Situation Report – Canada

Getting on Board the Supply Expansion Train: Context, Costs and Consequences

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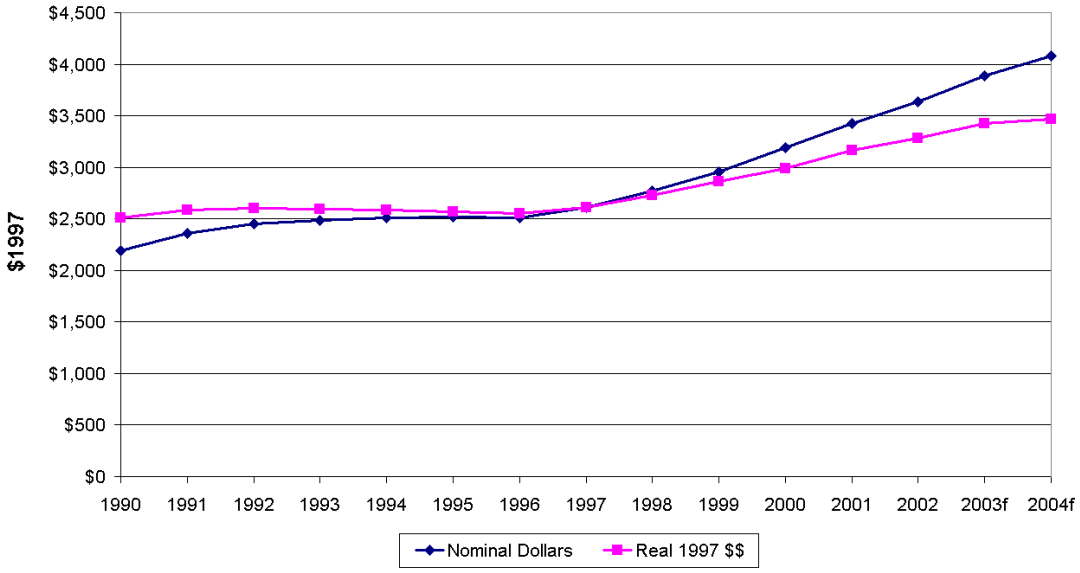
Context

Medical schools across the country have expanded entry enrolment over the past few years. In addition, two faculties of medicine, UBC (Vancouver, B.C.) and Sherbrooke (Quebec), have established campuses in more rural or remote communities, and one new school has opened in Ontario -- the Northern Ontario School of Medicine (NOSM). This is in the belief that graduates who study in these communities will be more likely to practice in rural and remote settings. NOSM also preferentially selects applicants with rural, northern and aboriginal backgrounds. These changes are consistent with trends elsewhere , but in Canada mark a rapid policy response to a dramatic change in view from the early 1990s, when there was a broad consensus that the country faced a surplus of physicians.

