



Health
Canada

Santé
Canada

*Your health and
safety... our priority.*

*Votre santé et votre
sécurité... notre priorité.*

Overview of the Cost of Training Health Professionals



Canada 

Overview of the Cost of Training Health Professionals

Research Report prepared by
OLCDB - Official Languages Community Development Bureau

January 2008

© Her Majesty the Queen in Right of Canada, represented by the Minister of Health, 2009

Cat. : H29-1/2009E

ISBN : 978-1-100-11971-7

Table of Content

Introduction	5
Three types of educational programs in the health professions	6
Physician medical training and licensure	7
Nursing programs	8
Paramedicine programs	8
Provincial and national figures on the cost of training in the selected health professions	9
CNFS working group figures: provincial funding to colleges and universities	9
Standing Senate Committee figures: national association cost estimates	10
Cost of training studies for the health professions: a critical perspective	11
Medical school	11
Nursing	19
Paramedicine	22
Further considerations	22
Alternative approaches to evaluating training programs for health professionals	24
Concluding Remarks	30
Annex A – Francophone College and University Programs offered by CNFS under Training and Retention of Health Professionals	31
Annex B – CNFS working group estimates of training costs	33

Introduction

The Official Language Community Development Bureau (OLCDB) supports initiatives designed to improve access to health services for members of official language minority communities — English-speaking persons in Quebec and French-speaking persons in the other twelve provinces and territories. One such initiative is the Support for Training and Retention of Health Professionals component of the Contribution Program to Improve Access to Health Services for Official Language Minority Communities, which is designed to increase the number of health care professionals who provide services in the language of the minority community.

The vast majority of spending on the Training and Retention component – \$63 million distributed over a five year period – is aimed at addressing gaps in French-language access to health care services. To this end, funds have been channelled to 10 post-secondary institutions working to increase the supply of French-speaking health care professionals outside Quebec and to the organization that coordinates these efforts – the national secretariat of the Consortium national de formation en santé (CNFS). The 10 member institutions of the CNFS are listed in Table 1. The 95 college and university programs funded under contribution agreements with CNFS member institutions are listed in Annex A.

Table 1 – Member Institutions of the Consortium national de formation en santé

1 –	Université Sainte-Anne, Collège de l'Acadie (Nova Scotia)
2 –	Collège communautaire du Nouveau Brunswick, campus Campbellton
3 –	Université de Moncton (New Brunswick)
4 –	Government of New Brunswick / Centre de formation médicale du Nouveau-Brunswick
5 –	La Cité collégiale (Ontario)
6 –	Université d'Ottawa (Ontario)
7 –	Université Laurentienne (Ontario)
8 –	Collège Boréal (Ontario)
9 –	Collège universitaire de Saint-Boniface (Manitoba)
10 –	Campus Saint-Jean, Université de l'Alberta (Alberta)

In May 2007, the Report of the House of Commons Standing Committee on Official Languages indicated that the federal government's investments in the CNFS seemed expensive and that the investments must not absolve provincial governments of their responsibilities in education and must not be used to directly compensate institutions over and above the cost to them of making extra effort to train francophone health professionals.

The Committee agrees that it should ideally cost the provincial governments less to train a Francophone health care professional than an Anglophone one in order for the provinces to become actively involved in the development of official language minority communities.¹

The Standing Committee's report goes on to recommend “an in-depth evaluation of the use of the funding allocated in order to compare the cost of training a student outside the CNFS to that of training a student within the CNFS.”

This cost of training overview has the modest ambition of providing a survey of some of the issues that

¹ Report of the Standing Committee on Official Languages (2007). *Communities speak out, hear our voice : the vitality of official language minority communities*. [available online] page 75.

might arise in connection with the Support for Training and Retention of Health Professionals program. It draws on a limited information base – specifically, on published studies that contain estimates of the cost of training in the health professions and on a wider review of the literature on the financing of training in the health professions. The goal of the overview is to provide a general sense of the issues relating to cost of training studies and to provide insights into an objective assessment of the comparative costs of training health care professionals within and outside the CNFS to assist Health Canada in more effectively planning for future investments in training and retention initiatives. To this end, the paper begins with a survey of three types of educational programs in the health professions. The survey is followed by a summary of provincial and national cost of training estimates associated with each of the three selected program types. Next is the main portion of the paper, which is devoted to a discussion of the limitations of cost estimates for training in the health professions. Considerable attention is paid here to cost estimates for medical education, primarily because it is the topic that is most widely discussed in the literature.

Three types of educational programs in the health professions

Although the OLCDB Support for Training and Retention of Health Professionals component is primarily a language access initiative — its main purpose is to ensure that there is an adequate supply of French and English-speaking health professionals to serve the needs of Official Language Minority Communities — an obvious secondary benefit of the program is that it will help to increase the number of trained health care professionals in Canada. In its 2002 report entitled *The Health of Canadians – The Federal Role*, the Standing Senate Committee on Social Affairs, Science and Technology laid emphasis on anticipated shortages in health human resources in Canada.² Of particular concern are expected shortages in the supply of physicians and nurses. Elsewhere, concern has been expressed regarding shortages in the supply of paramedics.³ Bearing in mind these expressed concerns, the following sections provide general features of three types of training programs in the health professions; those offered to doctors, nurses and

² Standing Senate Committee on Social Affairs, Science and Technology (2002). *The Health of Canadians – The Federal Role. Final Report. Volume Six: Recommendations for Reform.* (6) 5, Ch. 10, [available online], <http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/SOCI-E/rep-e/repoct02vol6part4-e.htm#CHAPTER%20ELEVEN>. The need for health care reform has been a recurring theme in public debate and discussion for many decades. In recent years, concerns have been voiced on topics ranging from improved technology in hospitals to a national system of electronic health records to reducing patient wait times. In Chapter 10 of the Senate Committee report, under “Expanding Capacity and Building Infrastructure”, it is recommended that a permanent national committee be established to oversee human resource-related issues in health care. In addition, numerous recommendations were made regarding the role of the committee and the federal government in addressing anticipated human resources shortages.

