

**International Medical Workforce Collaborative Conference
2008**

PHYSICIAN SELF-SUFFICIENCY

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Effective physician resource planning and therefore self-sufficiency requires knowledge of more than the supply of physicians. It requires a coordinated approach which takes into account the health needs of the population, the system's organization, models of care and the delivery of services and the available resources both financial and human.

Canada's constitution places the responsibility and the accountability for health and education in the domain of its ten provinces and three territories. In addition the Federal government retains responsibility for the care of some aboriginal peoples, personnel in the armed forces and other national organizations such as the Royal Canadian Mounted Police. There are, therefore, at least 14 independent jurisdictions responsible for the care of the Canadian people each having their own levers, leading to a number of policy solutions for any one particular problem including physician planning. Some jurisdictions have made attempts to go beyond projecting future supply ratios by using current utilization patterns to act as a proxy for future need. Overall, little has been done beyond theoretical modelling in terms of defining physician supply based on properly defined needs and there are limited resources being used to develop on-going coordinated data bases.

In this paper we will describe the rollercoaster health human resource planning of the last twenty years, reasons for the recent belief in a pan-Canadian physician shortage and the important factors contributing to the actual workforce shortfall. We will review the more recent immigration trends, the response of various levels of government in Canada to address the actual and perceived shortage and identify where specific policy levers reside.

Addressing Rising Public Concern

Health care and access to medical care became the number one public concern in Canada during the last five years of the 20th century and remained a concern during the first five years of the 21st Century. More recently it has become an equal concern with global warming and the environment. Prior to that 10-year period, the policies of all Canadian governments had directed a reduction in the number of domestically educated physicians. But the need for better access to physicians was the frequent refrain from the public. At the close of the century there was general public recognition that, by any measure, Canada was not only educating an insufficient number of health care workers to meet growing needs and expectations, but also that our traditional reliance on immigrating

health professionals was not being accounted for in physician planning or as a concept in self-sufficiency planning.

National task forces examining physician education and supply, Task Force One (1) and Two (2) identified and then confirmed the problems. Both reports recommended immediate and significant increases in medical school enrolment. The provinces began funding increases in enrolment to both medical and nursing schools.

In 2003 and again in 2004, the Prime Minister and the Premiers of the provinces and territories entered into significant funding agreements to address several critical health system concerns that had been identified nationally. The “Health Accords” of 2003 and 2004 reaffirmed the principle of universal health care to avoid personal financial hardship and provided large infusions of funds (\$36 billion in 2003 and \$41 billion over ten years in 2004) to enable system change (3). The federal government already had established a Primary Health Care Transition Fund to increase primary health care approaches in the country. As a result of the Health Accords the provincial and territorial governments agreed to implement processes to enable Canadians to have:

- *Access to a health care provider 24 hours/day, 7 days/week.*
- *Timely access to critical procedures in cardiology, hip and knee replacement, diagnostic imaging and cancer care*
- *Access to quality home and community services*
- *Access to drugs without undue financial hardships*
- *Access to high quality care no matter where they live*
- *A health care system that is efficient, responsive and adapting to their changing needs*

This paper focuses on the medical professional and describes some of the historical issues that preceded the recognition of a physician shortage, the changes and new policies that have been introduced to redress the reduction in domestic production of physicians and some of the national discussion about defining self-sufficiency

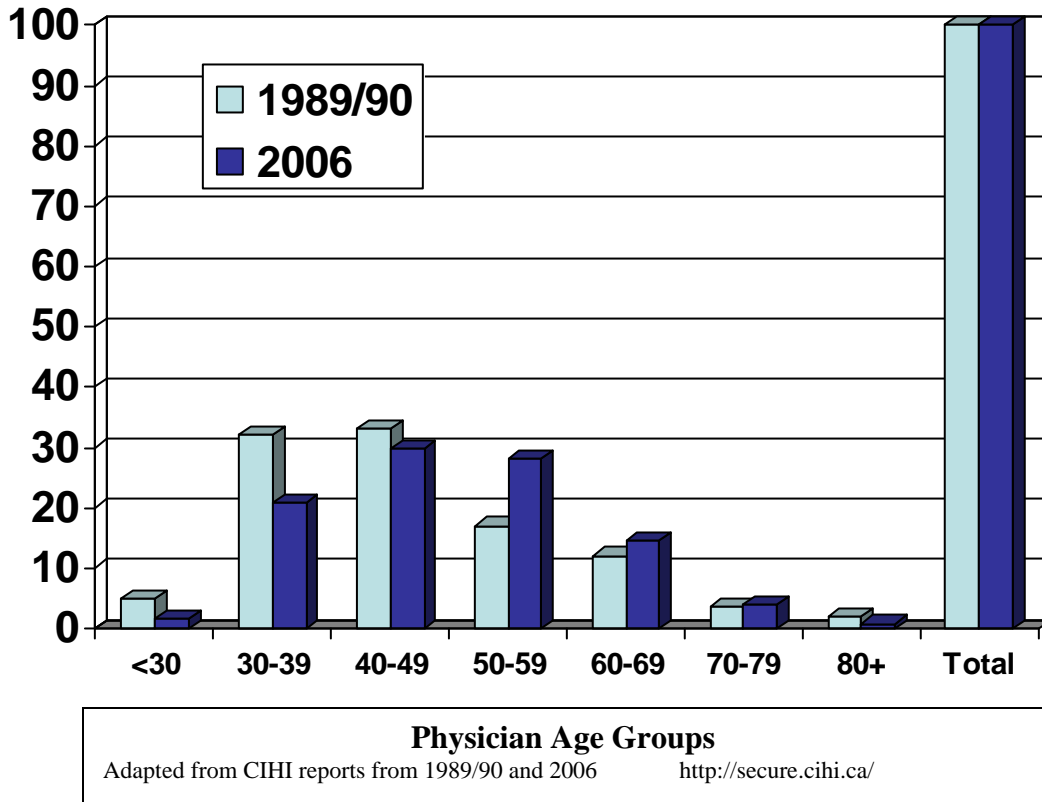
FACTORS IMPACTING PHYSICIAN SELF-SUFFICIENCY:

Canada’s Physician Population is changing:

Demographics of the physician population:

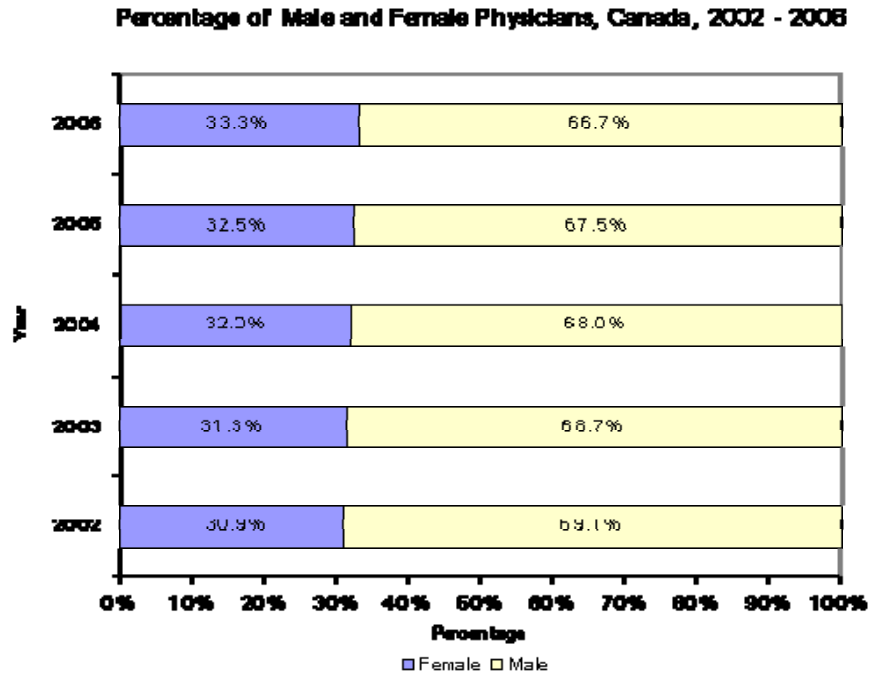
As in most developed nations Canada has an aging healthcare professional population. The demographics of the physician population have been no different. The average age of physicians has increased across all specialties of medicine with the greatest age increase in family medicine practitioners. (4)

Figure 1: Percentage of Physicians by Age Group, Canada



Evans and his colleagues (5) report that in British Columbia the number of physicians per population has remained relatively stable between 1993/93 and 2005/06 and that there are equal numbers of family physicians and other specialists. During the same period the average age of patients has increased, the number of women physicians entering practice has increased and the pattern of practice of all physicians has changed.

