first three years of practice, physicians faced 30%, 25%, and 20% penalties, respectively, in billings if they practiced in areas designated as "overserviced". This applied to those in family practice, psychiatry, dermatology, neurology, ophthalmology, otolaryngology and pediatrics.	Financial
Globally Funded Group Practices (GFGP)	1997 – Program no longer active	Alternate funding plan for 29 underserviced communities designated for three to seven physicians.	Financial
Northern Group Funding Plans (NGFP)	1998	Replaced GFGP. Alternate funding for 22 underserviced communities designated for three to seven physicians with populations less than 10,000 and greater than 80km from nearest major centre.	Financial
Alternate Funding Agreements (AFA) for EDs	1999 – Phase-in began	 Phase 1 – 1999—Agreements signed with 27 rural hospitals with less than 35,000 ED visits per year. Phase 2 – 1999—Agreements signed with an additional 58 hospitals with less than 35,000 ED visits per year. Phase 3 – 2000—All remaining 143 hospitals joined program. 	Financial
Free Tuition Program	2000	Provides medical students and residents up to \$40,000 in exchange for working in underserviced communities for a period of three to four years.	Financial
Northern Physician Retention Initiative (NPRI)OMA-administered program an annual bonus lasting th to physicians who have be full-time in northern Ontario to four years and who meet oth including having active hos privileges. Also provides ful CME through the CME Pro- Rural and Isolated Physician		OMA-administered program providing an annual bonus lasting three years to physicians who have been working full-time in northern Ontario for at least four years and who meet other criteria, including having active hospital privileges. Also provides funding for CME through the CME Program for Rural and Isolated Physicians.	Financial
Physician Services in Rural and Northern Ontario Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Title	Start Date	Program Description	Program Type
Ontario International Medical Graduate (IMG) Qualification Program	1987	A one-year program aimed at giving IMGs the equivalent of a medical school clerkship. Upon completion, candidates are eligible to enter post-graduate residency training. In 1987, there were 24 positions; in 1999, 36 positions; and, in 2001, there were 50 such positions.	Licensure
Repatriation Program	1999	15 positions for Canadians from Canadian medical schools who did post-graduate training in the U.S. and need one to two years of additional education to qualify to work in Canada.	Licensure
Assessment Program for International Medical Graduates (IMGs)	2001	Open to IMGs in active practice within the last three years. Participants undergo a six-month assessment followed by possible licensure or additional one to two years of post- graduate training as needed. A return- of-service obligation to northern, rural and underserviced communities is required upon completion of training. In 2001, there were 35 such positions and in 2002, there were 40 positions.	Licensure
Increased IMG positions in the Canadian Residency Matching System (CaRMS)	2003	25 additional positions in CaRMS for IMGs to access full post-graduate training programs.	Licensure
"Fast Track" In-practice Assessment of IMGs	2003	Opportunity for 80 IMG physicians to receive rapid assessment and partial or full licensure to practice.	Licensure
Remote Nursing Stations	1969	23 nursing stations established in remote northern communities that are unable to support a physician.	Model of Care
Physician Outreach Program: GP/FP	1969	Funds the provision of regular visits by a physician to outlying nursing stations and medical clinics as well as telephone back-up for these locations.	Model of Care
Community Visit Program	1970	Funds health professionals to visit communities designated as underserviced for the purpose of considering relocating to that community. Must be licensed or within one year of licensure.	Model of Care
Respite Locum Program	1979	Administered by the Ministry of Health and Long-Term Care (MOHLTC) to provide GP/FP locum coverage in selected underserviced communities.	Model of Care

Physician Services in Rural and Northern Ontario Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Title	Start Date	Program Description	Program Type
Visiting Specialist Clinic Program	1982	Program aimed at sending specialists periodically, for one to three days at a time, to designated remote communities that cannot support a full-time specialist and are greater than 40 km from the nearest physician in that specialty.	Model of Care
Urgent Locum Program for Specialists	1982	Provides locum coverage for specialists in northern communities where the specialist complement is less than or equal to two, and where there are vacancies for which the community is actively recruiting to have filled.	Model of Care
Respite Locum Program for Specialists	1982	Program aimed at providing respite locum coverage for specialists in northern communities where there are at least three specialists and a full complement in that specialty.	Model of Care
OMA Locum Program	1994–98 – Replaced with New Program in 1998	Locum physicians were contracted to provide respite coverage for eligible physicians residing in rural and remote communities (eligibility criteria were similar to the CME support program above). OMA provided full support to the locum physicians and overhead reimbursement to the resident physicians.	Model of Care
NORTH Network	1995	Beginning of large-scale telemedicine initiative for rural and northern communities.	Model of Care
Medical Services Corporation (MSC)	1997 – Program no longer active	20 physicians hired by the MOHLTC to provide locum service to CSC physicians.	Model of Care
OMA Locum Program for GP/FP Fee-For- Service (FFS) Physicians	1998	Revised program to recruit and subsidize respite locum coverage for FFS GP/FP physicians in eligible communities. Expanded in 1999 to include CSC and NGFP physicians.	Model of Care; Financial
Ontario Psychiatric Outreach Program (OPOP)	1999	Coordinates psychiatric clinical service, education and support to underserviced communities. Currently serving only northern communities. All medical schools engaged in some outreach activities. (The University of Western Ontario was the first to develop a program in 1986.)	Model of Care
Nurse Practitioners	2000	97 new practice positions created in underserviced communities.	Model of Care

Physician Services in Rural and Northern Ontario

Chapter 2. Government-funded Policy Initiatives to Address Rural and Northern Physician Issues

Title	Start Date	Program Description	Program Type
Northern Ontario Virtual Library (NOVL)	2002	Provides northern health care professionals with virtual access to a selected suite of Ovid biomedical databases, full text journals and textbooks, and to MD Consult. Also offers traditional library services including document delivery, mediated literature searching, current awareness, reference and consultation.	Model of Care
OMA Central Registry	1976	Provides listings of physicians looking for work and available opportunities.	Promotion of Rural/Northern Medicine
Health Professionals Recruitment Tour	1978	Communities designated as underserviced by the MOHLTC participate in a one- week annual tour of the five academic centres where they can meet with health care professionals in training. Program now includes educational and practice management component.	Promotion of Rural/Northern Medicine
Community Development Officers (CDOs)	1995–2001	Regionally-based individuals who coordinate, facilitate, establish and maintain strategies to recruit and retain physicians to communities in their region of Ontario. Some CDOs are also involved in educational initiatives. In 1995, a CDO was established in the Northwest; in 1996, in the Northeast; in 1998, in the Southwest; in 2000, in the South Central; and in 2001, in the Southeast.	Promotion of Rural/Northern Medicine; Education
Professional Association of Internes and Residents of Ontario (PAIRO) Registry	1996	Online searchable database of communities (including community profiles, lifestyle information and job opportunities) that are currently recruiting physicians.	Promotion of Rural/Northern Medicine
OMA Physician Job Registry	1998	Internet-based list of vacancies in designated underserviced communities.	Promotion of Rural/Northern Medicine
PAIRO Resident Placement Program	2000	Career assistance program to help match graduating physicians with job opportunities in underserviced communities.	Promotion of Rural/Northern Medicine

See Appendix A for information regarding sources.

- Many of these programs receive provincial funding but are administered through third party bodies such as universities or medical organizations.
- In many cases, programs that started in one part of the Province have been expanded to other regions.
- Early policies focused on financial incentives and promotional efforts. In the mid-1990s, there was a growth in initiatives to encourage the practice of rural medicine by offering rural educational experiences. More

recently, there have been efforts to increase the supply of physicians through additional assessment and training of IMGs, and more medical school and post-graduate positions for Canadians.