³ It is easy to find evidence of the shortage of paramedics in Canada. See, for example, the following national news articles, [available online], http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20050128/doctor_shortage_050127 and http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20070810/paramedics_070809.

to paramedics.⁴

Physician medical training and licensure

There are normally six stages in the training and licensure of Canadian medical graduates.⁵ The first three stages are directly related to training, while the latter three relate to licensing.

- 1) The first stage is two years of general undergraduate pre-medical education.
- 2) The second stage is a four-year undergraduate medical education program. This program involves two years of basic medical science education and two years of clinical clerkship.
- 3) The third stage is commonly referred to in Canada as residency, but is also known as postgraduate or graduate medical education. Residency is a period of supervised practice and training. It varies in length from two years for family medicine to four or five years for other specialties.
- 4) A certificate from an appropriate certifying body (i.e., the College of Family Physicians of Canada, the Royal College of Physicians and Surgeons of Canada, and the Collège des médecins du Québec);
- 5) a license to practice independent medicine in Canada (i.e., Licentiate of the Medical Council of Canada); and,
- 6) registration to practice in a particular province.

⁴ There are many different programs and differences between programs that train health professionals in Canada. This makes it difficult to generalize widely about the cost of training in the health professions. Typically, the college diploma and undergraduate degree programs that train doctors, nurses and other allied health professionals range between two and four years in length. However, many health professionals require ongoing training and certification as well.

⁵ Canadian Information Centre for International Medical Graduates (2007). *Medical Training/Licensure System in Canada*, [available online], http://www.img-canada.ca/en/licensure_overview/licensure.html.

Nursing programs

There are two kinds of entry-level programs for students choosing to pursue careers in nursing. One is a degree program and the other is a diploma program. According to the Canadian Nurses Association, degree programs take four years, while diploma programs take three years. Students pursuing university degrees in nursing follow a program of study that involves courses in nursing, the physical sciences, the social sciences and the humanities. Most provinces require a BN or BScN degree for new nurses. Degree students are encouraged to follow their university training with a Canadian Nurses Association certificate program that establishes that a nurse has met a national standard of competence. Diploma students follow a similar, but less intensive training program and must pass the Canadian Registered Nurse Examination in order to become Registered Nurses. It is usually possible to obtain a college diploma and then transfer to a university degree program.⁶

Paramedicine programs

The Canadian Medical Association has approved a variety of paramedicine programs – including those offered through Nova Scotia’s Université Sainte Anne and the Southern Alberta Institute of Technology.⁷ The Université Sainte Anne offers two levels of training in paramedicine. There is an entry-level certificate program that can take as little as one year to complete. This program trains paramedics to give on-site emergency first aid before and during transportation to hospital. There is also a more advanced program that provides training for a diploma in paramedicine. Diploma graduates are qualified to administer more advanced care prior to arrival at hospital, to use complex technology and to perform interventions involving cardiac defibrillation and the administration of medicines.⁸ The Southern Alberta Institute of Technology (SAIT) offers three levels of training. The first level is the Emergency Medical Responder twelve-week certificate program, which introduces ambulance care attendants to the basics of life-support care. Graduates of this Emergency Medical Responder program are eligible to enroll in a ten-month certificate program to become certified as an Emergency Medical Technician - Ambulance. A further two-year diploma program is required to obtain qualification as an Emergency Medical Technician - Paramedic. It is this latter training program that qualifies an ambulance attendant to become a paramedic in Alberta. In addition, ambulance attendants in Alberta must complete provincial testing through the Alberta College of Paramedics.⁹

⁶ Canadian Nurses Association (2007). *Nursing in Canada*, [available online], http://www.cna-aiic.ca/CNA/nursing/becoming/default_e.aspx. Nurses may also obtain credentials in advanced nursing practice. It is possible to obtain, for example, a post-master’s degree “nurse practitioner diploma”. Qualified nurse practitioners undertake all forms of nursing activities and are further accredited to perform activities such as medical diagnosis, the ordering of diagnostic tests and drug prescription.

⁷ There are differences in the training and designations of paramedics in Canada. However, a standardization process is gradually taking place across the country. The Canadian Medical Association (CMA) publishes a list of approved programs in paramedicine.

⁸ Université Sainte Anne. Programmes. Santé (2007). *Soins ambulanciers paramédicaux*, [available online], <http://www.usainteanne.ca/programmes/sante.php?id=6>.

⁹ SAIT Polytechnic (2007). *Programs Offered*, [available online], <http://www.sait.ca/pages/cometosait/academic/Programs.shtml>.

Provincial and national figures on the cost of training in the selected health professions

The three selected professions of medicine, nursing and paramedicine correspond, respectively, to expensive, mid-range and less-expensive training programs in the health professions. In the following section, provincial and national cost of training estimates are given for each of the selected professions.

CNFS working group figures: provincial funding to colleges and universities

The cost of training medical and other health professionals in Canada is estimated in a 2007 CNFS working group report entitled *Rapport du groupe de travail sur le développement d'une formule d'analyse des propositions des institutions du CNFS en vue de la Phase III (2008-2013)*. This report estimates the cost of training by appeal to provincial funding formulas for university programs.¹⁰ Specifically, the amounts are based on i) provincial grant amounts awarded towards operational costs and ii) provincial per capita amounts, i.e., amounts awarded to universities based on the number of students enrolled in each discipline and the cost of instruction in each discipline. Most provincial funds are linked to the latter category, i.e., enrollment. In Nova Scotia, for example, weighted enrollment grants account for 91% of the provincial funding to universities.¹¹ In Ontario, enrollment-based formula funding accounts for 92.5 % of all provincial funding.¹² According to the CNFS working group figures, training in medicine is by far the most expensive of the disciplines:

- Funding awarded by the provinces to universities for the training of one medical student for one year ranges between \$45,000 and \$73,500.¹³

Training in the other health professions is far less expensive. According to the CNFS working group, provincial funding awarded for college training programs starts as low as \$2,500 per student per year and reaches a high of \$17,100 per student per year. Provincial funding awarded per student per year for undergraduate degrees in the health professions ranges between \$8,600 and \$19,900.