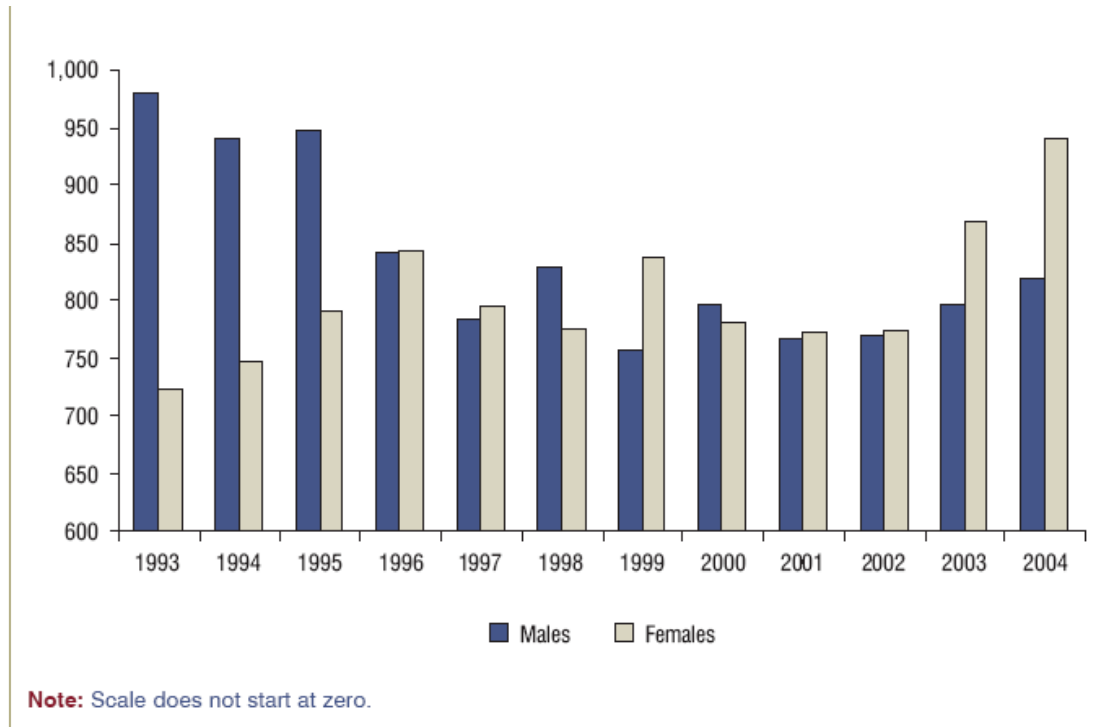
Figure 2. Change in the Percentage of Male and Female Physicians in Canada



Source:
http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=statistics_results_topic_physicians_e&cw_topic=Health%20Human%20Resources&cw_subtopic=Physicians
 ns downloaded July 27, 2008

Women now make up over 30% of the physician workforce in Canada and over 50% of the current medical school classes. Of the 1603 first year postgraduate positions available in Canada in 1998, 49% were taken up by women and 51% by men (6). In 2007-2008 not only has the number of first year positions been increased to 2380 (a 48% increase in funded positions) but 59% of the positions are occupied by women and 41% by men.

Figure 3. Actual Count of Graduating Physicians, by Sex, 1993 to 2004



Source: Health Personnel Database, Canadian Institute for Health Information.

In 1998-1999 women chose different specialties than their male counterparts. More women than men choose family medicine, paediatrics and medical specialties with obstetrics and gynaecology the only surgical specialty to have more women than men. These differences in career choices have remained unchanged despite the dramatic increase in women graduates during the last decade. This change in practice pattern related to gender is much more significant than the change in work hours. Previously male dominated specialties risk being depleted as an increasing number of women graduates continue to select their preferred specialties (Figures 4a, b, and c). (7)

Of note is that women are demonstrating less interest in psychiatry than in the past and there is some decrease in their interest in paediatrics; two specialties which have been traditionally strong choices for women.

Figure 4a. Specialty Career Choices 1998 and 2008

Comparison of Career Choice 1998 and 2008				
DISCIPLINE	1998		2008	
	Male	Female	Male	Female
	55%	45%	43%	57%
General Surgery	6.1	3.8	6.1	3.7
Emergency Med	3.3	2.1	4.0	2.3
Internal Med	15.7	10.7	19.3	12.0
Psychiatry	4.5	9.0	3.3	6.1
Pediatrics	5.2	10.3	2.8	8.9
Obstetrics/gynecology	1.9	6.6	0.9	6.9
Family Med	26.1	38.0	23.2	36.8