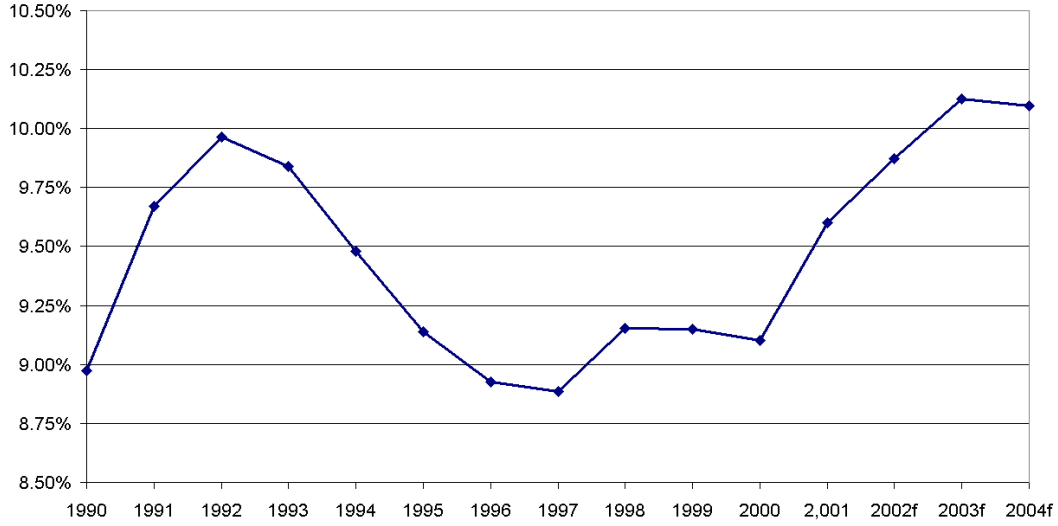
This recent expansion in medical training capacity has occurred against a backdrop of significant increases in overall health care costs in recent years. Costs more than doubled from about $61 billion (for a population of just under 28 million) in 1990, to over $130 billion (for a population of almost 32 million) in 2004. Figure 1 shows health care costs per capita in nominal and constant (1997) dollars, over the period 1990-2004. Costs per capita were increasing at the beginning of the 1990s, then flattened for a number of years as provinces mounted a full frontal assault on the sector, before beginning a significant climb about 1997 as the country's general economic fortunes improved. As of the most recent year for which data are available, that steady increase in costs shows no signs of abatement. In constant dollar terms, costs per capita actually declined from 1992 to 1996, before turning around and increasing rapidly through to 2003. Nominal costs per capita increased about 4.5% per annum over this period, while real costs increased an average of 2.3%. The increase in real costs over the shorter period since 1996 has, however, been much more rapid – almost 4% per capita per annum.

Figure 1
Canada, Health Expenditures,
Nominal and Constant $$ per Capita, 1990-2004



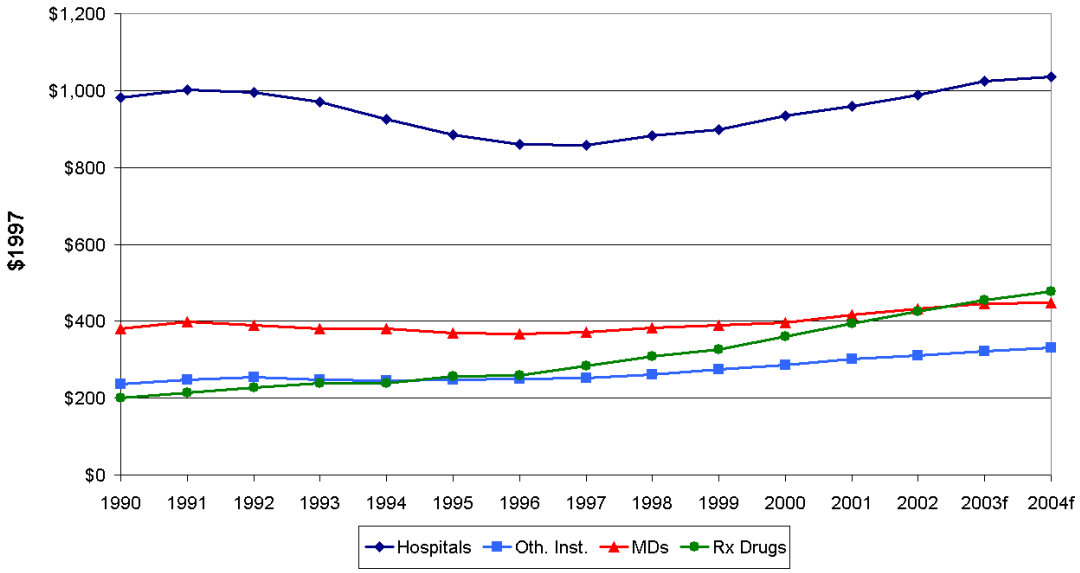
These trends are mirrored in the "% of GDP" statistics (Figure 2). Over the period, this ratio grew from about 9% to a little over 10%. But between 1992 and 1997 the ratio actually fell from just under 10% to just under 9%. There was a relatively rapid increase in share, from about 9% to about 10%, between 2000 and 2003. Though this appears to have levelled off in 2004, more recent events suggest that this share will be up again in 2005, a product of slightly slower overall economic growth juxtaposed with major new federal and provincial health care spending commitments.