For nurses and paramedics, the figures are as follows:

- Funding awarded by the provinces to train one nurse for one year of a university program ranges from \$12,500 to \$19,100.
- Funding awarded by the provinces to train one nurse for one year of a college diploma ranges from \$9,200 to \$14,000.
- Funding awarded by the provinces to train one paramedic for one year of a college diploma

¹⁰ Provincial funding amounts are based on provincial estimates of the cost of training.

¹¹ Nova Scotia Council on Higher Education (1998). *University Funding Formula - Technical Report*, [available online], link from http://www.ednet.ns.ca/index.php?sid=865172598&t=sub_pages&cat=350.

¹² Ontario Council on University Affairs. Task Force on Resource Allocation (1994). *Ontario University Funding System*, [available online], www.oise.utoronto.ca/depts/tps/TPS1017/Form_Fund/OntUnivFundSys.pdf.

¹³ It is unclear whether the figures are intended to represent funding for both undergraduate and graduate medical education.

program ranges from \$8,000 to \$11,600.¹⁴

The CNFS working group tables for training francophone health care professionals are reproduced in Annex B.

Standing Senate Committee figures: national association cost estimates

A second source of information on the cost of training medical and other health professionals in Canada is the 2002 report of the Standing Senate Committee on Social Affairs, Science and Technology, *The Health of Canadians – The Federal Role*. This report estimates the cost of training one medical student for one year of university at \$65,000 and the cost of training one nursing student for one year at \$7,700. These figures, based on data provided by the Association of Canadian Medical Colleges (ACMC) and the Canadian Nursing Association (CNA), are used by the Standing Senate Committee to estimate the cost of adding new seats to existing programs:¹⁵

Association of Canadian Medical Colleges (ACMC) figures:

Cost of training per medical student per year (2002): \$65,000

Cost of training each medical student over a four-year program (2002): \$260,000

Canadian Nursing Association (CNA) figures:

Cost of training per nursing student per year (2002): \$7,700

Cost of funding each nursing student over a four-year program (2002): \$30,000

In the two examples listed here, the figures appear to represent both the didactic and clinical components of the university or college training required for the respective programs. As with the CNFS working group figures cited above, no additional funds for residency, supplementary clinical training, certification or upgrades appear to be included in these estimates. While the figures are consistent with the findings of the CNFS working group, no explanation of the derivation of the ACMC or CNA figures is given.

¹⁴ In all of these cases, the CNFS working group figures are based on provincial grant amounts towards operational costs and per capita amounts. The figures appear to relate to the four-years of university and/ or clinical training associated with nursing and medicine programs and the college diploma program for paramedics. In other words, no additional funds for residency, supplementary clinical training, certification or upgrades are considered.

¹⁵ Standing Senate Committee on Social Affairs, Science and Technology. 37th Parliament, 2nd Session (September 30, 2002 - November 12, 2003) *The Health of Canadians – The Federal Role (Vols. I-VI)*, [available online], http://www.parl.gc.ca/common/Committee_SenRep.asp?Language=E&Parl=37&Ses=2&comm_id=47.

Cost of training studies for the health professions: a critical perspective

Medical school

Cost of training studies for medical schools have produced figures that vary considerably. Naturally, this presents a challenge for anyone wishing to assess the legitimacy or accuracy of a given cost estimate. The accountability problem is exacerbated by several factors.

University budgets have been free from detailed scrutiny. The connections between operating grants and enrolments, programs, and, to some degree, research have provided governments with mechanisms by which they can account for the distribution of grants to universities.¹⁶

As well, universities seldom break down the financial figures that they release to the general public, so there is limited opportunity to address the accountability problem through external financial analyses.

One question that can arise for the evaluator concerns what to include in a cost of training estimate. For instance, in addition to costs directly associated with university degree or college diploma education, there may be other legitimate costs of training that vary from one institution to another -- i.e., costs associated with starting new programs, with infrastructure or technology upgrades, or with operating a school. Another question is that of whether the cost estimates have been skewed by unique features of data collection or costing used by particular universities. Indeed, because there is no requirement to use a standard model in making cost estimates, medical schools often come up with widely divergent figures for a given cost category. However, such divergences may not even be linked to direct costs of training; rather, they may simply reflect the unique circumstances or methods involved in the manufacturing of particular cost estimates.¹⁷

Factors that may affect the reporting of costs: program start-up costs

If start-up costs are factored into annual operating costs and appear as education-related costs, then this will inflate the per capita costs associated with the operation of an education program. Here are some recent estimates of start-up costs:

- Laurentian University is planning to launch a new medical program in 2008, graduating 55 students per year. The start-up costs are estimated at \$80 million for the four-year program.¹⁸

¹⁶ A. L. Darling et al. (1989), *Autonomy and control: a university funding formula as an instrument of public policy* in *Higher Education* 18: 559-583 (1989), [available online], http://www.oise.utoronto.ca/depts/tps/TPS1017/Form_Fund/Autonomy_Control.pdf.

¹⁷ By way of comparison, the University of Washington estimates the average annual expenditure per medical student at \$ 77,905 (\$68,500 in US dollars in July 2006). It is unclear how this figure is derived. T. Mankowski and C. Hagerty, University of Washington Office of News and Information. (2006). *Universities present plan to expand medical education and dental education in Spokane* (July 21, 2006), [available online], <http://uwnews.org/article.asp?articleid=25715>.