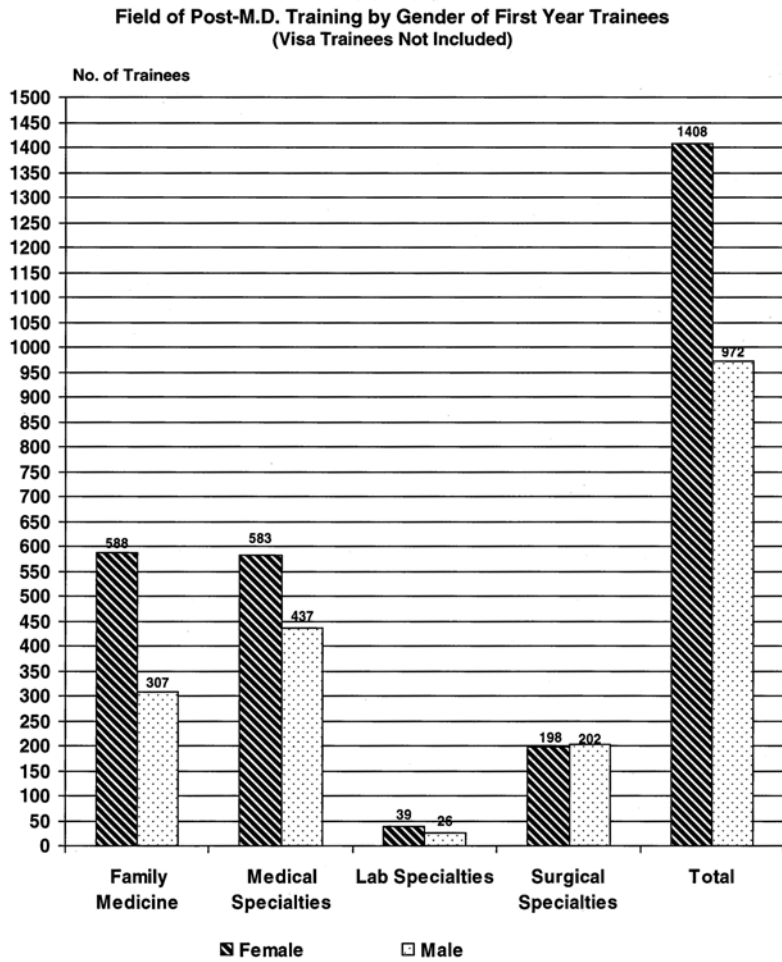
Source: SR Banner CaRMS data bank

Figure 4b. Changes in Choice of Specialty – Women Graduates 1998 and 2008

	1998	2008	Difference from 1998
Anesthesiology	3.8%	3.5%	-0.2%
Diagnostic Radiology	3.0%	3.4%	0.4%
Emergency Medicine	2.1%	2.3%	0.2%
Family Medicine	38.0%	36.8%	-1.1%
Internal Medicine	10.7%	12.0%	1.3%
Laboratory Medicine	1.1%	0.9%	-0.2%
Neurology	1.3%	1.5%	0.2%
Neurology Pediatric	0.0%	0.2%	0.2%
Obstetrics & Gynecology	6.6%	6.9%	0.3%
Pediatrics	10.3%	9.0%	-1.4%
Psychiatry	9.0%	6.1%	-2.9%
Surgery	10.5%	11.6%	1.1%

Source: SR Banner CaRMS data bank

Figure 4c Choices of Specialty by Gender – Postgraduate Trainees



http://www.caper.ca/docs/pdf_2007-08_CAPERCensus.pdf downloaded July 28, 2008

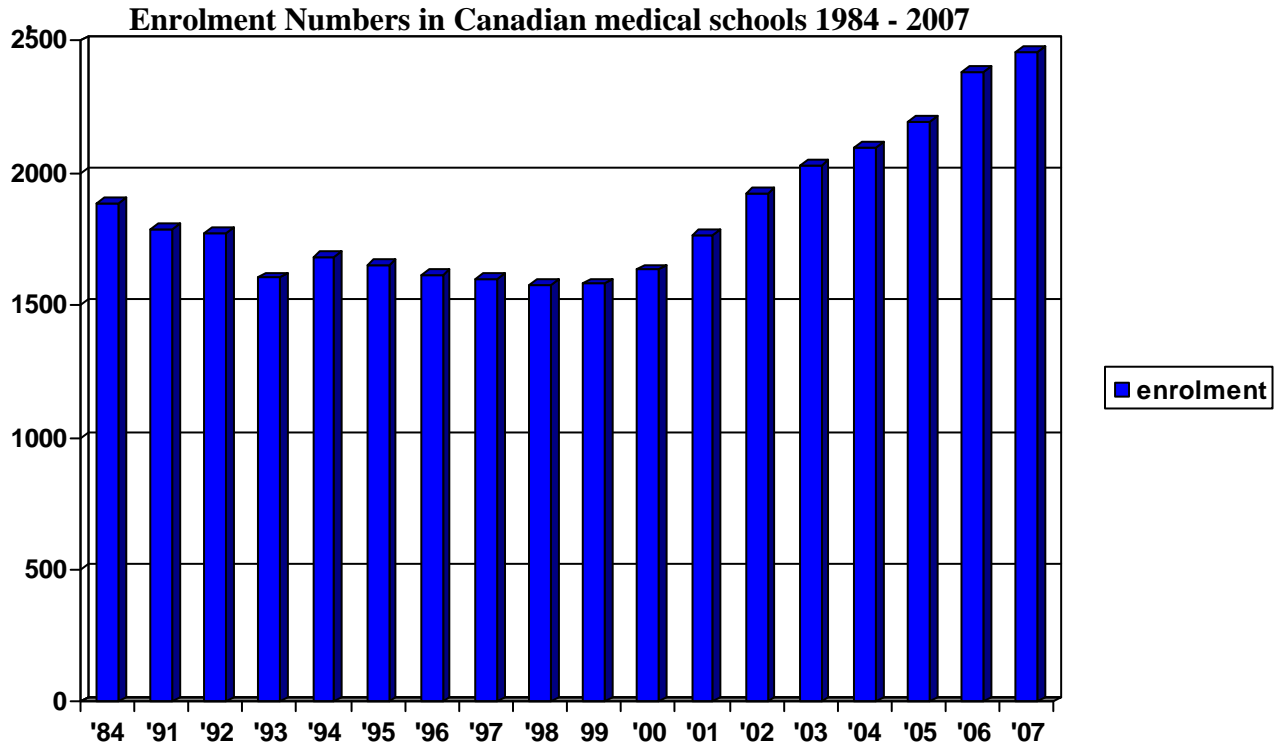
Evan’s study showed that, in British Columbia, the family physicians saw an increasing number of patients while medical and surgical specialists saw fewer. In addition, although the number of “billed days” for female physicians was less than for their male counterparts, the average number of “billed days” declined for both sexes. These authors demonstrated that the increase in women physicians was not associated with a decline in full time equivalents when one FTE was defined as the billings at the 40-60th percentile.

Therefore the feminization of the workforce does not necessarily mean women work less than their male equivalents but rather both work less in order to have a better professional/life balance. Women do take more time for child rearing but male physicians with young children also take more personal time. However, the career choices of women have not changed and this will lead to more exaggerated shortages in traditionally male dominated specialties such as surgery.

Medical School Enrolment

Between 1992 and 1995 the provincial governments mandated a reduction in the number of enrolments to medical schools across the country. This resulted in a 15% reduction in medical student enrolments by 1998, or over 280 students per year. (6)

Figure 5



Source: AFMC annual reports

Since the education of a physician takes from 6 to over 8 years for some subspecialties, the highest output prior to 2000 occurred in 1993. Subsequent to provincial governments relaxing the fiscal restraints of the 1990's all provinces with medical schools have invested in increasing their enrolment.

Changing Patterns of Practice:

While enrolment in medical school has increased along with a concomitant increase in postgraduate positions, the number of specialties and subspecialties also has increased including more subspecialties within family medicine. The pattern of practice for family physicians in Canada is changing dramatically. Tepper (*The Evolving role of Canada's Family Physicians 1992-2001*)

http://secure.cihi.ca/cihiweb/products/PhysiciansREPORT_eng.pdf -downloaded July 27, 2008) demonstrates that while office practice has remained unchanged the family physician is providing 33% fewer procedures and 10% less hospital care (8). This reduction is most prominent in obstetrical care which declined by 33% between 1992 and 2001.