Figure 2
Health Care Expenditures as Share of Gross Domestic Product, Canada, 1990-2004



The 86% increase in expenditures per capita over the fourteen years was fuelled to some extent by rapid increases in prescription drug costs (up **220% per capita** over the same period). Absent drugs, all other health care costs increased about 75%. Expenditures on physician services increased 58% per capita over the period (see Figure 3 for sector-specific trends over the period), though most of this increase was attributable to fee increases. The fee-adjusted (constant dollar) increase over the period was just under 18%. But for this sector as for the health care sector overall, this period was composed of two separate policy environments, the first lasting until about 1996, the second beginning about 1997. Real physician service costs per capita actually declined in Canada between 1991 and 1996, 'victim' of a determined effort by health care ministries across the country to get costs under control in the face of significant pressure on public sector revenues; beginning in 1997 physician costs turned around, reaching their 1991 level in 2000 and continuing to increase at least through to 2003. These trends in physician service costs mirrored, though were less dramatic than, the trends for hospital sector

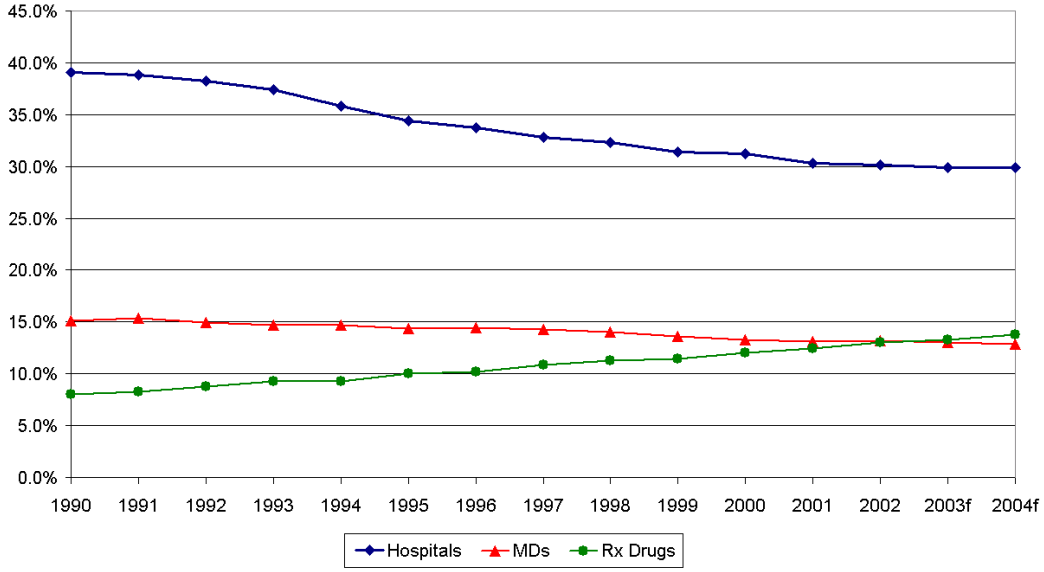
Figure 3
Canada, Health Expenditures per Capita,
Constant $1997, 1990-2004, Selected Components



costs. The rapid increase in prescription drug costs during the period resulted in those costs exceeding physician costs for the first time in 2003.

Figure 4 provides another view of inter-sectoral trends over the period. Here we show proportion of all health care costs represented by each of hospital, physician and prescription drug costs. Over this fourteen year period, hospital expenditures went from representing 40% of all health care costs, to closer to 30%. The physician services sector also declined in importance, though not quite as rapidly (down from 15% to just under 13%). As noted above, the major reason for these relative declines was the rapid increase in drug cost, representing 8% of total expenditures in 1990, but almost 14% (and still climbing) by 2004.