- Most of these initiatives have been incentive-based, although there have also been some attempts to use disincentives such as fee discounts in urban settings.
- Other initiatives work less directly to create changes in physician numbers. These include technological initiatives that help address the geographic challenges of rural practice, such as the expanding telemedicine initiative known as the NORTH Network and the Northern Ontario Virtual Library (NOVL). Also, there are Province-wide initiatives that seek to improve access for patients in rural and urban centres, including the Cardiac Care Network, Cancer Care Ontario, Telehealth Ontario and Criti-Call.

Discussion

Exhibit 2.1 describes the long history of government initiatives related to physician recruitment and retention in northern and rural areas. For more than 30 years, there have been consistent attempts to develop systems to train, recruit and retain physicians in rural and northern Ontario. The number of programs has grown steadily, particularly in the last decade, and now represents millions of dollars in annual support.

The recent shift from focusing primarily on Ontario medical students to increasing the supply of physicians through additional assessment and training of International Medical Graduates (IMGs), and more medical school and post-graduate positions for Canadians, is in contrast to other policy efforts in the early 1990s to reduce the overall supply of physicians.¹²

Efforts focusing on rewarding long-term retention have been more limited. Only the Northern Physician Retention Initiative (NPRI) exclusively focuses on physicians with longer stays in a community.

Evaluation of these programs is important, but currently, illustrating direct causality between the initiation of a program and the recruitment or retention of a physician is difficult. The number of programs with the similar goal of increasing recruitment and retention in rural and northern areas makes it challenging to evaluate the impact of any given initiative. In some situations, similar programs have been implemented over many years in different parts of the Province. This may reflect initial pilot projects that were then replicated. The amount of overlap also raises the question as to whether a more integrated approach to policy planning would be helpful.

Chapter 3. Physician Supply

Introduction

This chapter reports on physician supply in Ontario by type of community. To facilitate comparisons between communities of different sizes, supply is reported as number of physicians per catchment population, with the latter being an estimate of the population served by the physicians. The catchment populations were estimated based on the number and residence of people seeking access to the local Emergency Department (ED). The ratio of physicians to ED catchment population is calculated for 1996/97 and 2001/02, allowing for assessment of changes over time. It should be noted, once again, that although the definition of rural in this report was based on a community having fewer than five sub-specialists, there was no limit to the number of core specialists, such as pediatricians, general surgeons, obstetricians or internists that a rural community could have. The specialist physician figures in this chapter include both core and sub-specialists.

List of Exhibits

- Exhibit 3.1 Physicians per 100,000 population, by physician type and geographic setting, in Ontario, 1996/97 and 2001/02
- **Exhibit 3.2** General practitioners/family physicians (GP/FPs) per 100,000 population in Ontario rural base communities, by District Health Council (DHC) area, 1996/97 and 2001/02
- **Exhibit 3.3** Specialists per 100,000 population in Ontario rural base communities, by District Health Council (DHC) area, 1996/97 and 2001/02
- Exhibit 3.4 Physicians per 100,000 population practising in large northern centres in Ontario, by physician type, 1996/97 and 2001/02

Exhibits–Findings



Exhibit 3.1 Physicians per 100,000 population, by physician type and geographic setting, in Ontario, 1996/97 and 2001/02

*GP/FPs=General practitioners and family physicians

Data sources: Institute for Clinical Evaluative Sciences - ICES Physician Database; Ministry of Health and Long-Term Care - Ontario Health Insurance Plan, Registered Persons Database; Statistics Canada - *Annual Demographic Statistics*, Catalogue no. 91-312-XMP

- The supply of GP/FPs per 100,000 population is highest in Ontario's urban centres and lowest in the southern rural areas of the Province.
- Between 1996/97 and 2001/02, GP/FP supply per 100,000 population increased in the rural communities in both northern and southern parts of the Province. By 2001/02, the supply ratio was only slightly lower in the northern communities than the southern urban centres.
- GP/FP supply in the northern rural base communities is higher than in the five large northern centres.
- Specialist supply in the large northern centres is about 30% lower than in the urban centres of the Province.
- Supply of specialists is stable but at a very low level in rural base communities.



Exhibit 3.2 General practitioners and family physicians (GP/FPs) per 100,000¹ population in Ontario rural base communities, by District Health Council (DHC) area, 1996/97 and 2001/02

¹ For GP/FPs, this is the median ratio for all base communities in the DHC area.

Data sources: Institute for Clinical Evaluative Sciences - ICES Physician Database; Ministry of Health and Long-Term Care - Ontario Health Insurance Plan, Registered Persons Database; Statistics Canada - *Annual Demographic Statistics*, Catalogue no. 91-312-XMP

- The median GP/FP to population ratio ranged from a low of 45 physicians per 100,000 in the rural communities of the Thames Valley DHC area to a high of 141 physicians per 100,000 in Northwestern Ontario.
- Three of the five DHC areas with the highest GP/FP to population ratios are in the North.
- Median GP/FP supply decreased in seven DHC areas, increased in six and remained stable in one.
- The DHC areas with the largest decreases between the two time periods are also those where the GP/FP supply was relatively low to begin with.



Exhibit 3.3 Specialists per 100,000¹ population in Ontario rural base communities, by District Health Council (DHC) area, 1996/97 and 2001/02

**Not reportable due to small cell size.

¹The overall ratio of all specialists in the area to the entire rural catchment population.

Data sources: Institute for Clinical Evaluative Sciences - ICES Physician Database; Ministry of Health and Long-Term Care - Ontario Health Insurance Plan, Registered Persons Database; Statistics Canada - *Annual Demographic Statistics*, Catalogue no. 91-312-XMP

- Supply of specialists in rural areas tends to be very low, compared with urban areas and northern referral centres (see Exhibit 3.1).
- Essex-Kent-Lambton DHC area had the highest specialist supply in 1996/97, but this dropped by 40% by 2001/02.
- Simcoe-York saw a 50% increase in rural specialists over the study period.
- Supply of rural specialists is very low in the rural base communities of Algoma-Cochrane-Manitoulin-Sudbury, likely because this DHC area contains three of the five large northern centres, where most of the specialists are located.



Exhibit 3.4 Physicians per 100,000 population practising in large northern centres in Ontario, by physician type, 1996/97 and 2001/02

*GP/FPs=General practitioners and family physicians

Data sources: Institute for Clinical Evaluative Sciences – ICES Physician Database; Ministry of Health and Long-Term Care - Ontario Health Insurance Plan, Registered Persons Database; Statistics Canada - *Annual Demographic Statistics*, Catalogue no. 91-312-XMP

- Between 1996/97 and 2001/02, the physician to population ratio decreased in all centres except North Bay for both GP/FPs and specialists.
- Timmins had the lowest specialist to population ratio for both time periods, while Sudbury had the highest.
- North Bay had the greatest amount of change among all centres.

Discussion

Between 1996/97 and 2001/02, the supply of general practitioners and family physicians (GP/FPs), as measured by the number of GP/FPs per 100,000 population, increased in both northern and southern rural areas, although the supply is much higher in the rural base communities of the North than the South. Figures for individual base communities for 2001/02 can be found in Appendix C. In urban centres, by contrast, GP/FP supply decreased. Both of these findings are consistent with other recently published reports.¹³ Part of the explanation for both the relatively high GP/FP supply in the North and the increase during the study period may be related to the recruitment and retention initiatives outlined in Chapter 2.