Another change in the pattern of practice has been the increasing demand for alternative physician payments away from fee for service. In 2005-2006 alternative clinical payment programs in Canada amounted to \$2.98 billion or 21.3% of all payments made to physicians for clinical services. Alternative payments can range from full salaried physicians to blended models where specific services such as on-call and emergency services are paid by an alternative fund. In 2005-06 40% of physicians in Canada received some form of alternative payment and more young physicians are seeking alternative funding programs as they enter practice (9). (CIHI 2008 *Physicians in Canada: The Status of Alternative Payment Programs, 2005-2006*). Alternative payment schemes do change the pattern of practice of physicians who participate in them. The numbers of patients seen may decrease, while the time per patient may increase. While this may affect access there is no evidence for against an effect on health outcomes. Alternative payment schemes are necessary to effect practice pattern changes such as physician participation in collaborative multi-professional teams. (10)

Summary:

There are many supply factors to account for the perceived shortage of physicians and the perceived and actual reduced access. While the actual numbers of physicians has been addressed by Canada's federal, provincial and territorial governments, many other factors affect self-sufficiency to meet the population's needs. The changing pattern of practice remains an ongoing and increasing concern which relates to productivity. Other factors were outlined by Chan in his paper *From Perceived Surplus to Perceived Shortage: What happened to Canada's Physician Workforce in the 1990's* (11). His study demonstrates the Canada's governments utilized powerful policy levers that along with other factors created the current situation. Six policies or factors came together to have the unintended consequence of reducing physician access and therefore a shortage. Since medical education is publicly funded the governments' decree to role back enrolment was a major precipitating factor. However he identifies this as only one of the factors. Rising public expectations along with physician expectations to have better professional-life balance was one of the factors. This was not a major factor since Chan's study demonstrates that, in the ten years between 1989 and 1999, the average practice activity increased by almost 6% indicating a heavier workload. However, educational approaches changed during this period and all specialties required longer periods of postgraduate education. While governments did not decrease the number of postgraduate positions, there was no adjustment to accommodate the longer postgraduate training. This had two effects. The first was due to longer educational time the postgraduate students had their entry into the workforce delayed. Chan estimated that this accounted for nearly 30% of the decrease in physician numbers during this time period. The second effect was to limit the number of postgraduate positions to graduates of Canadian medical schools. This eliminated access

to postgraduate education for the many international medical graduates entering the country.

These factors along with new physicians entering the workforce having less patient contact and delivering less comprehensive care have contributed to significant shifts in access to the supply of both family medicine and other specialties.

The Canadian Population Growth - what is a reasonable rate of physician immigration?

Canada remains a country of immigration but the origin of its immigrants is changing. Between the 1991 and 1996 censuses, Canada's population grew by 1.5 million people. Births outnumbered deaths by only 912,000 and immigration was 1.118 million. An even larger number of immigrants accounted for Canada's 1.4 million population growth between 1996 and 2001. Only 616,000 were the result of the birth rate outpacing the death rate and 1.2 million were immigrants. There is also a definite increase in the diversity of the immigrant population. Between 1951 and 1970, the British Isles accounted for 25% of the immigrants and 30-40% were from Western Europe. In the decade preceding the 21st century immigrants came equally from China, Hong Kong, India, the Philippines and Eastern Europe. And Canada can expect from 250,000 to 400,000 immigrants per year if the current policies continue. (13)
(see appendix I)

Historically up to 26% of Canada's licensed physicians have been educated outside the country. In recent years, 2007 and 2008, it has been less than 23% (table 1).

Studies by CMA estimate that on an annual basis about 700 internationally educated physicians enter the licensed workforce. On average about 300 of these international medical graduates (IMGs) are completing postgraduate programs in Canada and another 400 are licensed locally after credential review and various assessments.

**Table 1. Percentage of Physicians Practicing in Canada
By Place of Graduation, 1995 - 2008**

	Country of Graduation							
	Canada		Other country		Unknown		Total	
	Number	%	Number	%	Number	%	Number	%
1995	41,868	74.0%	14,721	26.0%	12	0.0%	56,601	100.0%
1996	41,659	74.2%	14,496	25.8%	20	0.0%	56,175	100.0%
1997	41,316	74.5%	14,050	25.4%	75	0.1%	55,441	100.0%
1998	41,807	74.8%	14,005	25.1%	84	0.2%	55,896	100.0%
1999	42,928	75.6%	13,726	24.1%	121	0.2%	56,775	100.0%
2000	43,231	75.8%	13,639	23.9%	182	0.3%	57,052	100.0%
2001	44,237	76.1%	13,636	23.4%	260	0.4%	58,133	100.0%
2002	45,148	76.1%	13,913	23.4%	296	0.5%	59,357	100.0%
2003	46,232	76.0%	14,248	23.4%	379	0.6%	60,859	100.0%
2004	46,965	76.0%	14,362	23.2%	476	0.8%	61,803	100.0%
2005	46,864	76.1%	14,253	23.1%	465	0.8%	61,582	100.0%
2006	47,865	76.1%	14,514	23.1%	556	0.9%	62,935	100.0%
2007	48,541	76.1%	14,523	22.7%	755	1.2%	63,819	100.0%
2008	49,902	75.8%	14,904	22.6%	988	1.5%	65,794	100.0%

Source: CMA Master file.

Figure 6 demonstrates the changing country of origin of Canada's immigrant physician since 1995. More physicians now have their primary degree from the Asia and the Indian subcontinent.

Figure 6a.

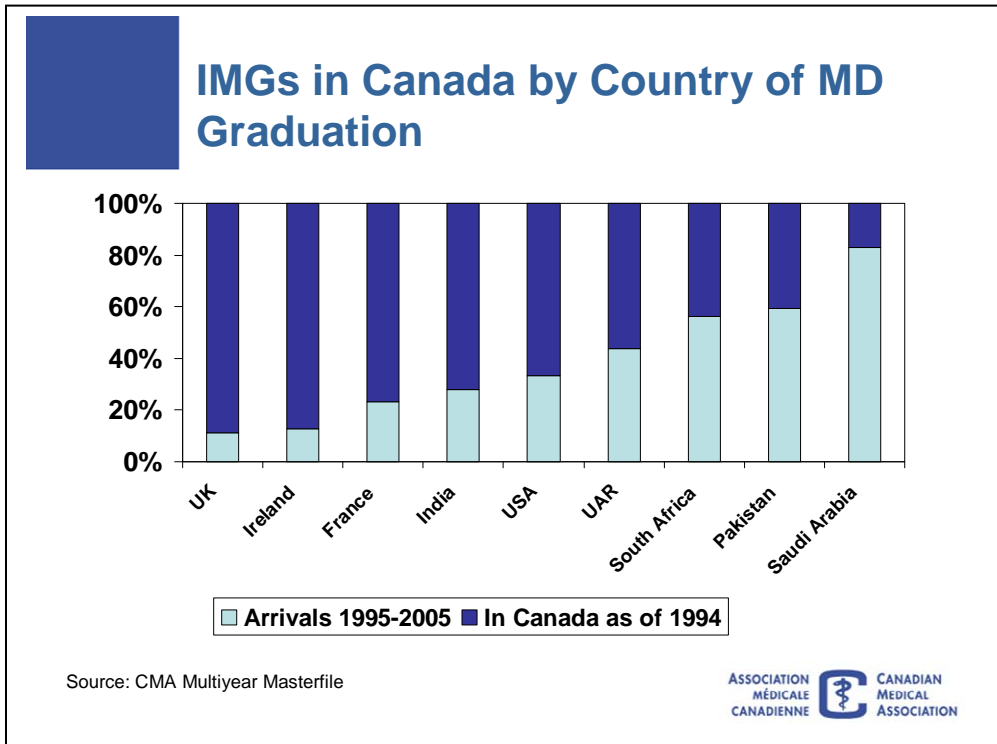
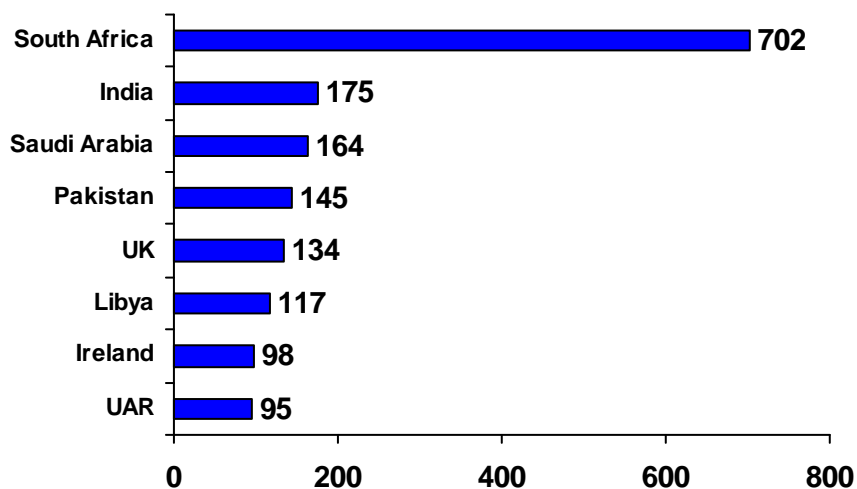


Figure 6b. Practising IMGs in Canada by country with year of MD 1990 or later



Source: Jan 2008 CMA Masterfile

If it is assumed that Canada population will continue to grow by attracting immigrants and the number remains between 250,000 and 400,000 per year, then it can be assumed

that a number of these will be physicians. Utilizing the inexact counting of physician-population ratios, to maintain the 2.1/1000 population ratio, Canada might expect to see 500 – 800 physicians per year who enter by this route.