¹⁸ P. Sullivan and M. O'Reilly (2007). *Canada's first rural medical school: Is it needed? Will it open?* in *Canadian Medical Association Journal*, [available online],

- The University of British Columbia is expanding its medical school, introducing a distributed campus model with two new locations in Prince George and Victoria. The expansion will require \$135 million in provincial funds for facilities and infrastructure.¹⁹ The British Columbia expansion is expected to double the available entry-level seats from 128 to 256 as early as 2007.²⁰

Based on the above figures, the start-up cost per new seat in medicine will be about 1.5 million for Laurentian University and one million for the University of British Columbia. By way of comparison, the University of Washington announced a medical school expansion project in July 2006, based on a distributed campus model, and gave the following figures, in American dollars, when it expanded its medical program by 20 seats: \$5.5 million to cover annual operating costs, \$4.9 million in start-up costs and \$7.5 million in capital costs.²² In Canadian dollars, the figures are \$6,132,500 for annual operating costs, \$5,463,500 for start-up costs and \$8,362,500 for capital costs. Since 20 new seats are to be created, the start-up costs per new seat are estimated at \$273,175.²³

¹⁸ (...continued)
<http://www.cmaj.ca/cgi/content/full/166/4/488>.

¹⁹ D. Snadden and J. Bates (2007). *Expanding undergraduate medical education in British Columbia: a distributed campus model* in *Canadian Medical Association Journal* [available online], <http://www.cmaj.ca/cgi/content/full/173/6/589/DC>. An abridged version was published in the Sept. 13, 2005, issue of CMAJ and is available online at www.cmaj.ca/cgi/content/full/173/6/589.

²⁰ Ministry of Health (2005) *B.C. is investing to Boost Future Doctor Supply*, [available online], http://www2.news.gov.bc.ca/news_releases_2005-2009/2005HEALTH0039-001058-Attachment1.htm.

²¹ Office of the Premier, Ministry of Health Services and Ministry of Advanced Education . B.C. provincial government news release (2005). *B.C. Invests \$27.6 Million to Support Doctor Education*, [available online], <http://www2.news.gov.bc.ca/archive/2001-2005/2005HSER0003-000017.htm>, Jan. 12, 2005. Additional funding for facilities and infrastructure for this expansion was obtained from Western Economic Diversification Canada, the Canada Foundation for Innovation and private sources. Evidently, some costs, such as those funded federally, have not been factored into the above estimate. Consider also, that in 2005, the British Columbia government announced funds for expansion and enhancement of existing teaching hospitals and clinical facilities. In this case, the province of British Columbia invested \$27.6-million in order to improve the hospital teaching facilities used for its residency training. This figure is not likely reflected in the 135 million expansion quote.

²² T. Mankowski and C. Hagerty, University of Washington Office of News and Information. (2006). *Universities present plan to expand medical education and dental education in Spokane* (July 21, 2006), [available online], <http://uwnews.org/article.asp?articleid=25715>.

²³ Note that if capital costs are factored in , the cost per new seat is \$691,300. If one year of operating costs is also factored in, the cost per new seat is \$997, 925.

Factors that may affect the reporting of costs: operating costs

In addition to start-up costs, there are numerous factors that may affect the way per capita and annual operating costs for medical schools are calculated and reported. Here are some of the relevant factors:

- Educational mission: Medical schools have traditionally defended their funding requirements by appeal to educational mission. The claim is that funding is not only required for education and clinical service, but also for research. The three cost components can vary significantly and this may affect reporting of the cost per student.
- Fixed and variable costs: There are base costs associated with running an educational program. Such costs may include educational supplies, technological tools, professorial salaries, training facilities, administrative support, and so on. These costs can vary significantly from school to school – as does the manner in which they are reported. For example, teaching salaries for medical professors are the biggest single expense in medical faculties.²⁴ While salaried labour and benefits are regarded as fixed costs, in the case of medical schools, salary expenses and benefits are harder to predict and can vary tremendously between schools. More importantly, salaries and benefits are often calculated and reported in non-standard forms in cost estimates.
- Program size: It is generally held that fixed costs per student will tend to be higher for smaller programs.
- Program design: It is generally held that centralized programs are cheaper to run than decentralized or distributed campus programs.

Factors that may affect the reporting of costs: education-related incentives

Special incentives relating to recruitment, retention and access initiatives are cost components that relate to training. Provinces essentially compete for doctors, so incentive types and amounts vary from province to province.²⁵ The table below, taken from Barer, Wood and Schneider's *Toward Improved Access to Medical Services for Relatively Underserved Populations: Canadian Approaches, Foreign Lessons*, gives an indication of the education-related and education/training incentives in the various provinces in Canada. On p. 11, the authors explain the nature of the education-related funding incentives: "Education-related funding approaches involve providing a variety of financial incentives to physicians-in-training, in order to encourage them to select particular training experiences, particular specialties, or particular practice locations post-graduation. They range from support for rural

²⁴ D. Hawkins, MD, Executive Director, ACMC (2003?). *Social Accountability of Canadian Medical Schools: The Factor of Complexity*, [available online], www.afmc.ca/pdf/Complexity%20of%20medical%20schools.pdf, p. 2.

²⁵ M. Barer, L. Wood and D. Schneider (1999). *Toward Improved Access to Medical Services for Relatively Underserved Populations: Canadian Approaches, Foreign Lessons*, Centre for Health Services and Policy Research The University of British Columbia, [available online], www.hc-sc.gc.ca/ahc-asc/alt_formats/cmcd-dcmc/rtf/media/releases-communique/1999/9picebk7.rtf.

placements, to bursaries and loan packages, the latter often tied to return-in-service commitments.”²⁶

Barer, Wood and Schneider also explain the nature of various other incentives related to education/training: “Within an educational/ training cluster are a wide range of policies spanning the early stages of the "physician life cycle" (Barer and Stoddart, 1991a). These might begin with high school science enrichment and student counselling programs for rural areas, through medical school recruiting strategies, through curricular and clinical exposures provided during medical and post-graduate training, to continuing education/skills upgrading initiatives Included would be initiatives based on where training programs are physically located, as well as where students are sent for training.”²⁷

As Table 2 shows, there is variety in the education-related incentives offered by the provinces. This variety relates to the type of incentive, the number of incentives and the dollar amounts.