Although GP/FP supply in the rural North is just slightly lower than that of the urban centres, the situations are far from equivalent due to the nature of rural practice. GP/FPs in rural communities are known to offer a broader scope of practice than their urban counterparts,¹¹ a difference that seems to increase the farther a physician practises from an urban setting.¹⁴ Northern GP/FPs are more likely to work in the Emergency Department (ED), handle obstetrics, perform minor surgical procedures and care for patients in the hospital than those GP/FPs in other parts of the Province.^{11,13} They also function with fewer resources, less on-site back-up, greater on-call frequency, and their patients have less recourse to after-hours or walk-in clinics. Given these differences, a direct comparison of physician supply ratios is misleading and underestimates the need for primary care physicians in rural areas.

The southern rural base communities and the large northern centres have GP/FP supply levels 30% and 20% lower, respectively, than the northern rural communities. As has been suggested elsewhere,¹³ it may be helpful to determine which of the many programs and incentives designed to recruit and retain physicians in the North are the most successful and offer similar opportunities to rural communities of the South. However, such expansion must keep some form of gradation to recognize the chronic challenges of recruitment in the North relative to the rest of the Province. A completely level playing field would likely undo the gains made in the North. There may also be a need to develop programs specifically designed for the large northern centres, as these centres appear to be consistently disadvantaged in regards to physician supply compared to other urban centres.

It is of some concern that the most notable decreases in GP/FP supply at the District Health Council (DHC) area level during the two periods occurred in areas that had relatively low supply to begin with. It should be noted, however, that in the case of Grand River, the decrease in physician supply is not the result of a decrease in the number of physicians, but rather an increase in the catchment population of the rural hospitals in this area. This may relate to patients seeking care in rural hospital EDs as those in the larger centres become more crowded—the reason for this finding deserves further investigation.

In Chapter 1, it was reported that specialists overwhelmingly locate to urban centres. This finding is reinforced here in the extremely small supply of rural specialists. Even in the large northern centres, the supply of specialists is 35% lower than in the urban centres. The situation may be even worse than it appears, for three reasons. First, the specialist to population ratio may be even lower than reported because in the North many specialists see acutely ill patients from outside of their immediate community. These patients are often referred directly to the specialist rather than entering through the ED and therefore are not captured in the ED catchment population estimates. Second, these figures group all specialists together, but specialists are not interchangeable. There may be certain specialists in large northern centres must typically provide a greater range of services with less support from specialist colleagues.

More research needs to be done into the realities and consequences of the uneven distribution of specialists in the Province—whether this situation is resulting in barriers to access or whether the systems currently in place (e.g., grants for travel, telemedicine, etc.) adequately overcome the specialist distribution problem. Future research should examine the utilization and development of measures of workload, for example, the number of hours worked per week, and physicians' scope of practice, including the amount of time spent on non-clinical aspects of practice such as administration, education and teaching.

It might appear that the low supply of specialists in rural areas is a self-fulfilling prophecy, given that the definition of rural areas was based in part on the number of specialists working in the community. However, there was no limit to the number of core specialists and an additional four sub-specialists were permitted. Therefore, the strong discrepancies of distribution noted here are unlikely to be linked to the definitional process used in the study.

Chapter 4. Demographic Profile of the Physician Workforce

Introduction

The demographic characteristics of the rural and northern physician workforce are profiled in this chapter. Practice patterns are known to vary based on age and gender, therefore understanding demographic distributions can help to predict practice patterns. The variations seen here may help future workforce planning.

List of Exhibits

- **Exhibit 4.1** Demographic profile of Ontario physicians, by physician type and geographic setting, 2001/02
- **Exhibit 4.2** Demographic profile of Ontario rural general practitioners and family physicians (GP/FPs) by District Health Council area, 2001/02
- **Exhibit 4.3** Demographic profile of Ontario rural specialists, by District Health Council area, 2001/02
- **Exhibit 4.4** Demographic profile of Ontario general practitioners and family physicians (GP/FPs) practising in large northern centres, 2001/02
- **Exhibit 4.5** Demographic profile of Ontario specialists practising in large northern centres, 2001/02

Exhibits–Findings



Exhibit 4.1 Demographic profile of Ontario physicians, by physician type and geographic setting, 2001/02

*GP/FPs=General practitioners and family physicians

- Specialists in rural base communities tend to be in practice longer than both specialists and GP/FPs in any other setting.
- Almost two out of five rural specialists have been in practice for 30 years or more.
- Among GP/FPs, northern rural base communities had the most physicians that were new to practice, while urban centres had the most experienced.
- Urban centres have the highest proportion of physicians who are female, compared to rural base communities and large northern centres. This trend is true for both GP/FPs and specialists. However, among rural base communities, northern communities had a greater proportion of female physicians than southern communities.



Exhibit 4.2 Demographic profile of Ontario rural general practitioners and family physicians (GP/FPs), by District Health Council (DHC) area, 2001/02

- The Northwestern Ontario DHC area had the highest percentage of women in the GP/FP workforce. This proportion exceeded even that of women in urban areas (Exhibit 4.1).
- Two northern DHC areas (Northwestern Ontario and Algoma-Cochrane-Manitoulin-Sudbury) had the highest proportion of physicians new to practice in the Province.
- Essex-Kent-Lambton had the most physicians in practice 30 years or more and the lowest proportion of women.





**Not reportable due to small cell sizes.

- Across the Province, a relatively small proportion of rural specialists are recent graduates.
- The Niagara area had the rural specialist workforce with the highest proportion of those new to practice in the Province.
- Over 50% of rural specialists in the Thames Valley DHC area had been in practice more than 30 years.





- Among the five large northern centres, the GP/FP workforce in Thunder Bay and Timmins had the highest proportion of those new to practice and a slightly higher proportion of GP/FPs who were women.
- Sault Ste. Marie had a very low percentage of young GP/FPs, and the second highest percentage of older GP/FPs.
- Sudbury had the highest percentage of more experienced GP/FPs.



Exhibit 4.5 Demographic profile of Ontario specialists practising in large northern centres, 2001/02

Data source: Institute for Clinical Evaluative Sciences - ICES Physician Workforce Database

• Among the five large northern centres, Timmins had a higher proportion of more experienced specialists and a lower proportion of specialists who were women.

Discussion

Rural northern general practitioners and family physicians (GP/FPs) tended to be newer to practice than GP/FPs elsewhere. One possible reason may be that rural northern practice may be an attractive career option early in a physician's career, as many of the financial incentives noted in Chapter 2 are applicable only during the first few years that a physician is practising in an underserviced area. Furthermore, young physicians may be settling in the north after training as part of a return-of-service obligation for taking a student loan or tuition grant. As a result, these policies may be more successful at initial recruitment than long-term retention.

Previous literature has suggested that women are less likely to practice in rural areas.^{15,16} This study generally confirms this finding. However, recently the northern rural communities appear to be having better success in attracting female GP/FPs, and Northwestern Ontario has an exceptionally high percentage of female GP/FPs. One possible explanation is that recent workforce policies implemented in the North may be particularly attractive to women. Alternate funding plans may allow physicians to create a group practice with a more sustainable workload while offering competitive remuneration. In addition, greater workload flexibility may be particularly valued by female physicians during their child-bearing years. Some plans also offer maternity benefits. It may also simply be a result of the fact that an increasing proportion of medical school graduates are women and so any recruitment policy that is attractive to new graduates in general will naturally attract more women.¹⁷

More women in the physician workforce may be beneficial for several reasons. Some studies note that patients report higher satisfaction with care offered by female physicians.^{18,19} For patients who express a preference for female physicians, having more females in the physician workforce represents greater choice. Female physicians are noted to be better communicators,²⁰ more focused on preventive care,²¹ and have higher quality of care assessments.²² However, previous reports suggest that female GP/FPs tend to work fewer hours and are less likely to work in non-office settings such as emergency departments and inpatient hospital care.^{11,23} Given these trends, the stronger presence of women in northern areas may have implications for service delivery and planners may need to ensure that sufficient personnel supply exists to provide care in these non-office settings.