Figure 4
Share of Total Health Care Costs, by Sector, Canada, 1990-2004



Undergraduate Medical Education Capacity in Canada

In their 1991 report on the state of physician resource policy and practice in Canada, Barer and Stoddart set out almost fifty recommendations, intended to be implemented as an integrated package. One of these involved a reduction in first-year medical school enrolment intake of about 10%.[ψ] Perhaps predictably, this recommendation was 'cherry-picked' by policy makers, and first year intake to medical schools in Canada declined from just under 1800 students in the 1990 entry year, to about 1575 in the 1997 entry year, while virtually no attention was given to most of the recommendations. Interestingly, these reductions continued a downward trend that had begun in the early 1980s, and totalled somewhat more than 10% relative to the entry class size in 1990. As the general view shifted to one of physician shortage, this began to be reflected in policy around medical school enrolment. There was a particularly dramatic reversal between 1998 and 2001, such that by 2001 first year entry numbers were at historic highs. The entry class for 2004-05 (the most recent data available) was almost 2200 students, over 20% higher than in 1990.

More recently, as a second major effort to address the perceived shortage of physicians, increasing avenues to practice have been provided for graduates of foreign medical schools. Specifically, increased opportunities have been put in place for the Canadian-based training necessary before foreign medical graduates are able to write the licensing examinations [qz Ian/Joshua – I don't have time to track down the details; we may want

to be more precise here, in terms of which provinces have added the capacity, and what the capacity consists of]

Graduate Medical Education in Canada

Graduate or postgraduate medical education in Canada costs over $0.5 billion annually. An exact accounting is impossible, however, because there are multiple sources of funding and support for the postgraduate medical education enterprise (Table 1). Postgraduate students or residents are considered both health care providers and students. As health care providers they receive salaries from their respective provincial ministries of health. As students they must participate in an accredited residency program. The program must have an organizational structure governed by an academic unit within a university, and clear learning objectives and curriculum designed to meet the objectives. It must provide resources for learning: in Canada, these come from both the university and its affiliated health care institutions and national health care boards. Faculty must provide a scientific and scholarly environment for learning and there must be evaluation of both the learner and the program. Postgraduate students pay either nominal tuition fees or registration fees which really cannot be included in the funding of the educational enterprise.

Table 1. Funding Sources for Postgraduate Medical Education

DIRECT FUNDING	INDIRECT SOURCES*
Educational Grants from Departments of Education	Hospital and Health Board budgets from Ministries of Health
Tuition or Registration fees	Fee for Service Clinical Practice Plans
Specific Program funding from Ministries of Health	Voluntary teaching by part-time and community preceptors
Alternative Funding Plans where instituted from Ministries of Health	Alternative Funding Plans such as salaries
	Research funding

*** Note: Explicit and implicit indirect sources of funding are proving to be higher than direct funding for postgraduate education.**

Funding for the postgraduate program is derived from both direct and indirect sources. Resident salaries are the only cost item with a clear funding source and a clear annual budget. These salaries vary based on the education year and the province in which they are paid. They are part of a negotiated contract between the provincial residency association and the provincial Ministry of Health and Treasury Board. Salaries and benefits are paid through either the health board / health care institution or the university. Table 2 identifies, for each province in Canada with one or more faculties of medicine, the number of residents and the average salary paid in that province. The calculation of the average salary is weighted to account for the large number of first and second year residents and the very much smaller number of later year non-family medicine residents.

Family Medicine training in Canada is two years and represents approximately 35% of postgraduate positions. Using these calculations it is possible to estimate that the total salary cost for 7317 ministry of health funded residents is almost $358M. Table 3 uses a Canadian mean for each year of postgraduate training. This latter table does not reflect the weight that larger provinces create with large numbers of residents and higher salaries.

Table 2. Ministry of Health Residency Salaries - cost by Province

Funding Province	# of Residencies	Average Salary	Cost per Province
Newfoundland and Labrador	205	$43,233	**$8,862,765**
Maritimes: NS, NB & PEI	361	$48,125	**$17,373,125**
Quebec	2158	$43,742	**$94,395,236**
Ontario	2596	$52,734	**$136,897,125**
Manitoba	329	$49,662	**$16,338,798**
Saskatchewan	203	$49,806	**$10,110,618**
Alberta	867	$49,815	**$43,189,605**
British Columbia	598	$51,453	**$30,768,894**
TOTAL			**$357,936,505**

Derived from CAPER – salaries calculated as weighted average [2(R1+R2) +R3+R4 + (R5+R6)/2]