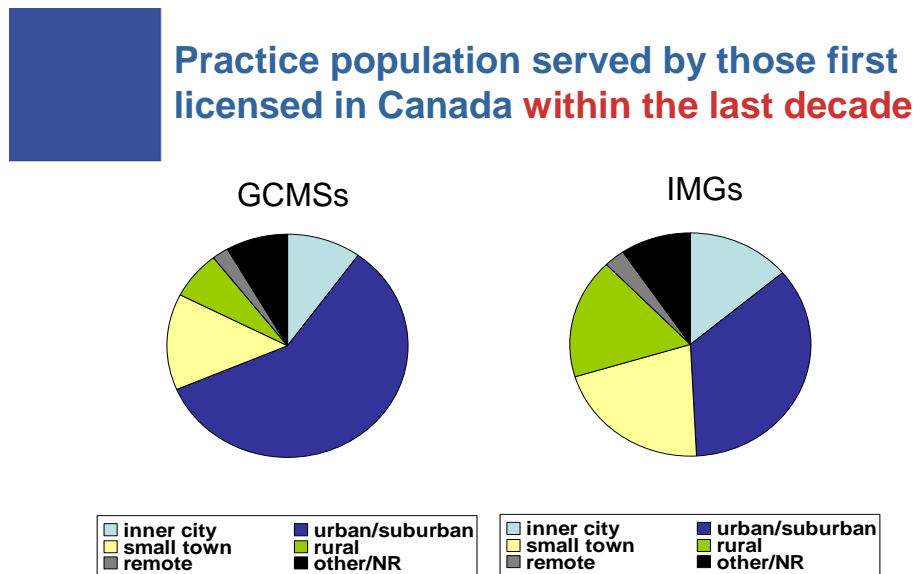
The evidence is that these physicians come from the same diverse countries as the rest of Canada’s most recent immigrants.

Formerly both Canada’s immigrants and the physician immigrants came from Commonwealth countries especially the UK. With the changing demographics of Canada’s immigration there has been a parallel change in the international medical graduate immigrating to Canada. It can be postulated that there may be a relationship between our increasing difficulty in assessing and integrating immigrant physician into Canada and the origin of these physicians.

However, the distribution of International Medical Graduate does not parallel the urban centre location of most new immigrants to Canada.

Figure 7 demonstrates that IMGs entering practice provide more services to the urban core, small towns and rural areas than do recent graduates of Canadian medical schools.

Figure 7.



2007 National Physician Survey (CFPC, CMA, RCPSC)

It is not unreasonable to suggest that Canada, with an immigration policy that accepts global mobility and looks to immigration for population growth, can expect physicians to

be a part of the annual influx. The questions are, what is an appropriate and ethical numbers of International Medical Graduates and how is Canada ensuring they are being integrated into medical practice? If numbers per population is an adequate measure, then 500-800 qualified IMGs per year should be anticipated. Mechanisms are needed to integrate these physicians either through assessment or further remedial education.

Are Numbers Enough?

How does the Canadian Physician Workforce compare to other OECD Countries?

Use of a traditional physician population model to assess the adequacy of numbers of physicians indicates that Canada has a low number of physicians per capita compared to some other OECD countries. Table 2 summarizes the physicians per 1000 population for a selected number of countries and Table 3 compares Canada to the average of all OECD countries.

Table 2. Practicing Physicians per 1000 population (includes residents)

Country \ Yr.	2002	2003	2004	2005	2006
Canada	2.1	2.1	2.1	2.1	2.1
Australia	2.5	2.6	2.7	2.8	n/a
New Zealand	2.1	2.2	2.2	2.1	2.3
United Kingdom	2.1	2.2	2.3	2.4	2.5
USA	2.3	2.4	2.4	2.4	2.4
Germany	3.3	3.4	3.4	3.4	3.5
Japan	2.0	n/a	2.0	n/a	2.1

OECD

reports show that Canada has slipped in its position since 1970 when compared to other member countries. (14)

Table 3. Canada's Physician Supply Vis à Vis the Industrialized World: 1970 - 2006

	<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2006</u>
Physicians* per 1,000 Population	1.5	1.8	2.1	2.1	2.1
Canada's Rank	4th	13th	14th	24th	26th
OECD Average	1.3	1.9	2.3	2.8	3.1

* includes residents

Source: OECD Health Data, 2008

However, the number of physicians per population cannot be the only or even the main explanation for any perceived reduced access or positive health outcome as measured by health system performance and population health. If measures of health system performance are used to compare the same countries, the correlation with the number of physicians per population is not a predictor of their overall ranking. Table 4 compares the countries using health system indicators such as access, healthy lives, and equity as well as expenditure per capita. Inserted along the bottom is the physician population ratio.

Table 4. Six Nation Summary Scores on Health System Performance

	Aus	Can	Germany	NZ	UK	US
Overall Ranking	3.5	5	2	3.5	1	6
Quality Care	4	6	2.5	2.5	1	5
Right Care	5	6	3	4	2	1
Safe Care	4	5	1	3	2	6
Coordinated Care	3	6	4	2	1	5
Patient-Centered Care	3	6	2	1	4	5
Access	3	5	1	2	4	6
Efficiency	4	5	3	2	1	6
Equity	2	5	4	3	1	6
Healthy Lives	1	3	2	4.5	4.5	6
Health Expenditures per Capita*	\$2,876	\$3,165	\$3,005	\$2,083	\$2,546	\$6,102
Physicians/1000 population 2004	2.7	2.1	3.4	2.2	2.3	2.4

Note: 1=highest ranking, 6=lowest ranking.

* Health expenditures per capita figures are adjusted for differences in cost of living. Source: OECD, 2004. Health expenditures data are from 2004 except Australia and Germany (2003).

Source: Calculated by The Commonwealth Fund based on the Commonwealth Fund 2004 International Health Policy Survey, the Commonwealth Fund 2005 International Health Policy Survey of Sicker Adults, the 2006 Commonwealth Fund International Health Policy Survey of Primary Care Physicians, and the Commonwealth Fund Commission on a High Performance Health System National Scorecard.

Source: Davis K., Schoen C. et al. *Mirror, Mirror on the wall: An international update on the comparative performance of American Health Care*. The Commonwealth Fund. May 13, 2007(15)

The evidence shows that Germany with the most physicians per population ranks just behind the UK, a country with 60% fewer physicians per thousand population.

Therefore, the definition of self-sufficiency for physician resources cannot solely be a matter of numbers of physicians but must include the type of services they provide, the integration of these services with those of other health care providers and the system supports for comprehensive care, which includes such approaches as collaborative models of team care and a single health record that is accessible to and links to all a patients care providers.