Rural specialists were also more likely to have been practising 30 years or more, raising concern that these physicians may be approaching retirement age. Policymakers and planners should consider how best to replenish the supply of these physicians, if they wish to continue the current model of care where certain rural communities benefit from local specialist back-up.

Chapter 5. Physician Turnover

Introduction

This chapter introduces the concept of turnover as a measure of the stability of the physician workforce over time. It reflects the movement of physicians into and out of a community during a defined time. (Appendix A provides a detailed explanation of the methodology.) The measure of turnover period is an index, where zero indicates no change and 100 indicates a complete changeover of all physicians in the community. One-way change, where there are only exits from or entries into the community, results in a lower turnover index than replacement of physicians within the community. Turnover is assessed here over two separate time periods, 1993–1996 and 1997–2001.

List of Exhibits

- Exhibit 5.1 Turnover of physicians in Ontario communities, by physician type and geographic setting, 1993–1996 and 1997–2001
- **Exhibit 5.2** Turnover of general practitioners and family physicians (GP/FPs) in Ontario rural base communities, by District Health Council (DHC) area, 1993–1996 and 1997–2001
- Exhibit 5.3 Turnover of specialists in Ontario rural base communities, by District Health Council (DHC) area, 1993–1996 and 1997–2001
- Exhibit 5.4 Turnover of physicians in large northern centres in Ontario, by physician type, 1993–1996 and 1997–2001

Exhibits–Findings



Exhibit 5.1 Turnover of physicians in Ontario communities, by physician type and geographic setting, 1993–1996 and 1997–2001

*GP/FPs=General practitioners and family physicians

- Turnover of physicians was highest in rural areas, and higher in rural base communities in the North than in the South.
- Physician turnover tends to be lowest in urban centres.
- Turnover in large northern centres is similar to southern rural base communities.
- With the exception of GP/FPs in southern rural base communities, turnover was lower in the second time period compared with the first.





- Most DHC areas showed some increase in the turnover of GP/FPs in the second time period compared to the first. A notable exception to this is Champlain, where turnover fell from nine to five.
- Northwestern Ontario and Algoma-Cochrane-Manitoulin-Sudbury DHC areas had the highest levels of average GP/FP turnover across both time periods.
- Turnover more than doubled in the Halton-Peel and Waterloo Region-Wellington-Dufferin DHC areas from the first to the second time period.



Exhibit 5.3 Turnover of specialists in Ontario rural base communities, by District Health Council (DHC) area, 1993–1996 and 1997–2001

- Turnover was higher for specialists than for general practitioners and family physicians (GP/FPs) (Exhibit 5.1) in many DHC areas.
- Southeastern Ontario DHC area had the highest specialist turnover in 1993-96, but this dropped by almost 50% in the second time period.
- Waterloo Region-Wellington-Dufferin had a relatively low specialist turnover in 1993-1996, but it quadrupled in the second time period.
- Algoma-Cochrane-Manitoulin-Sudbury, Durham-Haliburton-Kawartha-Pine Ridge and Simcoe-York DHC areas also had large increases in the second time period.



Exhibit 5.4 Turnover of physicians in large northern centres in Ontario, by physician type, 1993– 1996 and 1997–2001

*GP/FPs=General practitioners and family physicians

- Thunder Bay had the highest level of turnover of GP/FPs in both time periods.
- GP/FP turnover increased in North Bay, decreased in three other centres and remained unchanged in Thunder Bay.
- With the exception of Timmins, there was little difference in the turnover of specialists in the two time periods.
- The specialist workforce in Timmins, which had the highest turnover in 1993-96, significantly stabilized in the second time period.

Discussion

Traditional assessments of physician supply numbers do not reflect whether the physicians counted in a community are the same individuals. With the turnover index, we can describe movement in the workforce over time. A high turnover index is generally indicative of significant movement both into and out of a community.

There are several reasons why a stable workforce is advantageous. Continuity of care is likely preferred by patients and is beneficial to their care. The core principles of Canadian family medicine articulate the need to be "a defined resource to a community" and provide continuity of care.²⁴ Also, given the small numbers and wider scope of rural practice, physicians need to work closely as a team. A stable workforce would likely facilitate this co-operation. And finally, there are significant costs to replacing physicians who leave, both in terms of recruiting for replacement physicians and ensuring the ongoing provision of services in the interim. Many northern and rural hospitals currently spend significant dollars on recruitment efforts and the provision of interim physician services.

In both time periods, rural communities showed almost twice the turnover levels of their urban counterparts. The reasons for this are likely complex and include both personal and professional issues. Possible personal issues include limited employment or schooling opportunities for spouse and children, and an absence of certain religious or ethnic peer groups in rural areas. Professional barriers to retention may be isolation from colleagues, high workload due to the limited number of other physicians, and lack of access to back-up and other resources. An additional factor could be that many recent government and community initiatives have focused on recruiting using upfront financial rewards, or disincentive measures such as financial penalties for new graduates starting to practice in urban areas, both of which have a relatively short-term impact and do little to encourage long-term stability. As noted in Chapter 2, relatively few policies have extended their influence beyond the first four years of practice or emphasized rewarding long-term retention. Most District Health Council (DHC) areas showed higher rates of turnover during the more recent time period, suggesting increasing instability in rural areas. This may be driven by increasing shortages in urban areas or possibly the influence of the short-term nature of incentive strategies.

Appendix D provides the level of turnover at the individual rural community level for general practitioners and family physicians (GP/FPs). There is large variation within a given DHC area. This suggests that local factors may be influencing workforce stability even among communities with similar physician profiles and geographic settings.

Rates of turnover can be a helpful Health Human Resources (HHR) planning and modeling measure. Although the scale ranges from 0 to 100, most of the communities in Ontario had scores of less than 30. There are no physician workforce benchmarks or norms at this time to help interpret the absolute significance of a given number, however, policymakers may find the turnover index a useful evaluation tool to assess the relative impact of HHR strategies on local retention.

Chapter 6. Location of Medical Training

Introduction

This chapter analyzes where Ontario's practising physicians received their medical school training. The locations include one of the five existing schools in Ontario, Canadian medical schools outside of the Province or schools outside of the country. Patterns of distribution will help highlight the roles played by these different training locations.

List of Exhibits

- **Exhibit 6.1** Training location of Ontario physicians practising in 2001/02, by physician type and geographic setting
- **Exhibit 6.2** Training location of Ontario general practitioners and family physicians (GP/FPs) practising in rural base communities in 2001/02, by District Health Council (DHC) area
- **Exhibit 6.3** Training location of Ontario specialists practising in rural base communities in 2001/02, by District Health Council (DHC) area
- **Exhibit 6.4** Training location of Ontario physicians practising in large northern centres in 2001/02, by physician type

Exhibits–Findings



Exhibit 6.1 Training location of Ontario physicians practising in 2001/02, by physician type and geographic setting

*GP/FPs=General practitioners and family physicians

- In all categories, the University of Toronto (U of T) was the most frequent medical school of graduation among physicians who graduated from an Ontario school. The proportion of physicians who were U of T graduates was relatively low, however, among rural and northern GP/FPs, rural specialists and specialists in large northern centres. The proportion of U of T graduates was highest among GP/FPs in urban centres.
- Rural northern communities had a relatively high proportion of physicians who were graduates of medical schools located within Canada, but outside Ontario.
- Among specialists, IMGs were more common in rural communities and large northern centres compared with urban centres. Among GP/FPs, however, the opposite was true: IMGs were more common in urban centres compared with rural communities and large northern centres.