The educational costs of residency education are derived from direct provincial grants to universities and their medical schools, which may or may not accommodate postgraduate education depending on the province. Some provinces compensate faculty for loss of clinical income. But this is a minimal amount in the range of $10,000 per resident per year. All medical schools in Canada have developed business plans for the recent expansion of the undergraduate enrolment (see previous section). These plans have required a rationale for the cost of undergraduate medical education. The processes have varied across the country and the estimated amount has been from $45,000 to $75,000 per student per year, with a mean of about $52,000. Schools have estimated that postgraduate student education costs between 30 – 50% of an undergraduate student. Therefore, a conservative cost would be about $15,600 and a more generous estimate $25,000. In Canada, this educational cost is subsidized from a number of sources including hospital and health board budgets, the undergraduate education budget, research funds, clinical practice plans where faculty providing fee-for-service care pool their clinical income, voluntary teaching by part time faculty, and alternative funding

plans where applicable. Most alternative funding plans other than direct salary for physicians acknowledge a component for teaching both undergraduate and postgraduate students.

Table 3. Ministry of Health funded Residency Salaries – by year and discipline

Residency Discipline	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**Total**
Family Medicine including specialties	798	692	188		1	2	1	**1682**
Medicine including anesthesia, internal medicine, pediatrics	825	777	705	698	658	98	8	**3769**
Laboratory Medicine	48	59	45	42	35	2		**231**
Surgical including specialties and OB/GYN	341	340	306	280	284	67	17	**1635**
TOTAL #	**2012**	**1868**	**1244**	**1020**	**978**	**169**	**26**	**7317**
Average salary per year	$41,818	$46,140	$50,188	$54,041	$58,009	$61,688	$65,428	
TOTAL $M	**84.139**	**76.850**	**62.434**	**55.122**	**56.733**	**10.425**	**1.701**	**347.40**

Source: Modified from CAPER Annual Census 2004 -2005

The total number of postgraduate positions in Canada has increased from 8151 in 1995 to 10020 in 2004-05. This 23% increase has occurred since 2000 due to both an increase in ministry and non-ministry of health funded positions. The federal government does not fund postgraduate positions except for physicians in the military. The ministries of health positions have increased from a low of 6401 in 2000 to 7317 in 2004, a 14% increase. Non ministry of health positions increased from 2009 in 2000 to 2703 in 2004-05, a 34.5% increase. The majority of these non-ministry-of-health-funded positions are visa or non- Canadian students and they vary from as low as 1% of the residency body in

Newfoundland and Labrador to 27.3%of the positions in Ontario. Only 70 or 1% of the visa students are ministry-of-health funded. (Table 4). The visa and non-Canadian students are typically under contract to return to their home country.

Table 4. Residency Positions – Canadian and Visa Students

MD source	Legal status	Residents								Fellows	TOTAL
		R1	R2	R3	R4	R5	R6	R7	Subtotal		
MD Canada	CDN	1731	1678	1187	981	970	176	30	**6753**	313	**7066**
	Visa	11	10	5	2	2			**30**	1	**31**
	Subtotal	**1742**	**1688**	**1192**	**983**	**972**	**176**	**30**	**6783**	**314**	**7097**
MD outside Canada	CDN	316	222	97	95	65	10	1	**806**	152	**958**
	Visa	175	153	174	191	143	51	5	**892**	1073	**1965**
	Subtotal	**491**	**375**	**271**	**286**	**208**	**61**	**6**	**1698**	**1225**	**2923**
TOTAL		**2233**	**2063**	**1463**	**1269**	**1180**	**237**	**36**	**8481**	**1539**	**10,020**

Source: Modified from CAPER Annual Census 2004

Three issues arise when expansion of graduate medical education is discussed in Canada. The first is the necessary funding for resident salary, for university teaching programs and for the infrastructure and learning resources, whether these are formal learning environments such as laboratories, simulators etc., or the more traditional and informal learning environment of the hospital and community practice.