Table 2 – Contemporary Provincial/Territorial Policy Approaches

Policy Approaches	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I	Nfld.	Yuk.	N.W.T.
Direct Funding – Education Related												
Undergraduate/post-graduate student loans/grants/bursary with return of service			✓	✓	✓	✓				✓		✓
Special funding or loans for residency and specialty skills development	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Special travel allowance for students to get to summer placements or residencies		✓	✓	✓	✓							
Financial support for continuing medical education	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Education/Training												
Rural training/exposure for undergraduates	✓	✓	✓	✓	✓	✓	✓			✓		
Rural placements / teaching units in association with a rural practice residency or specialty	✓	✓		✓	✓		✓			✓		
Special (re-entry) access to residency and/ or new specialty skills development		✓	✓	✓			✓	✓		✓		
Special recruitment policies/criteria for new undergraduate medical students, e.g. aboriginals, rural		✓	✓	✓	✓							
Special recruitment policies/criteria for graduate level residency training	✓											
Development of continuing education capacity using new communication technologies		✓	✓					✓		✓		
Promotion of rural practice in medical schools				✓			✓	✓		✓		

²⁶ Ibid, p.11.

²⁷ Ibid, p.11.

Table 2 – Contemporary Provincial/Territorial Policy Approaches

Policy Approaches	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I	Nfld.	Yuk.	N.W.T.
Nurse practitioner or similar program			✓	✓	✓					✓		

Source: Barer, Wood and Schneider (1999), pp. 15-16.

Factors that may affect cost estimates: residency programs

Cost of medical training estimates may also vary depending on whether residency (postgraduate medical education) is included in the estimate. One recent estimate puts the cost of undergraduate medical training in Canada at \$45,000 to \$75,000 per resident per year. In contrast to this, the cost of residency training in Canada at \$68,500 to \$77,000 per resident per year. In the latter case, the figures include \$52,000 in salary and \$15,600 to \$25,000 in benefits and other expenses.²⁸

Several recent American and Canadian studies also discuss the cost of graduate medical education and the issues around cost of training studies. According to one report, the major cost component in cost of training estimates for graduate medical education is postgraduate salaries. The 2005 Public Health Agency of Canada report on *The Landscape of Community Medicine Residency Training in Canada: An Environmental Scan* includes a basic salary table for residents in all of the provinces:²⁹

Table 3 – Postgraduate Salaries by Province and Level of Training (\$)

Province (year)	Postgraduate Year				
	1	2	3	4	5
BC (2003)	\$43,869	\$48,939	\$53,330	\$57,405	\$61,734
AB (2004)	\$43,121	\$46,866	\$51,557	\$55,306	\$59,994
SK (2004)	\$43,372	\$47,300	\$51,225	\$55,132	\$59,011
MB (2004)	\$43,273	\$46,952	\$51,138	\$55,072	\$59,007
ON (2004)	\$44,230	\$51,628	\$54,765	\$58,475	\$62,358
QC (2001)	\$36,543	\$40,101	\$44,221	\$48,322	\$51,601
NS (2004)	\$41,845	\$45,394	\$49,668	\$53,353	\$57,465
NL (2002)	\$37,380	\$40,938	\$44,495	\$48,057	\$51,615
Mean	\$41,704	\$46,015	\$50,050	\$53,890	\$57,848

²⁸ David C. Goodman (2005). *Health Care Financing: Implications for Workforce Expansion*, paper presented to the 9th International Medical Workforce Collaborative, [available at] http://www.health.nsw.gov.au/amwac/amwac/pdf/9_goodman.pdf.

²⁹ Public Health Agency of Canada Director General’s Office (2005). *The Landscape of Community Medicine Residency in Canada: An Environmental Scan*. Prepared by Lori Kiefer, Community Medicine Specialist, [available online], www.phac-aspc.gc.ca/php-ppsp/pdf/the_landscape_of_community_medicine_registry%20_traing_in_can.pdf, p. 15.

Province (year)	Postgraduate Year				
	1	2	3	4	5
Median	\$43,197	\$46,909	\$51,181	\$55,102	\$59,009

While a major factor in cost estimates, salary tables alone are regarded as inadequate to reflect all of the direct costs of training. According to Zeidel et al. in *Estimating the cost to departments of medicine of training residents and fellows: A collaborative analysis*, published in *The American Journal of Medicine*, cost estimates for post-graduate medical school vary depending on the particular circumstances of medical schools and the way that cost components are treated and calculated.³⁰ For example, the estimated time-effort for a program director might be set at 70% FTE for a large program and 30% FTE for a small program. On the other hand, there may be special expenses incurred by smaller programs, for example, if the school is lacking clinical faculty in specific areas.³¹ As a rule, smaller programs have higher fixed costs per student.³² Moreover, since residency requirements for different specialties can vary considerably, so too may the cost of training residents.³³ According to one estimate, the annual cost of training can start as low as \$10,473 per resident and extend as high as \$261,825 per resident (\$7,500 to \$187,500, USD, August 2003) – depending on the type of program.³⁴

Many analysts have found that cost estimates for medical residency vary wildly. However, this variation does not necessarily imply that a reasonable degree of unanimity could not, in principle, be achieved. Zeidel et al. argue that, under controlled conditions, there is “remarkable unanimity” in cost estimates. Specifically, they argue that by using a formula that controls for key cost components, they are led to a cost estimate of \$34,000 (USD) per year to train a resident, a result that is consistent with at least two other respected estimates. Zeidel writes,

Although different approaches have been used at different medical centres, there is remarkable unanimity in the cost estimates. Nasca et al estimate that it costs departments of medicine \$34,000 per year to train a resident, with costs rising to higher levels in smaller programs because of reduced efficiency in spreading administrative costs over many residents. The Nasca group does not provide an estimate for fellows. The Hunter Group, in conjunction with the places it has consulted, estimates about \$34,000 per resident and \$17,500 per fellow...The University of Pittsburgh time studies led to an estimated cost of \$35,000 per resident.³⁵

³⁰ M.L. Zeidel et al. (2005). *Estimating the cost to departments of medicine of training residents and fellows: A collaborative analysis* in *The American Journal of Medicine* Vol 118 (5), pp. 557-564.