Exhibit 6.2 Training location of Ontario general practitioners and family physicians (GP/FPs) practising in rural base communities in 2001/02, by District Health Council (DHC) area

- Rural GP/FPs tend to locate close to where they graduated from medical school:
 - The Thames Valley DHC area is home to the University of Western Ontario (UWO) and had the highest percentage of physicians from that university. Nearby Grey-Bruce-Huron-Perth, Grand River and Essex-Kent-Lambton DHC areas also had relatively high proportions of physician trained at UWO.

- Southeastern Ontario, home to Queen's University, similarly had the highest physician percentage from that institution.
- Champlain DHC area includes Ottawa and had the highest physician percentage from the University of Ottawa.
- Halton-Peel, Simcoe-York and Durham-Haliburton-Kawartha-Pine Ridge had the highest physician percentage from the University of Toronto.
- Niagara had the highest proportion of physicians from neighbouring McMaster University.
- The two most remote northern DHC areas, Northwestern Ontario and Algoma-Cochrane-Manitoulin-Sudbury, relied most heavily on Canadian medical graduates from outside of Ontario. The latter DHC area also had a relatively high proportion of University of Ottawa physician graduates, as Sudbury is the home of the Northeastern Ontario Family Medicine program, affiliated with that university. Northwestern Ontario is close to the Manitoba border and the closest medical school would be the University of Manitoba, which explains the high proportion of physicians who trained outside of Ontario.
- Essex-Kent-Lambton stood out as the DHC area with the highest proportion of International Medical Graduates (IMGs) in the Province.



Exhibit 6.3 Training location of Ontario specialists practising in rural base communities in 2001/02, by District Health Council (DHC) area

- Thames Valley and Algoma-Cochrane-Manitoulin-Sudbury DHC areas had the highest proportion of rural specialists who were IMGs.
- Similar to the situation with rural general practitioners and family physicians (GP/FPs), in the two northernmost DHC areas (Northwestern Ontario and Algoma-Cochrane-Manitoulin-Sudbury), a relatively large proportion of rural specialists graduated from medical schools outside of Ontario but within Canada. Many of these likely come via the University of Manitoba.
- Unlike the situation with rural GP/FPs, there was no strong relationship between medical school of graduation and ultimate practice location for rural specialists. For example, in Champlain, the most common school was Queen's University, not the University of Ottawa, while in the Southeastern Ontario DHC area the reverse was true. In Thames Valley, only 11% of rural specialists were trained at the University of Western Ontario.



Exhibit 6.4 Training location of Ontario physicians practising in large northern centres in 2001/02, by physician type

*GP/FPs=General practitioners and family physicians

- Among the five large northern centres, Timmins had the highest proportion of specialists and GP/FPs who were IMGs.
- Except for Timmins specialists, the University of Toronto was the single most common medical school of graduation among physicians in large northern centres.
- Medical schools outside of Ontario but within Canada were an important source of GP/FPs and specialists for Sault Ste. Marie and Thunder Bay, and specialists for North Bay.
- More than 50% of specialists practising in Ontario come from outside of the Province.

Discussion

Previous studies on recruitment and retention have shown that location of training is a good predictor of ultimate practice location. This study found this relationship to be very robust in the case of rural general practitioners and family physicians (GP/FPs), who were more likely to have graduated from the medical school closest to their current practice location. This suggests that the opening of the Northern Ontario School of Medicine, with campuses in Sudbury and Thunder Bay and a decentralized teaching campus of the University of Western Ontario in Windsor, should result in an increase in GP/FP supply in rural areas in the North and Southwest areas of the Province.

In the case of rural specialists, however, medical school location and ultimate practice location were not closely related. This may be because specialists undergo residency training after medical school and develop many professional linkages during that period. It is likely that the location of residency training is more closely linked to practice location. Future research should examine this hypothesis within Ontario. These results suggest that the creation of the Northern Ontario School of Medicine alone may not have a large impact on northern specialist supply; other factors, such as creating more specialist training opportunities in the North, may also be needed. Such efforts are currently underway for several specialities (e.g., psychiatry and general surgery) and an evaluation of their impact on local retention will be important.

Among current Ontario medical schools, the University of Toronto (U of T) has played a very important role as a training centre for rural family physicians and specialists. However, this trend is likely a reflection of the large medical school class size. Until 1991, U of T had at least twice the number of graduating students as any other individual Ontario medical school. While the proportion of rural physicians who trained at U of T may decline with the advent of the Northern Ontario School of Medicine, it may still play an important role in training rural physicians in those DHC areas that are relatively close to Toronto.

For many parts of the Province, particularly the Northwest, Canadian medical schools outside of Ontario are a critical source of family physicians and specialists. Developments that could limit the inflow of physicians into the Province, such as recruitment campaigns in other provinces to keep their own graduates, could have a disproportionately strong impact on such areas. Open discussion of these findings may foster better interaction between provinces and support the pan-Canadian Health Human Resources (HHR) planning efforts currently underway.^{25,26}

International Medical Graduates (IMGs) are an important component of the northern and rural specialist workforce. Recent efforts to increase the role of IMGs may be particularly helpful to rural areas, albeit perhaps more for specialist care than primary care. Further research to monitor IMG distribution as they enter the health care system will help to ensure their most effective integration.

Chapter 7. Policy Implications and Next Steps

Introduction

Rural and northern communities are a unique and vital part of Ontario. The physicians who work in these communities are an important resource in maintaining the health and well being of these populations. Ensuring that there is an adequate number of appropriately trained physicians to work in these areas is a chronic problem.

This report aims to improve our understanding of rural communities and the physicians who work in them. Using new definitions and new methodological approaches, this report offers a portrait of the heterogeneity of that part of the physician workforce committed to meeting the health care needs of Ontarians living in the hundreds of rural and northern communities across the Province.

Policy Implications

1. Wide variation across regions

This study suggests significant variation among rural communities at both the individual community (see Appendix C) and District Health Council (DHC) area levels, bringing into question traditional policy approaches that use coarse and large-scale definitions such as North vs. South or Northwest vs. Northeast. The analysis by DHC illustrates disparate patterns of rurality as well as physician type, number and demographics. The three northern DHC areas showed similar trends and challenges. Several of the communities in the southern DHC areas show increasing turnover, decreasing physician to population ratios and an aging workforce. This heterogeneity should be acknowledged in the development of policies designed to assist with the recruitment and retention of physicians. Given the number and diversity of rural communities, different policies may be required, even if similar trends are seen.

2. Location of training is important

This study confirms that medical school location is strongly related to practice location, albeit for rural general practitioners and family physicians (GP/FPs,) but not for rural specialists. This finding suggests that the recent policy decisions to establish the Northern Ontario School of Medicine and a Windsor campus of the University of Western Ontario may help to improve the supply of rural GP/FPs in those regions of the Province.

3. Uniqueness of the large northern centres

The five large northern centres play an important role in northern health care delivery. They represent the vast majority of the northern specialist physician population. These communities have profiles (demographic, turnover levels, physician to population ratios) that are typically different from both urban and rural communities. While not eligible for many of the targeted rural programs, issues such as their geographic location and broader clinical scope can lead to problems with physician recruitment and retention. Programs that specifically address these five centres, with enough flexibility to reflect the differences among them, may be helpful.

4. International Medical Graduates (IMGs) are an important source of specialists in rural areas If policymakers wish to increase rural specialist supply, then one important source could be IMGs. Evidence from this report suggests that, in the past, rural communities have had some success in attracting IMGs.