The second issue is whether the system will have the capacity to accommodate an increased number of postgraduate students. The learning environment has changed, with the generalist requiring more ambulatory care experience and less exposure to tertiary acute illness environments and models of learning. However, there appears to be considerable capacity as 29% of the post graduate positions are occupied by visa students. One hundred and seventy five are in R1 positions and 77% of all visa students are in the first four years of residency. But when the effects of undergraduate entry enrolment at 2,200 students or thereabouts begin to hit the post-graduate system, the capacity crunch may result in a reduction in the number of places for visa students. Since these students generate significant revenue for their respective faculties, another financial burden will be introduced if visa student positions have to be rolled back.

In the meantime, the major issue for expansion of postgraduate medical education remains funding of salaries and the educational costs. Based on these figures and including both salary and educational costs, any new positions will cost at least $67,000 each in 2004 dollars and this does not factor in any new infrastructure costs. The increasing role of decentralized medical education may further increase costs for each undergraduate and postgraduate position.

The third issue relates to the distribution and type of the postgraduate positions. There is growing acknowledgement of the national nature of the post-graduate training system.

Similar to the United States, medical students apply to post-graduate positions through a national matching system. Some provinces do not have medical schools and those with medical schools may not have post-graduate training positions in all disciplines. Therefore the decisions made to increase or decrease overall training positions or discipline-specific areas in one school can have significant ripple effects across the country. In response, there is growing national discussion among provincial governments about the decision to change post-graduate numbers. This national dialogue is also starting to involve medical schools. Provincially, governments are also working more closely with medical schools to identify the disciplines in which post-graduate training should be changed. This level of increased dialogue is new in many provinces where schools traditionally dictated where additional funding would be allocated. Supporting this allocation process is increasing data (and forecast modelling) about current and predicted areas of shortage and looking at the social accountability of medical schools to meet needs of the larger population beyond their immediate patient population.

Table 4. Cost of Ministry of Health Funded Graduate Medical Education – 7317 positions (excluding fellows and visa students)	
Salaries paid by Ministries of Health	**$357,936,505**
Conservative Estimated Educational Costs based on 35% of average undergraduate costs	**$133,169,400**
TOTAL	**$491,105,905**

Influences on Medical Workforce Expansion

Some time during the 1990s, the general perception regarding the adequacy of the supply of physicians in Canada underwent a profound change. One cannot point to a particular year, or to a particular event, that triggered the change. What is beyond dispute is that early in the decade there was a widely held view that Canada had a surplus of physicians, largely the result of an exuberant expansion of medical school capacity in the late 1960s and early 1970s. That expansion ended up being the main engine for three decades of continuous increase in the supply of physicians per capita. In 1993, two years after the release of the Barer-Stoddart report, a Canadian Medical Association (CMA) survey found that half of the doctors in the country believed enrolment in medical schools should be reduced. The president of the CMA is quoted as saying that despite cuts "it will be possible to serve all areas with Canadian-trained doctors [in the future]".[i]

By the mid-1990s, questions were beginning to be raised about the adequacy of physician supply, despite the fact that, in per capita terms, nothing much had changed. By the end of the decade, the 'common view' had swung 180 degrees, with a cacophony of calls for urgent attention to deal with the impending physician shortage. Today the physician shortage is taken as part of our collective understanding about the state of the union. In 2004, 89% of physicians indicated that

increased medical school enrolment would "provide a sustainable solution to address Canada's physician shortage".[ii] Yet the physician supply per capita in Canada in 2003 was virtually identical to what it had been a decade earlier.

Despite the aggregate supply figures, there does seem to be real cause for concern – in 2003 many among those waiting for specialist visits, non-emergency surgery and diagnostic tests reported unacceptable waits (29, 17 and 20%, respectively).[iii] Among family physicians, 60% now either take no new patients, or limit the numbers they see.[iv] And an overwhelming majority of Canadians (86%) now believe there is a shortage of physicians, and these perceptions are amplified by physicians themselves, with 89% now reporting shortages among their ranks.[v,vi]

A detailed analysis of the change in view during the 1990s[vii] concluded that there had been a true decline in the "real" (population- and physician-age-adjusted) availability of physicians. This decline was the product of a number of factors, the leading among them having been a shift in training requirements, from a one-year rotating internship to a compulsory minimum two year residency; an increase in the proportion of residency positions allocated for non-family-practice training, a reduction in foreign medical graduates entering practice, and an increased number of retirements. Exacerbating these effects has been the fact that new entrants to practice appear to be adopting lifestyles and practice patterns that, in effect, result in less fte practice capacity per new entrant to medical practice.[viii] While part of this is a sex-related phenomenon, Watson and colleagues concluded that a cohort effect was the predominant influence – younger physicians were simply working less than their older counterparts had worked at the same age (and are working now).