Policy changes and investments being implemented by Canada's governments and other successful initiatives.

Good news about the numbers - increased enrolment in medical schools:

Although self-sufficiency is not just about increasing the supply, jurisdictions across Canada have instituted increases in positions for health professionals recognized to be in short supply. Since 1999 there has been a 50% increase (800 students) in the enrolment in Canada's medical schools. This has required considerable investment by provincial governments and changes in the way Faculties of Medicine deliver their educational programs. The Province of Ontario has established one new medical school (The Northern Ontario School of Medicine NOSM) and announced their intention to develop a second. All other medical schools have expanded their enrolment and have introduced some form of distributed learning experience, in part to accommodate the growth. Distributed learning has involved establishing new campuses in smaller urban centers where medical education has not been the tradition or has required the expansion of educational opportunities to other community practices including more rural or remote parts of a province or partner province.

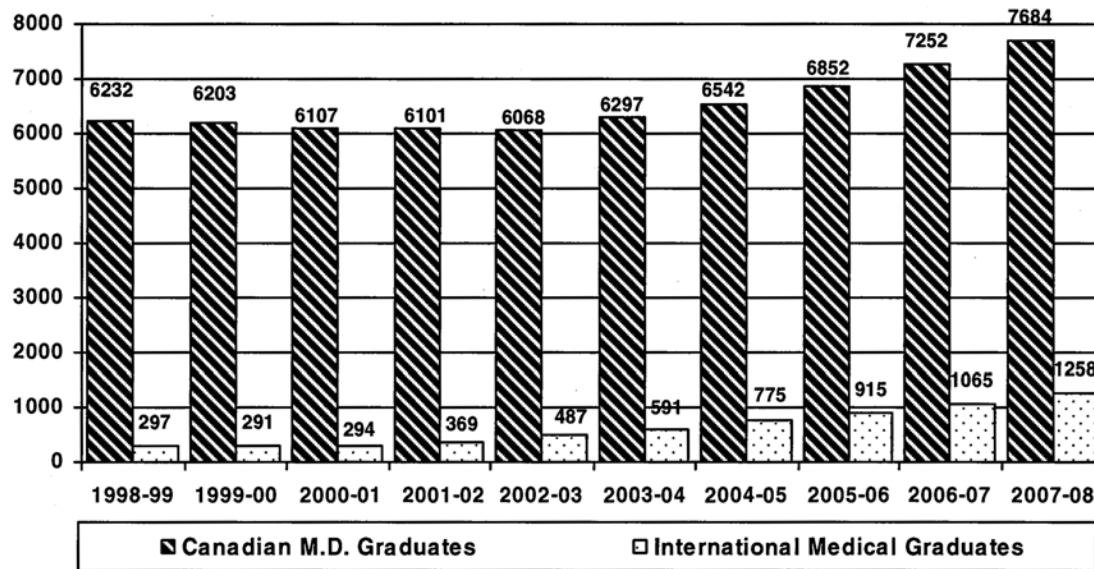
Increased postgraduate positions:

Accompanying this funding to increase undergraduate enrolment, jurisdictions have funded a concomitant increase in postgraduate positions including additional positions targeted for international medical graduates. Most of these latter “IMG” positions have been included in the Canadian Resident Matching Service process (CaRMS) although some positions remain in provinces’ departments of health for special programs. The new positions have been divided between Family Medicine (a two year program in Canada) positions accredited by the College of Family Physicians of Canada (CFPC) and other specialty programs from 4- 6 or more years) accredited by the Royal College of Physicians and Surgeons of Canada.

These investments are starting to have an impact on Canada’s capacity to meet its health care needs. CIHI reports that the number of physicians, especially family doctors practicing in Canada has increased. The increase is due to a 5.2% increase in Canadian trained doctors and a 0.7% increase in IMGs. The CMA Physician Evaluation Template PRET predicts a population/physician ratio of 449:1 by 2021 compared to the lower 534:1 in 1999 as a result of the first year enrolment increases introduced in Canada since 1999.

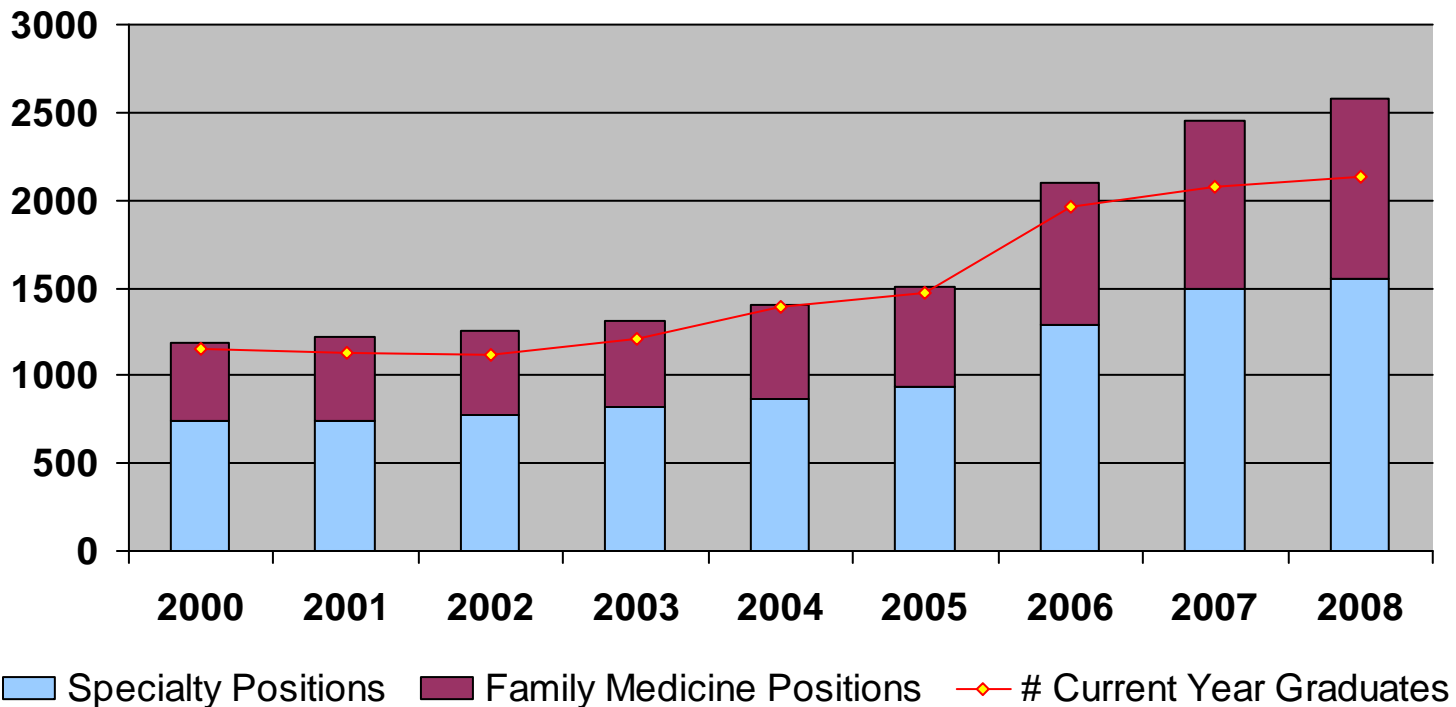
Figure 9. Change in Postgraduate Positions (16)

Regular Ministry Funded Trainees: Canadian M.D. Graduates and International Medical Graduates



The number of ministry funded IMGs has increased to 1258 in 2007-08. Each year, for the past six years, the number of ministry funded IMGs has increased by no less than 100 over the previous year’s figure. The largest one-year increase occurred in 2007-08, when the number of ministry funded IMGs increased by 193 over the previous year’s figure.