5. IMGs are less important as a source for rural GP/FP supply

If policymakers want to increase rural GP/FP supply, they may wish to consider other means, such as more domestic training of rural physicians. Alternatively, policymakers could make changes to tailor existing IMG entry programs so that they would encourage bringing IMGs into rural areas.

6. Rural specialists are diminishing in numbers

The number of rural specialists is relatively small and declining. Furthermore, rural specialists tend to be older and are likely approaching retirement age. If current trends continue, then the model of care whereby some rural physicians have at least a small degree of immediate specialist back-up may gradually disappear. Policymakers have two choices: either allow this model to diminish over time, or actively promote it. If the latter is chosen, then policymakers may either aim to bring in more IMGs to rural areas as noted above, or develop other policies such as targeted rural specialist training.

7. Northern Ontario is better at the recruitment of young physicians than it is at achieving long-term retention

The North has a predominantly young workforce and a high turnover rate. Practising in the North appears to be a more common career choice early in a physician's career, and this may be related to the fact that financial incentives are discontinued, or return-of-service obligations are completed, after the first few years of service. Other factors such as lack of educational opportunities for older children or spousal employment opportunities may pull some physicians south over time. Policymakers may consider continuing with the status quo, noting that there may be some advantages for northern patients to have access to a workforce with the most recent, up-to-date training. Alternatively, frequent turnover may lead to problems with continuity of care and the advantages of recent training must be weighed against fewer years of experience. If policymakers want to improve retention, then they may consider lengthening the timeframe of financial incentives, more aggressive recruiting of local candidates into medical training, more northern education, or the development and implementation of policies aimed at dealing with spousal or family issues related to living in the North.

8. New tools for Health Human Resources (HHR) research Numerous provincial and national reports have called for better data collection about the health professional workforce. This report offers researchers some new approaches for utilization of this data including an HHR-based definition of "rural", a measure of workforce stability called the "turnover index", and population catchment definition by utilization of local Emergency Department (ED)

Next Steps

services.

- 1. Future HHR research should focus on using measures of full-time equivalency and looking at scope of practice. The ability to assess HHR with these tools is increasing and studies to date suggest significant differences between rural and urban physicians.
- 2. This report has focused on physician services. Many rural communities also face challenges with achieving and maintaining an adequate number of nurses, therapists, laboratory technicians and radiology technicians. Future study of these groups could be informed by the methods used for the study of physicians but would likely require improved data collection about other registered health care providers such as nurses, nurse practitioners and health therapists. Such efforts would also help to inform policy efforts focused on creating interdisciplinary care teams.
- 3. This research was conducted with administrative data. Future efforts to refine the use of such data may allow an efficient means to study the impact of given recruitment and retention policies and strategies. This information would provide guidance to policymakers about the best use of their limited resources. The challenge will be to allow for and to control the multiple factors at play, and the limitations of secondary analysis.
- 4. Future rural HHR policies should try to respond to the significant differences in rurality across the Province.
- The data provided here should be updated routinely using a similar methodology and level of detail to identify communities and regions at risk. The use of DHC areas in this report may be replaced by the geographically-designated Local Health Integration Networks (LHINs).²⁷

Appendices—Appendix A. How the Research was Done

Data sources

Information regarding physician numbers, location and specialty practice are derived from the Institute for Clinical Evaluative Sciences (ICES) Physician Database (IPDB), which comprises information from the Ontario Health Insurance Plan (OHIP), Corporate Provider Database (CPDB), the Ontario Physician Human Resource Data Centre (OPHRDC) database, and the OHIP database of physician billings. The CPDB contains information on physician demographics, specialty training and practice location. The data in the CPDB is validated against the OPHRDC database, which verifies physician specialty and practice location information through periodic telephone interviews with physicians.

The OHIP database records individual patient visits to a physician and is compiled when physicians submit their activities to the government for reimbursement. The Registered Persons Database (RPDB) contains information about the age, gender and postal code for each individual in Ontario with valid health insurance coverage.

The National Ambulatory Care Reporting System (NACRS) database captures information about a number of ambulatory care settings including Emergency Departments (ED). It contains basic information about ED visits, the patient and the reason for the ED visit. It was created in 2000 and was widely used in Ontario by 2001.

The information in Exhibit 1.2 about the main industry in each community was drawn from physician leaders, the Professional Association of Internes and Residents of Ontario (PAIRO) Resident Placement Program Officer and the regional Community Development Officers (CDOs). Information was also collected from official community websites and provincial government references.

The catalogue of initiatives in Exhibit 2.1 was compiled through searches of medical and non-medical reference databases, and review of relevant websites. Appropriate stakeholders and experts reviewed the results for accuracy and completeness.

Analytic methods

Defining rural and urban communities

As mentioned in the Overview chapter, this report takes a unique approach to defining rural and urban communities that is based on the local physician workforce and the presence of supporting infrastructure, rather than population density. "Rural base community" was defined as any census subdivision (CSD) that contained a hospital but had fewer than five sub-specialists resident in the community. CSDs with resident physicians but no hospital were designated "affiliate communities" and their physicians were assigned to the nearest rural base community. CSDs with a hospital and five or more sub-specialists were classified as "urban centres", with the exception of North Bay, Sault Ste. Marie, Sudbury, Thunder Bay and Timmins, which were designated "large northern centres".

One of the challenges of this approach is that as physician numbers change, a community may gain or lose its rural designation. In comparing 1996/97 with 2001/02, a few communities changed their designation from rural to urban or vice versa. For consistency, a community was categorized according to its 2001/02 designation:

Community	1996 Designation	2001 Designation
Hawkesbury	Rural	Urban
Lindsay	Rural	Urban
Grimsby	Urban	Rural
Bracebridge	Urban	Rural
Trenton	Rural	Urban

Determination of physicians, physician location and distances

For inclusion in this report, physicians had to meet the following criteria: be identified as active in the IPDB; have billed OHIP at least once a year; and, have an address in Ontario. The IPDB was used to identify practice location and specialty for each year. There were a total of 20,671 physicians included in this database in 2001.

Physicians were assigned to a community based on the postal code of their practice location as provided in the IPDB. If there was no acute care hospital in the community, then physicians were linked to the nearest community with an acute care hospital by an "as the crow flies" distance. This distance is noted as "distance from affiliate to rural base community" in Exhibits 1.1 and 1.3.

Determination of the next level of care for a rural community is also based on distance calculated "as the crow flies". However, the distances presented in Exhibits 1.1 and 1.3 between rural base communities and the next level of care are based on driving distance (unless otherwise noted). Driving distance was determined through the use of the Internet-based program Mapquest® (<u>www.mapquest.com</u>). The Mapquest® calculation used the postal codes of the hospital in the rural base community and the hospital at the next level of care.

Actual location of the next level of care can be governed by a variety of factors (e.g., physician preference, hospital partnerships, clinical problem and the resources available in the referral centre), and hospitals may not always use the hospital that is geographically closest for referrals. Furthermore, this study assumed that referrals would stay within the Province. However, communities on the border of other provinces or the United States may refer to those regions. The use of geographic proximity likely leads to an underestimation of the role of academic health science centres as a referral centre for rural communities.

Calculation of physician turnover

Each year, communities were studied to see if a particular physician had stayed or left the community and whether new physicians had joined. Modifying an approach used in the business community, the following formula was used:

Turnover =
$$\frac{\left| (G+L) \right| / 2}{N} * 100$$

G = Number of new physicians gained by the community (i.e., were in practice in the year of interest but were not in practice in the preceding year).

L = Number of physicians lost by the community (i.e., were not in practice in the year of interest but were in practice in the preceding year).

N = Number of physicians in practice in the community in the year of interest.