³¹ Ibid, p. 560.

³² T.J. Nasca et al. (2001). *Minimum Instructional and Program-Specific Administrative Costs of Education Residents in Internal Medicine* in *Arch Intern Med.* 2001(161) pp. 765.

³³ Aaron Covey and Gary Friedlaender, *Financing Graduate Medical Education: Sorting Out the Confusion* in *The Journal of Bone and Joint Surgery*, Vol 85-A No. 8, August 2003, pp. 1594-1604.

³⁴ Ibid, p. 1599.

³⁵ Ibid, p. 562.

Zeidel et al reason that, even when formulas are not identical, formulas that tie cost components to circumstances and regulations governing training – such as the Residency Review Committee - Internal Medicine standard for training – will tend to converge with well-respected cost estimates. The formula used by Zeidel et al., which ties costs to the Residency Review Committee standard, led to a result that approximated the results obtained with other types of cost of training formulas. According to their findings, the cost estimate results would appear to converge on a training cost for residency programs of about \$42,734 in Canadian dollars (\$34,000 USD, May 2005) per year per resident.³⁶ The general point that Zeidel et al. extract from this is that consistency in cost estimates for medical school training may not be a practical impossibility; to the contrary, it might be achievable through an approach or formula that ties cost components to the circumstances and regulations governing training.³⁷

Efforts to produce a standard model for estimating the cost of residency training

As indicated above, the underlying difficulty associated with estimating and comparing the cost components for medical faculties is that medical schools have not adopted standard approaches to defining, calculating and reporting on cost components. Evidently, there is no single standard applied in making cost estimates for medical school. Indeed, for this reason, studies based on single institutions tend not to be suitable for extrapolation:

The institution-specific direct costs of educating residents have been studied. Authors of these studies attempted to quantify components of the total cost of education of residents in individual programs or components of programs, usually in single institutions. Extrapolation of these findings to project a national figure or a range of cost per resident has been problematic for many reasons. The reasons include variation in (1) the structure of programs within a given specialty among institutions; (2) the elements and methods of education in different specialties; (3) the payment mechanisms for faculty and other participants; (4) assumptions regarding the allocation of faculty effort; (5) administrative overhead and allocated institutional overhead; (6) the costs of the noninstructional components of support of educational programs (for example, financial support of clinics); and (7) the expense of medical malpractice insurance.³⁸

One effort to develop a model that can avoid the above shortcomings is the “minimal instructional and program-specific administration costs” (MIPSAC) model. The MIPSAC model is an attempt to develop a theoretical standard that takes into consideration the basic structure of medical education programs, while avoiding variables that can dramatically alter cost estimates, such as the number of students enrolled in a program or assumptions about faculty time-commitments. The model includes only the minimal costs of program administration and required instruction, and, in the case of graduate medical education, salary and fringe benefits for residents. The MIPSAC model, which estimates the fixed costs associated with a program, is restricted to six components: i) resident salary and fringe benefits; ii) minimum instructional and program; iii) institutional educational and administrative expenses; iv) special program or facilities-

³⁶ M.L. Zeidel et al. (2005). *Estimating the cost to departments of medicine of training residents and fellows: A collaborative analysis in The American Journal of Medicine* Vol 118 (5), pp. 562.

³⁷ Ibid, p. 562.

³⁸ T.J. Nasca et al. (2001). *Minimum Instructional and Program-Specific Administrative Costs of Education Residents in Internal Medicine in Arch Intern Med.* 2001(161) p. 762.

related expenses; v) allocated institutional overhead; vi) balance between opportunity cost and benefit.³⁹

In addition to its relative simplicity, the MIPSAC model has the advantage of more readily admitting to generalization than other models.⁴⁰ However, even when the MIPSAC model appears to be in evidence, it can be difficult to judge whether an institution’s quote is an accurate reflection of the direct costs of training. Consider the following example, published in the Public Health Agency of Canada’s 2005 *Landscape of Community Medicine* report, and based on a MIPSAC-like model for estimating the cost of training for residents. The model is intended to reflect only the direct costs associated with residency training. According to the findings, in 2003-04, the estimated cost of community-based residency training in Alberta ranged, over a five-year period, from \$99,184 to \$119,683. By way of contrast, a similar estimate for Ontario ranged from \$74,429 to \$97,753:

Table 4 – Estimated Costs of Training in Alberta, 2003-2004 (\$) ⁴¹

Cost of Training	Postgraduate Year				
	1	2	3	4	5
2003-04 Estimated Salary	\$43,121	\$46,866	\$51,557	\$55,306	\$59,994
2003-04 Benefits	\$8,846	\$10,326	\$10,953	\$11,695	\$12,472
Postgraduate Medical Education Office Costs*	\$33,628	\$33,628	\$33,628	\$33,628	\$33,628
Clinical Preceptor Honorarium (estimate)	\$12,500	\$12,500	\$12,500	\$12,500	\$12,500
Stipend	\$650	\$1,000	\$1,000	\$1,000	\$1,000
Meal Allowance - varies by usage	\$325	\$325	\$325	\$325	\$325
On-Call Costs - varies by usage	\$114	\$114	\$114	\$114	\$114
Total Cost Per Resident	\$99,184	\$104,409	\$109,727	\$114,218	\$119,683

*Includes funding for teaching (didactic and clinical), program administration and supplies, Faculty Professional Development, Facility Space (not rent), and a 15% overhead levied by the university.

Table 5 – Estimated Costs of Training in Ontario, 2004-2005 (\$) ⁴²

³⁹ Ibid, p. 765.