The shift in thinking about the adequacy of Canadian physician supply coincided in time with the shift noted in section 1 of this paper, from an era of health care sector constraint, to a more expansive approach fuelled by an improving economy and a general perception that (at least some of) the constraints had overshot their mark. As a result, it was relatively easy to use survey-based and anecdotal accounts of patients waiting an increasingly long time for specialist services, or not being able to find a general practitioner who was accepting new patients, to argue that expansion of medical school places was urgently needed. Some schools sold their strategic expansion plans as a means of improving access to care for rural and remote communities. Whatever the rationales, medical school expansion began in earnest in 1998. Canada's first year entry class is now 33% higher than it was a decade ago, and Canada has also taken concrete steps to increase the number of foreign medical graduates for whom skills upgrading and access to licensure examinations is available.

Looking Ahead

Two of the current health care policy preoccupations in Canada are access to care, and pharmaceutical costs. Priority is being given to reducing public sector wait times and, of course, the policies related to increasing physician training are seen as part of this

package. Some (though not all) of the time, waits for services are directly related to availability of physicians. Other precipitating factors have included availability of complementary personnel (e.g. radiation technologists), availability of diagnostic imaging capacity, availability of operating room capacity, and lack of coordinated systems for managing patient queues.

A third area of priority has been health human resources. Nationally there has been a specific focus on HHR. Three federal level initiatives have been launched in response to the 2004 Accord between the provinces and the federal government. These include:

- Pan-Canadian Health Human Resource Planning;
- Interprofessional Education for Collaborative Patient-Centred Practice; and
- Recruitment and Retention of Health Care Providers.

Provinces, under the same accord, have committed to creating a long term HHR plan to be released publicly by December 31, 2005. They have also undertaken a wide variety of HHR related initiatives already including increasing supply in many professions and looking at new roles.

How the recent medical school and post-graduate training expansion will affect access to care in the near future is dependent on many things, including trainees' choice of specialty and location of practice, availability of complementary (physical and human) resources, and availability of funding.

As some wise sage once said (in so many words), trying to predict the future is an uncertain business. There is every likelihood that health care spending in Canada will continue to increase, and that it will continue to increase somewhat faster than population growth and the growth in gross domestic product. The continued aging of the population will be a contributing factor, but a small one.[vii should be ix] More influential will be the continued rapid increase in the cost of prescription pharmaceuticals, particularly those associated with tailored and targeted gene-based therapies, and cost pressures arising from increasingly costly new non-drug technologies. All health care systems struggle with how to manage growing expectations, and how to resist the powerful pressures associated with the creative marketing of new products and services; Canada seems, at present, no more likely than any other system to be able to resist these influences. Even where some headway appears to be made, as with British Columbia's pharmaceutical Reference Pricing System [qz ref. Schoenweiss [x]], there is limited appetite for more generalized uptake. Many other examples of efficiency-improving system innovation possibilities[viii should be xi] are available, but they all seem to fall prey to Canada's general disinterest in innovation diffusion. And there are numerous examples of potential improvements in clinical practice not adopted. For example, the Canadian-developed "Ottawa ankle rules" [viii] [qz should be endnote/ref [xii]] provided a straightforward way of avoiding unnecessary radiography in the diagnosis of ankle fractures. These guidelines were widely promulgated, and widely accepted within the clinical community. Yet over a decade later, the use of radiography for diagnosing ankle fractures has increased dramatically, and the ankle rules seem to be rarely used.[ix] [should be endnote/ref [xiii]]