Calculation of catchment populations

All ED visits were identified from the OHIP database for the year 1996/97. These visits were linked to a specific hospital through the institution number assigned by the Ministry of Health and Long-Term Care (MOHLTC). In communities with multiple hospitals, the multiple hospitals were treated as a single institution for the community. Patients' home postal codes were determined through the RPDB and linked to a 1996 census enumeration area (EA). The EA is the smallest geographic unit defined by the 1996 census.

Based on the number of visits from each EA, a percentage (or the whole) of the EA was attributed to a particular hospital ED. This percentage was multiplied by the population for that EA as determined by the 1996 census. Summing these results for each EA yielded a total catchment population for a given ED.
The population was then adjusted for age and sex based on their health care utilization rate. This yields a population figure that more accurately reflects potential demand for health services.¹³

This process was repeated for the year 2001/02. For 2001/02, the NACRS database was used to determine ED visits and patient home address because the proliferation of alternate funding programs for EDs limited the accuracy of OHIP billing information. The 2001 census eliminated the EA geographic unit and replaced it with the Dissemination Area (DA) unit. The DAs are smaller than the EAs and do not correlate with the same geographic areas. This made comparison of the two time periods difficult. To address this problem, the 1996 EA census population was used again.

In some cases it was not possible to calculate catchment populations for a rural base community for both time periods due to either closure of an ED or a change in billing practices. In these cases, the rural base communities were re-designated affiliates and they and their affiliates were added to the next nearest community. The following changes had to be made this way:

- Richard's Landing (St. Joseph CSD) and Thessalon—The hospitals were amalgamated with Sault Ste. Marie and all ED visits are recorded together in NACRS. These two communities and Bruce Mines became affiliates of Sault Ste. Marie.
- Port Hope—ED closed. Port Hope, Hope and Millbrook became affiliates of Cobourg.
- Whitby—ED closed. It was apportioned between Ajax and Oshawa (both urban centres).
- Niagara-on-the-Lake—ED closed. It was designated an affiliate of St. Catharines.
- Burk's Falls—ED visits no longer recorded separately. Burk's Falls, Sundridge and South River designated as affiliates of Huntsville.
- Penetanguishene—ED closed. Re-designated an affiliate of Collingwood.
- Shelburne—ED closed. Shelburne, Dundalk and Osprey re-designated as affiliates of Orangeville.

Timeframes

Several different timeframes are used in this study. OHIP billing data is collected and analyzed by fiscal year, which runs from April 1 of any given year to March 31 of the following year. Physician data is collected by calendar year. Thus, a physician's location of practice in 1997 would be as of December 31, 1997. Census data, which is as of July 1 in the year of the census, was used to calculate the physician to population ratios. In the exhibit titles, the format "2001/02" indicates fiscal year data, while "2001" indicates calendar year data.

Limitations

There are several limitations to the research for this report that should be noted:

In calculating the catchment area, 2% of the ED visit billings did not have institution numbers and could not be included in the analysis. These visits likely occurred in large urban centres that have only alternate funding plans as a payment mechanism. The location of the patients in determining the catchment area was drawn from the RPDB. This database relies on individuals to update their main address of residence as indicated on their provincial health card. However, this does not always occur in a timely manner, or at all, which could misallocate an individual's location of current residence.

The calculation of the catchment area also used different databases for the two time periods. OHIP data was used for 1996/97 and NACRS was used to determine the 2001/02 ED visits in each hospital. There may be differences in the respective strengths and weaknesses of each. Finally, because of changes in the organization of the 1996 and 2001 census, it was not possible to adjust the data for changes in

population size and location. Given the population growth in urban areas, the data likely overestimates the physician per 100,000 population rate in these regions.

Total catchment populations are less than the provincial population. Not all EAs had ED visits, but only the EAs with ED visits could be proportionally assigned to hospitals. The rest of the EAs could not be assigned, so these EAs account for the missing population totals.

There are physicians working in relatively sparsely populated suburbs whose closest ED is in an urban centre. These physicians will not be identified as rural physicians although their practice may reflect a more rural setting.

In compiling the catalogue of initiatives for Exhibit 2, some programs may be have been missed given the dynamic and broad nature of the topic. With limited exceptions, programs not specifically intended for northern and rural communities or for physicians have not been included.

The report focuses on describing the northern and rural physician workforce over a ten-year time period, and particularly for 2001/02. It does not try to define what the proper number of physicians should be. Similarly, it does not try to designate whether a community has a "shortage" or if it is "underserviced". This would require a different set of definitions and methodologies and would likely include communities and populations not reflected in this work. Another limit of this report, and an area for future study, is the role of other health care professionals. Such a study would require improved data collection about other registered health care providers such as nurses, nurse practitioners and allied health professionals.

This report gives a detailed analysis about the number and nature of rural and northern physicians and the policy context in which they work. The next level of analysis would be to understand what type of services these rural and northern physicians are providing to their populations and how this may differ from their urban peers. Differences in scope of practice among practice settings have been studied on a national level¹¹, and from the provincial perspective using larger geographic aggregations.¹³ A similar analysis using the geographic definitions in this report would be a useful future endeavour.

Privacy and confidentiality

When presenting data at the community level, the confidentiality of individuals must be assured. Therefore, the main unit of analysis was the rural base community aggregated with any affiliate communities. This allows for larger cell sizes and protection of individual physician information. Results with cell sizes of less than six are not reported.

Given the small number of specialists working in rural areas, information about these physicians is only provided in certain analyses and only at the District Health Council (DHC) area level and for the larger northern centres. Finally, physician demographic information (e.g., gender, location of training, years in practice, etc.) is only included when the data is available through public sources, such as published medical directories.

Appendix B. Glossary of Key Terms

The following is a high-level overview of key terms and approaches used to present information in this report. Detailed explanations of the sources of data and research methods are provided in Appendix A.

Descriptions of physicians

General Practitioners and Family Physicians (GP/FPs) include general practitioners, family physicians licensed by the College of Family Physicians of Canada (CFPC) and family physicians with formal certification by the CFPC in Emergency Medicine.

Core specialists are defined as specialists who help manage a broad range of clinical conditions, and who may often be practising in smaller communities and providing back-up to family physicians. They include physicians trained in general surgery, obstetrics & gynecology, internal medicine, radiology, pediatrics, psychiatry and family physicians practising at least some anesthesia.

Sub-specialists are all physicians not included in the definition of core specialists or GP/FPs. Compared to core specialists, they manage a narrower range of clinical conditions. Examples include cardiology or other sub-specialties of internal medicine, and orthopedic surgery.

Older physicians are physicians in practice more than 30 years from the year of graduation from postgraduate training. One year of post-graduate training after medical school graduation was allocated for those identified as general practitioners; two years for family physicians; three years for family physicians with emergency medicine or anesthesia training; and, five years for all other physicians.

Young physicians are physicians with five years or less of experience practising after post-graduate training. The length of post-graduate training was categorized in a manner consistent with that for defining an older physician.

International Medical Graduates (IMGs) are physicians who completed their medical school training outside of Canada.

Descriptions of geography

Rural base community is a census subdivision (CSD) that had an acute care hospital in 2001/02, and less than five sub-specialists located in the community and any affiliated communities. Almost all of these hospitals provided emergency department services. This is the main unit of analysis in the report.

Affiliate community is a CSD with physicians in practice but no acute care hospitals. The physicians in these communities are counted as part of the nearest community with an acute care hospital. The link between an affiliate community and its rural base community, large northern community or urban centre is outlined in Exhibits 1.1, 1.3 or Appendix A, respectively.

Urban centre is defined as a community that has five or more sub-specialists. Note that all of Ontario's Census Metropolitan Areas, as defined by Statistics Canada, are included in this definition.