⁴⁰ Note that the MIPSAC model is approved by the US Health Care Financing Administration as a minimal standard for reimbursement by Medicare. T.J. Nasca et al. (2001). *Minimum Instructional and Program-Specific Administrative Costs of Education Residents in Internal Medicine* in *Arch Intern Med.* 2001(161) p. 762.

⁴¹ Public Health Agency of Canada Director General’s Office (2005). *The Landscape of Community Medicine Residency in Canada: An Environmental Scan*. Prepared by Lori Kiefer, Community Medicine Specialist, [available online], www.phac-aspc.gc.ca/php-psp/pdf/the_landscape_of_community_medicine_registry%20_traing_in_can.pdf, p. 18.

⁴² Public Health Agency of Canada Director General’s Office (2005). *The Landscape of* (continued...)

Cost of Training	Postgraduate Year				
	1	2	3	4	5
2004-05 Estimated Salary	\$47,016	\$54,881	\$58,215	\$62,159	\$66,287
2004-05 Benefits	\$9,403	\$10,976	\$11,643	\$12,432	\$13,257
GFT Professor Salary \$12,000/year	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
GFT Administrative Support \$4,163/Year	\$4,163	\$4,163	\$4,163	\$4,163	\$4,163
Stipend (\$1,000/PGY1, \$1,200 for others)	\$1,000	\$1,200	\$1,200	\$1,200	\$1,200
Meal Allowance	\$846	\$846	\$846	\$846	\$846
Total Cost Per Resident	\$74,429	\$84,066	\$88,067	\$92,800	\$97,753

Note: These extra funds are not necessarily passed on to the residency programs. In Ontario, this money is paid to the hospitals, and the universities recover their portion of funding from the hospitals.

Note that even when a minimalist cost of training formula is adhered to, there can remain differences between the cost estimates of different medical schools. This may signal that something is still amiss with methods of estimating and reporting medical school training costs. Yet there is no reason, in principle, that a minimalist standard cannot be used and applied consistently. Such a standard would likely require, as Zeidel et al. argue, that cost estimates be restricted to what are universally considered to be training-related expenses – i.e., the fixed and variable components directly related to training activities. Some other method of ascertaining costs for activities and expenses that are indirectly related to training could be introduced to supplement such a minimalist analysis, as appropriate, and on a case-by-case basis.

Nursing

It is difficult to find published cost estimates for training in the health professions in Canada. Typically, detailed information is obtained through professional contacts. Hence, the 2006 *Critical Care Nurse Training Standards Task Group Final Report* states that “No literature focussed specifically on the cost of critical care nursing training programs. The cost of critical care nurse training was investigated using Task Group member hospitals as examples.”⁴³

The province of Ontario’s Critical Care Nurse Training Standards Task Group was able to obtain direct

⁴² (...continued)
Community Medicine Residency in Canada: An Environmental Scan. Prepared by Lori Kiefer, Community Medicine Specialist, [available online], www.phac-aspc.gc.ca/php-ppsp/pdf/the_landscape_of_community_medicine_registry%20_traing_in_can.pdf, p. 22.

⁴³ Ontario Ministry of Health and Long-Term Care. Critical Care Secretariat. Critical Care Nurse Training Standards Task Group Final Report.(c. 2006), [available online], http://www.health.gov.on.ca/english/providers/program/critical_care/docs/report_ccn_std_s.pdf, p. 13. Hence, as with the case of medical school training, it is difficult to find published material that spells out the details of the cost of training nurses in the health professions.

information from various colleges and hospitals regarding the cost of college-based training for nurses. The Task Group’s main findings on the cost of college-based training programs and in-house hospital training for critical care nursing, published in the *Critical Care Nurse Training Standards Task Group Final Report*, are summarized as follows. First, with respect to the cost of college-based training programs:

The tuition of college-based critical care training may be covered by hospitals or individual nurses. The different courses offered across colleges are associated with specific prices, ranging from \$69 at Conestoga to \$530 at Cambrian. We estimate that the tuition of putting a single nurse through an entire college-based critical care training program is somewhere between \$1,500 and \$2,000. In addition to tuition, staff member education time contributes to costs. The total cost of training a single critical care nurse (tuition and education time) is estimated to range from \$14,000 to \$22,000 dependent upon duration of the program (clinical and didactic), tuition and salary scale of the nurse.⁴⁴

Table 6 – College-based training programs in Ontario (2006)

Colleges	FT	PT	Avg Time to Complete	# Enrolled	Total Hrs	# Theoretical Hrs	# Clinical Hrs	In-Class	Distance Training	Collab. with Hospital	Cost per Course
Algonquin		X	3 years	40/class	392	302 (77%)	90 (23%)	X			\$161.66 - \$425.46
Cambrian*		X							X		\$207.84 - \$529.82
Canadore		X			450	300 (67%)	150 (33%)		X		
Centennial		X		20/class	396	196 (49%)	200 (51%)	X			\$320 - \$455
Conestoga		X		10/class	381	261 (69%)	120 (31%)	X	X		\$69 - \$197
Durham		X		20/class	290	230 (79%)	60 (21%)	X			\$175.30 - \$522.00
Fleming	X	X	8 mo–2 yrs	20/class	360	234 (65%)	126 (35%)	X			\$90 - \$304
George Brown	X		4 months	45/class	438	198 (45%)	240 (55%)	X		X	\$1,495 TL fees
Georgian		X	2 years	20/class	305	215 (70%)	90 (30%)	X			\$170 - \$350
Humber (PT)		X	3 years	25/class	384	192 (50%)	192 (50%)	X		X	\$300 - \$400
Humber (FT)	X		11 weeks		400	200 (50%)	200 (50%)	X			\$300 - \$400
Mohawk		X	2 years	20/class	297	213 (71%)	84 (28%)	X	X	X	\$120 - \$140

⁴⁴ Ibid, p. 20.