Figure 10. Available Entry Level Postgraduate Positions in Canada and Canadian Graduates



NOTE: Université Sherbrooke, Université Montréal and Université Laval joined CaRMS in 2006; therefore increasing the number of graduates and the number of available positions.

Source: SRB CaRMS data bank

International Medical Graduate Assessment and Integration:

In 2004 a federal task force made several recommendations to increase the integration of international medical graduates into Canadian medical practice. These included:

- *Increasing the capacity to assess and prepare IMGs for licensure.*
- *Working toward standardization of licensure requirements..*
- *Expanding or developing supports/programs to assist IMGs with the licensure process and requirements in Canada.*
- *Developing orientation programs to support faculty and physicians working with IMGs.*
- *Developing the capacity to track and recruit IMGs.*
- *Developing a national research agenda, including evaluation of the IMG strategy, evaluation of the IMG licensure recommendations and the impact of the strategy on physician supply*

The National Assessment Collaboration funded by Health Canada and under the auspices of the Medical Council of Canada brings together the seven programs in Canada involved

in International Medical Graduate assessment, government jurisdictions, and the certifying colleges to work towards a single national assessment process. The goal is to have a single nationally coordinated assessment program delivered regionally across the country. It is also expected that, once established, such a clinical skills assessment will be able to assist in determining individual physician's ability to enter practice assessments or other forms of supervised practice.

All provinces have increased funding support to enable IMGs to enter remedial or postgraduate education. An orientation program for faculty and preceptor physicians working with IMGs is available to all centers and IMG tracking has been established through the Canadian Post-MD Education Registry (CAPER)

Canadians Studying abroad:

The number of Canadians enrolling in medical schools outside Canada and the US has been increasing and has recently been recognized as potentially contributing to Canada's physician self-sufficiency. It is estimated that in 2008 there are at least 2000 Canadians who are currently studying medicine outside Canada and the US. A recent study by one of the authors, (SRB) in collaboration with S. Speiling at ECFMG, has demonstrated a true increase in Canadians seeking postgraduate education in the US. Using applications to the USMLE step 1, they have demonstrated over 100% increase in students who are Canadian citizens at entry to medical schools outside Canada and the US (Figure 11). Banner also has reported not only an increase in candidates applying to Canadian programs through CaRMS but also a high success rate for these individuals when they compete for postgraduate positions in Canadian residency programs.

Figure 11. Number of Canadians Writing USMLE step 1 as an Indicator of the Increase in the Number of Canadians Studying Outside Canada. 2002-2006 >100% Increase

Step 1 Applicants with Canadian Citizenship at Entry to Medical School					
Year	Total	Male	Female	Graduate at application	Student at application
2002	261	157	104	92	169
2003	342	205	137	92	250
2004	358	211	147	71	287
2005	475	265	210	93	380
2006	545	294	251	98	447

Figure 12.

Where are Canadians Studying When They Apply to the USMLE step 1

Region	2002		2006	
Caribbean	130	50%	335	62%
Asia	39	15%	34	6%
Eastern Europe	30	12%	54	10%
Western Europe	27	11%	50	9%
Middle East	11	4%	20	4%
Central America	10	4%	16	3%
Australia	4	11%	17	3%
Africa	8	3%	16	3%

Source for figures 11 and 12: Speiling and Banner USMLE data bank

The changing health care delivery environment:

Needs-based planning:

The *Framework for Collaborative Pan-Canadian HHR Planning* published in its revised format March 2007 identifies self-sufficiency as a goal. The document identifies the risks of utilization based planning; that it is not just about numbers per population and acknowledges the role of the changing health needs of the population and the changes being made within the system.

Provinces have begun to institute needs-based planning into their health human resource projections (17). The *Framework* has been accepted by all the provincial ministries of health and recognizes the need:

- *To improve all jurisdictions' capacity to plan for the optimal number, mix, and distribution of health care providers based on system design, service delivery models and population health needs:*
- *To enhance all jurisdictions' capacity to work closely with employers and the education system to develop a health workforce that has the skills and competencies to provide safe, high quality care, that works in innovative environments, and that responds to changing health care system and population health needs:*
- *To enhance all jurisdictions' capacity to achieve the appropriate mix of health providers and deploy them in service delivery models that make full use of their skills:*
- *To enhance all jurisdictions' capacity to build and maintain a sustainable workforce in healthy safe work environments. Self reported health status is recognized as a correlating with utilization of health services:*

Most jurisdictions are identifying population health needs through Statistics Canada community health surveys. There is clear recognition that more than standard population health indicators should be used to determine need. While mortality, life expectancy etcetera need to be included, self-assessed health status which correlates with health system utilization is also being factored in to the planning. Indirect health indicators such as socio-economic and education levels are being included in modeling. CIHI has published, for each province, detailed comparisons of traditional health indicators such as mortality, life expectancy for each province as well as its prevalence rates for cancer and other potentially chronic diseases such as diabetes and heart failure.

Other health professionals have to be factored into any models for care, based on predicting need. Each professional has to be able to practice to the limit of their scope and expertise. New physicians are seeking to practice in groups, they are spending more time counselling patients and both primary and secondary disease prevention is becoming a more critical focus in practice. The fact that most physicians do not wish to practice in more rural and remote areas of the countries requires specific policies and incentives. Some policies have been adopted by the Faculties of Medicine. Newer approaches to the selection of students increasing numbers drawn from underserved areas and changing medical education experience by utilizing these areas for the undergraduate educational experience have shown to be of benefit. On the national scene the certifying Colleges have instituted programs to encourage students in their career choices. The College of Family Physicians of Canada has developed a family practice interest group in each of

the Faculties of Medicine. The group not only promotes family medicine through local initiatives but also provides a national network.

Lifestyle considerations and incentives have become part of the policy initiatives in many jurisdictions. Lifestyle considerations are recognized as issues for both the local community and the provincial department of health. Community acceptance and spousal employment are two areas that are being addressed by communities working with provincial recruiters. In addition the need to have reasonable on-call working conditions for physicians may lead to some needed redundancy in some locations. For example, while a population may only require three physicians to meet their care needs, such a practice is not conducive to a long standing commitment. But adding extra physicians or other care providers to offset the “on-call” factor for these physicians will help with recruitment and retention. Some of the additional roles may not be in clinical care but in administration, public health initiatives, teaching and even research. Jurisdictions also have introduced financial incentives in the form of debt buyout in return for defined time commitments to practice in more remote or underserved communities. Special postgraduate positions have been introduced to provide re-entry training directed at those physicians who wish to change career after time in more generalist practice.