Northern or the North refers to the three District Health Council areas of Northwestern Ontario, Algoma-Cochrane-Manitoulin-Sudbury, and Northern Shores.

Large northern centres are Timmins, Thunder Bay, North Bay, Sudbury and Sault Ste. Marie.

Indicators of physician supply

Turnover index describes the stability of the physician workforce in a given community from one time period to the next. If there is no temporal change in the workforce, then the index is zero; if all physicians leave and new ones replace them, then the index is 100.

Physician to population ratio for a particular rural base community is the number of physicians located within that community (including affiliate communities), divided by the population within the emergency department (ED) catchment area for the base community. To determine the catchment area, we identified, for each enumeration area (EA), the ED that was most frequently used by residents of the EA. The EA was then assigned to the community with this "favourite ED". Appendix A provides a detailed description of how these catchment areas were determined.

Definitions of Alternate Payment Plans

Exhibit 1.2 referenced several alternate payment plans used in rural areas in primary care settings. A brief description of these programs follows:

Northern Group Funding Plans (NGFPs): These contracts were offered to communities in the north who were designated for three to seven physicians. In 1998, the following communities were offered an NGFP contract: Atikokan, Blind River, Burk's Falls, Chapleau, Cochrane, Emo, Englehart, Espanola, Geraldton, Haileybury, Hearst, Iroquois Falls, Little Current, Manitouwadge, Marathon, Mattawa, Mindemoya, Nipigon-Red Rock, Powasson, and later Wawa and Red Lake.

Community-Sponsored Contracts (CSC): Applies to northern communities that have been designated for one to two physicians. The community initiates the process for being eligible for the contract.

Appendix C. General Practitioner/ Family Physician (GP/FP) Supply and Turnover by Rural Base Community, 2001/02

District Health Council (DHC) Area	GP/FPs per 100,000	Turnover	
and Community Name	2001/02	1993–1996	1997–2001
Algoma-Cochrane-Manitoulin-Sudbury			
Black River-Matheson	64.6	31.3	14.2
Blind River	95.7	6.0	2.7
Carnarvon (Mindemoya)	88.8	7.5	19.3
Chapleau	63.0	31.3	25.8
Cochrane	80.6	14.8	0.0
Elliot Lake	71.7	7.7	9.4
Espanola	65.3	4.6	20.4
Hearst	80.5	1.6	6.0
Hornepayne	203.6	25.0	37.5
Iroquois Falls	67.4	23.5	16.2
Kapuskasing	71.9	8.9	18.6
Little Current	145.3	11.9	13.1
Michipicoten (Wawa)	103.3	18.8	6.8
Smooth Rock Falls	41.7	68.8	5.0
St. Joseph (Richard's Landing)	w/Sault Ste. Marie	16.7	23.5
Thessalon	w/Sault Ste. Marie	38.9	5.0
Champlain			
Alexandria	129.6	21.3	9 1
Amprior	68.2	6.6	4.5
Barry's Bay	77 1	6.8	2.0
Deep River	82.3	4.5	4.8
Renfrew	86.7	3.1	4.9
Winchester	55.9	8.1	3.1
Durham-Haliburton-Kawartha-Pine Ridge			
Campbellford	85.9	8.1	10.0
Clarington (Bowmanville)	89.2	6.0	12.6
Cobourg	81.3	7.9	7.3
Haliburton	51.7	8.9	3.4
Minden	w/Haliburton	26.6	14.5
Port Hope	w/Cobourg	6.1	5.1
Scugog (Port Perry)	71.9	11.6	4.9
Uxbridge	51.7	9.8	13.3
Essex-Kent-Lambton			
Leamington	56.3	8.3	8.1
Petrolia	78.3	6.4	77
Wallaceburg	32.0	11.0	12.3

	GP/FPs per 100,000	Turnover	
District Health Council (DHC) Area	Weighted Population	Index	
and Community Name	2001/02	1993–1996	1997–2001
Grand River			
Dunnville	27.2	6.0	3.4
Haldimand	75.4	14.2	10.1
Paris	35.4	1.1	14.8
Simcoe	74.3	5.7	9.4
Grey-Bruce-Huron-Perth			
Chesley	140.1	5.4	6.1
Durham	65.6	7.4	9.3
Exeter	46.8	5.8	9.3
Goderich	90.0	5.4	4.8
Hanover	90.5	11.4	8.4
Kincardine	54.3	5.1	7.3
Lion's Head	63.7	4.6	13.0
Listowel	74.5	7.7	0.8
Markdale	44.1	2.4	5.4
Meaford	68.4	4.2	20.4
Seaforth	144.1	15.1	10.5
Southampton	41.5	8.2	11.0
St. Marvs	118.3	6.9	3.0
Tuckersmith (Clinton)	103.1	11.9	14.1
Walkerton	64.7	3.5	1.9
Wiarton	46.9	7.0	12.9
Wingham	54.8	8.0	11.0
Halton-Peel			
Halton Hills	52.5	6.4	13.4
Milton	39.8	5.5	13.7
Niagara			
Fort Erie	32.8	8.3	5.5
Grimsby	61.7	7.2	8.7
Niagara-on-the-Lake	w/St. Catharines	6.1	17.4
Port Colborne	57.5	7.5	6.5
Northern Shores			
Bracebridge	114.8	7.0	7.7
Burk's Falls	w/Huntsville	14.7	6.8
Englehart	132.9	17.3	11.0
Huntsville	79.5	6.2	7.0
Kirkland Lake	54 5	8.2	13.0
Mattawa	79 7	0.0	0.0
New Liskeard	117 7	4.9	8.6
Parry Sound	64 1	18.3	6.7
Sturgeon Falls	85.3	10.2	12.5

	GP/FPs per 100,000	Turnover	
District Health Council (DHC) Area	Weighted Population	Index	
and Community Name	2001/02	1993–1996	1997–2001
Northwestern Ontario	470 5		45.4
Atikokan	179.5	8.9	15.1
Dryden	/3.5	7.9	7.9
Emo	274.2	41.7	23.3
Fort Frances	95.1	4.8	7.9
Geraldton	123.5	29.4	49.3
Jaffray and Melick (Kenora)	110.4	12.6	8.7
Manitouwadge	168.3	22.9	28.3
Marathon	167.6	45.8	17.4
Nipigon	101.1	19.8	10.3
Rainy River	75.9	37.5	0.0
Red Lake	147.6	5.6	8.1
Sioux Lookout	404.6	27.8	26.5
Terrace Bay	140.8	10.4	13.7
Simcoe-York			
Collingwood	122.4	6.6	16.1
Midland	53.7	4.2	8.6
New Tecumseth (Alliston)	70.1	11.4	13.6
Penetanguishene	w/Collingwood	13.4	16.0
Southeastern Ontario			
Almonte	283.3	10.9	11.8
Bancroft	69.7	3.4	9.3
Carleton Place	85.7	4.5	8.3
Kemptville	140.7	13.4	10.0
Perth	w/Smiths Falls	10.4	10.8
Picton	100.5	5.8	3.0
Richmond (Napanee)	94.8	6.4	6.8
Smiths Falls	88.7	4.7	9.2
Thames Vallev			
Ingersoll	45.0	2.7	8.0
Newbury	91.4	9.6	8.4
Tillsonburg	35.4	8.0	5.5
Waterloo Region-Wellington-Dufferin			
Feraus	55 1	82	84
Mount Forest	74 6	4.6	3.8
Orangeville	17.0 12.8	4.6	35.0
Palmerston	40.0 47 7	12 1	15.8
Shelburne	w/Orangeville	3.3	9.6

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