On the physician expenditure front, it will be a number of years yet before the cost implications of the recently-enacted policies start to become evident. The combination of new training capacity and increased opportunity for foreign medical graduates will, in short order, begin to be seen in rapidly increasing physician supply figures. Whether full-time-equivalent physician supply will again begin increasing faster than population growth (even age adjusted) cannot be known with certainty. This will be dependent on rates of physician net migration, age-specific retirement rates, and practice style and pattern decisions of new entrants. If new physicians continue to practice less than their predecessors, and if (as seems certain now) females continue to enter the profession at current rates (just over 50% of new medical school entrants are female), 'effective' physician supply growth may not outstrip population growth. And increases in physician incomes, the result of relatively generous fee increases in a number of provinces, will have an unknown influence on physician life-cycles. Also affecting the ability to accurately predict future HHR needs are the increasing complexity of medical knowledge and technology as well as changing expectations of the public about their health care (including preventative care and complementary medicine).

None of this is new; but it does make any assessment of likely cost trends 10-15 years out highly speculative. It would not surprise us, however, to find an environment in which physician sector costs are viewed as "out of control" five-ten years hence, and in which efforts are being made to figure out how to simultaneously get a handle on physician supply and get more physicians willing to practice in rural and remote areas of the country. Everything that is old may be new again.

While about 30% of total health care costs in Canada are funded privately (either through private insurance or out-of-pocket payments,[xi] virtually all of physician services are financed through taxation, and funded through public purchase of services on behalf of those Canadians requiring those services. And while pressures on other sectors, particularly the prescription drug sector, seem likely to increase the private share of financing there, it appears unlikely that any significant share of core physician services will be other than publicly financed through the foreseeable future. There are mixed views on whether a recent Supreme Court of Canada ruling that Quebec residents must be able to purchase private insurance to cover core services for which long waits exist in the public sector, will change this in any significant way, either in Quebec or more generally.[xiv] We are betting not.

Perhaps the most important determinant of overall health care spending in Canada will be the country's economic performance, and fiscal decisions taken by the federal and provincial/territorial governments. Canada's history is informative here. As a percent of GDP, health care in Canada has gone through periods of relative stability (the 1980s could be viewed as the "8% decade", and the 1990s as the "9% decade"), interspersed with short periods of rapid growth. These periods of growth have been associated either with a slowing economy (as in the late 1980s and early 1990s), or a buoyant economy (as in more recent years). In the former case, health care costs are not usually expanding at historically high rates; rather, the denominator expands more slowly. The 1990s were characterized by a period of general economic slowdown, followed by a reactive attempt

to get ‘runaway health care costs’ under control. In truth, health care costs were not running anywhere. But the public revenue base from which those costs are covered was not keeping up.

In recent years all provinces, and the federal government, have been in a tax rate ‘race to the bottom’. This has reduced tax revenue available for public sector programs, including health care but, so far, economic growth has been sufficiently robust that the ‘big squeeze’ has not arrived (though the provinces have established a pattern of cutting their own taxes and then squealing to Ottawa that they need more funds for health care – it has, so far, been an effective strategy). When the inevitable economic slowdown arrives, we might expect to see another cycle of health care cost belt-tightening. How many of these cycles Canada will experience over the next 10-15 years is, of course, difficult to predict. Nevertheless, all things considered, this may turn out to be the “10% decade”.

In sum, we expect that the recent expansion in medical training and relaxation of restrictions on entry to practice for foreign medical graduates will, in short order, begin to be reflected in more rapidly increasing physician sector costs (and/or more pitched battles over physician fees and methods of remuneration). While these costs will continue to be financed largely through public taxation, they will put pressure on other health care sub-sectors (e.g. pharmaceuticals and hospitals) and on other non-health-care public spending. Despite the commitments to a national pharmacare program, it seems likely that this will be skeletal, at best, and that the recent trend of cost-shifting drug costs to private financing will continue. These pressures will be exacerbated by provinces’ recent reductions in personal and corporate tax rates, when the inevitable economic slow-down arrives. At that point we expect that Canada will enter yet another cycle of health care cost-cutting and cost-shifting. Health care costs will drift up toward 11% of gross domestic product, before being hammered back down a bit as a result of the belt-tightening. It will, in the words of that peerless prophet, Yogi Berra, be déjà vu all over again.

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