Collaborative Care Initiatives:

As noted above new physicians are interested in establishing their practice within a group. In addition evidence has been mounting that collaborative multi-professional team care is a more effective approach to dealing with chronic disease in the community. Beginning in 2000 the federal government began investing in nation-wide projects to improve the delivery of primary care through their Primary Health Care Transition Fund. They focused on primary health care teams. The 2003 Health Accord also identified the goal of instituting multidisciplinary teams especially for the management of chronic disease. Specifically it stated that “*citizens routinely receive needed care from multi-disciplinary primary health care organizations or teams. First Ministers agree to the goal of ensuring that at least 50% of their residents have access to an appropriate health care provider... target be fully met within 8 years.*” Although collaborative teams have been proven effective in improving the management of chronic disease, reducing patients costs through fewer emergency room visits and hospitalizations and giving increased satisfaction to the members of the team, Canada is not close to achieving its target in 2008 and is unlikely to do so within the next three years. In the Health Council’s 2007 survey, *only 30% of Canadians reported that a nurse works with their family doctor and is regularly involved in their care. Fewer than one in five (17%) said that other types of providers worked in the same place as their doctor (these data don’t include care by offsite team members who work together but not in one location). Most Canadians (96%) report having a regular doctor or place where they receive care, one in four people who needed care said they had difficulty getting it for a minor health problem (24%) or for routine care (26%). Canada appears to have the worst access to primary care among seven countries recently studied. Only 36% of Canadians could get a same-day or next-day appointment with a doctor when they last needed care (compared to 58% in the UK*

and 75% in New Zealand), and 30% waited six days or more for an appointment (12% in the UK, 4% in New Zealand). (3)

Some jurisdictions have demonstrated the benefits of multidisciplinary teams. Using multiple regression modeling and structural equation modeling they analysed the Canadian Survey Experience with Primary Health Care data to show that functional teams reduce hospitalization and emergency visits and have a positive impact on the processes of care i.e. the coordination of care. Confidence was increased by the team's ability to reduce unmet needs. However, confidence is eroded if the team does not improve the processes of care (18). The literature review by Barrett and her colleagues (10) corroborate this modeling and identifies other benefits from the team experience. The professional and personal satisfaction of the team members was the major additional finding.

Multi-professional team-care is incorporated into the policies for all the governments of Canada. These policies will have an impact on all HHR planning and especially on the planning for physician self-sufficiency.

The funding and promotion of inter-professional collaborative patient centered care has resulted in curriculum reform in all of Canada's medical schools. Each school has a project to- redesign part of the curriculum to have student education occur in conjunction with nursing students and at least one other health professional.

Conclusion:

Provincial governments have fiscal control over both education and health care. They retain the most powerful levers for change. All Canada's medical schools are publicly funded through the provincial governments. Thus enrolment in undergraduate medicine and the availability of postgraduate education are controlled as a part of public policy. Provincial governments have recognized a looming shortage of all health care professionals, among them the physicians. They have addressed the 10% reduction in medical school enrolment that occurred in the early 1990s by systematically increasing funding for first year positions in medical schools and by funding additional postgraduate medical education positions, both to accommodate the rise in enrolment and to integrate more international medical graduates into the Canadian health system. These policy changes which began in 2000 have already increased the output of Canadian physicians by nearly 6%. An additional 20% increase in enrolment is expected over the next five years with the first year positions reaching 3000 by the first decade of the 21st century. The increased capacity has been achieved by expanding every one of the sixteen medical schools in the country and by the province of Ontario funding one new medical school and promising to open a second new school. The schools have found new approaches to providing medical education as the need to expand their facilities outstripped the reductions of the early 1990's. Distributed campuses accommodated not only the need for expansion, but also the recognized need to move the educational experience out into the communities requiring medical services. These expansions along with admission policies to increase the entry of students from areas of need and the modification of the educational experience to include more rural and remote learning have been introduced to encourage current and future practice in defined areas of population need.

The number of Canadians studying abroad has increased dramatically during the past decade. They remain a relatively unknown factor in the HHR planning process. Will they will return home or take up practice in their country of study, or in the US? Current estimates indicate that 400-500 of these students per year may be eligible to pursue postgraduate education in Canada. To date the US has absorbed many of these students in their postgraduate residency positions. Finally, with Canada's current immigration policy, we continue to attract a diverse immigrant population and it is not inappropriate to expect a number of physicians among newcomers. Programs are being developed to better assess these international medical graduates both before they come to Canada and after their arrival. However, capacity to provide specific additional education to effectively integrate a diversely educated immigrant population is still lacking.

In the future self-sufficiency models must identify and include all three sources of physicians. Challenges remain in ensuring that new planning models include, at the very least, the changing patterns of practice, the impact of the increase numbers of women entering practice and their choices of specialty medicine, the impact of alternative funding of physicians, the policy moving primary health care practice to multi-professional team practice and the changing health needs of the population to list only a few.

Canada's various jurisdictions have been very successful at increasing domestic supply. Policies have yet to effectively accommodate and integrate international medical graduates who come to Canada as part of our immigration drive and recent data show that we have both underestimated and under planned for the third source of physicians, Canadian students seeking their medical education outside Canada and the US.

Due to the nature of Canada's federation, each jurisdiction will continue to make its own decisions about its health care workforce in order to address some differing population health needs, differing service delivery models and the education of physicians. However, with less restriction on the mobility of physicians in Canada and globally each jurisdiction with a medical school is providing a national and on occasion an international resource. In such an environment it is no longer appropriate to look at physician self-sufficiency in terms of domestic product.

Canada's health ministers' Advisory Committee on Health Delivery and Human Resources (ACHDHR) has developed its own definition of self-sufficiency.

Self-sufficiency in health human resources is the ability to develop, attract and retain the right supply and mix of health care providers to work within each jurisdiction's service delivery models to meet the population's health needs.

ACHDHR has identified five principles to achieve self-sufficiency of HHR in Canada:

- *Medium and long term planning based on population health needs and service delivery models:*
- *Finding the right balance between the responsibility to educate and train health care professionals domestically and the responsibility to provide opportunities for and integrate health professionals educated internationally:*

- *Work environments based on collaboration and mutual respect where health care professions can practice to their full scope of practice:*
- *Deployment strategies that encourage appropriate distribution of health care professionals across and within jurisdictions: and*
- *Attraction, retention and exit strategies to ensure optimal job satisfaction and use of health care professionals' knowledge and skills throughout their career life cycle.*

Canada has the Framework to develop a coordinated planning process that recognizes all the essential elements of utilization planning. However, the implementation of the *Framework* is occurring in a piecemeal fashion. To have the *Framework* be effective we, as a country, require a more consistent approach to collecting and analysing workforce data, collaborative modelling tools that cross jurisdictions, the ability to share the many successful and innovative health care delivery projects that have been initiated around the country and to move them into practice while ensuring that the evolving roles of different health professionals are identified and integrated into the planning processes. Canada may reach a level of self-sufficiency for physicians but with the current lack of jurisdictional coordination it will be by accident more than by design.

Appendix I

Population and growth components (1851-2001 Censuses)

Census population Total population Births Deaths Immigration Emigration
at the end of period growth¹

Period	thousands					
1851-1861	3,230	793	1,281	670	352	170
1861-1871	3,689	459	1,370	760	260	410
1871-1881	4,325	636	1,480	790	350	404
1881-1891	4,833	508	1,524	870	680	826
1891-1901	5,371	538	1,548	880	250	380
1901-1911	7,207	1,836	1,925	900	1,550	740
1911-1921	8,788	1,581	2,340	1,070	1,400	1,089
1921-1931	10,377	1,589	2,415	1,055	1,200	970
1931-1941	11,507	1,130	2,294	1,072	149	241
1941-	13,648	2,141	3,186	1,214	548	379

1951 ²							
1951-1956	16,081	2,433	2,106	633	783	185	
1956-1961	18,238	2,157	2,362	687	760	278	
1961-1966	20,015	1,777	2,249	731	539	280	
1966-1971 ³	21,568	1,553	1,856	766	890	427	
1971-1976	23,450	1,488	1,760	824	1,053	358	
1976-1981	24,820	1,371	1,820	843	771	278	
1981-1986	26,101	1,281	1,872	885	678	278	
1986-1991	28,031	1,930	1,933	946	1,164	213	
1991-1996	29,611	1,580	1,936	1,024	1,118	338	
1996-2001	31,021	1,410	1,705	1,089	1,217	376	

Source: Statistics Canada, Census of Population.
Last modified: 2005-01-28.

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