Table 6 – College-based training programs in Ontario (2006)

Colleges	FT	PT	Avg Time to Complete	# Enrolled	Total Hrs	# Theoretical Hrs	# Clinical Hrs	In-Class	Distance Training	Collab. with Hospital	Cost per Course
Niagara		X		12/class	375	285 (76%)	90 (24%)	X			\$178 - \$269
Seneca		X			380	180 (47%)	200 (53%)	X			\$307 - \$410
St. Clair		X			355	260 (73%)	95 (27%)	X			\$1548.70 TL fees
St. Lawrence		X		25/class	350	190 (54%)	160 (46%)	X			\$5 / hour

Source: OMHLTC (c. 2006), Critical Care Nurse Training Standards Task Group Final Report, p. 21.

According to the Report, “The total cost of training a single critical care nurse (tuition and education time) is estimated to range from \$14,000 to \$22,000 dependent upon duration of the program (clinical and didactic), tuition and salary scale of the nurse.”

Estimates for in-hospital orientation programs for critical care nursing show greater variation than the cost of training estimates for college-based programs:

The cost of in-house orientation programs depends on numerous factors such as the number of hours of training and the hourly wages of the new nurses, educators, and preceptors involved in training. In this sample, the direct cost per nurse (excluding the cost of educators and preceptors) ranges from \$3,553 at Northumberland Hills Hospital to \$15,750 at Ottawa Hospital.⁴⁵

Some of the details of the cost of in-house training for critical care nurses in selected Ontario hospitals are summarized below:

Table 7 – Sample of Task Group in-house orientation programs

Hospital name	Cost of training per RN	Cost components
Hamilton Health Sciences	\$10, 000	not available
Sudbury Regional Hospital	\$4, 050	\$4050 per RN (\$1350 didactic, \$2700 clinical) + indirect costs of respiratory therapist, nurse clinicians, and mentors
Northumberland Hills Hospital	\$3, 552.75	\$3552.75 per RN (\$31.58/hour, 15 shifts) + benefits + indirect costs of clinical educator
Ottawa Hospital	\$15, 750	\$15,750 per RN (\$35/hour, 10 wks, 1.2 relief) + \$18,900 per educator (\$42/hour, 10 wks, 1.2 relief)
Peterborough Regional Health Centre	\$8, 000	(\$55,000 salary, 24% benefits) + \$8000 teaching fee (paid to Fleming)
St. Thomas Elgin-General Hospital	not available	not available

⁴⁵ Ibid, p. 22.

Trillium Health Centre	\$5,400	(\$36/hour, 120-150 hours) + indirect costs of clinical educator
------------------------	---------	--

Source: OMHLTC (c. 2006), Critical Care Nurse Training Standards Task Group Final Report, p. 23.

As with the medical school estimates, the methods of performing cost estimates used by each institution differ and there is no evidence of uniformity in the methods of data collection and cost-estimation used by the various colleges and hospitals. Hence, many of the same difficulties associated with medical school cost estimates will likely apply in the case of nursing school cost estimates.

Paramedicine

There is little information available on the cost of training paramedics. The CNFS or provincial figures cited earlier in this paper give the following cost estimate, based on annual provincial funding for paramedics; \$8,000 to \$11,600 per student per year. Another estimate relates to Manitoba's Red River College, which is planning to open a distributed-campus paramedic training program in September 2008. The program will graduate 40 primary-care paramedics per year. The province is providing more than \$1.3 million in start-up funds.⁴⁶ Hence, the program start-up will likely cost more than \$32,500 per new seat. As with other health professions, methods of data collection and cost estimating can affect the reporting of the cost of training.

Further considerations

Funding sources and budgeting practices in the health professions

As we have seen, many factors can influence the cost of training and cost estimates for training in the health professions. Cost components may include "deliverables" in areas such as education, research, clinical service and administration."⁴⁷ The situation is particularly complex in the area of medical training; though similar kinds of costs are involved in the training of other health professionals. Not surprisingly, the funding situation for training in the health professions is also complex. Consider, for example, the various sources of funding for medical education:

- provincial department of education grants to faculties through provincial funding formula to universities;
- provincial department of health funding for items such as residents' salaries and benefits, GFT (Geographic Full-Time) funding to faculties of medicine, medical education supplies funding to teaching hospitals and GFT secretariat support;
- university tuition fees from undergraduate medical students, administrative fees from residents and fellows; Pool C off-shore stipends, other university resources in support of clinical services;
- hospital operating funds dedicated to teaching activities, hospital foundation funds;
- national/regional programs in support of hospital-based clinical services;
- clinician generated revenue, including both medically insured and other fee revenue, in support of educational activities, e.g., clinical fellowships;
- resident funding from non health sources, and,

⁴⁶ Red River College News (2007). *New Paramedic Training Program Announced*, [available online], <http://rrc.mb.ca/index.php?pid=2384&mid=3588&rid=172>.

⁴⁷ Ibid, p. 11.

- funding from private foundations.⁴⁸

The funding sources listed above include funding for education and clinical service activities alone. Medical research funding is obtained through separate programs and sources from national agencies, provincial agencies, government contracts, industry contracts, fee-for-service sponsors, university sponsors, hospital and foundation sponsors, independent research unit funds and research collaborative funds.⁴⁹

The difficulties and complexities associated with the financing of medical education are well-known and fairly universal. Evidently, they extend beyond cost estimates to include a complex funding system. The following excerpt, taken from an American source that dates back to 1983, shows that the current Canadian situation regarding the financing of medical education reflects a well-entrenched and long-standing problem:

Analysis of the financing of medical education is a complex task. It involves examination of numerous sources of funds that flow into and among the various educational settings, funds that are used to finance the diverse functions and responsibilities of the organizations that participate in medical education. Sources of funds include federal and state governments, families or individuals that pay tuition, insurance companies that pay for patient care, and philanthropy. Organizations involved in medical education include medical schools and numerous patient care sites in which students gain clinical experience. Functions funded under the umbrella of medical education include construction, academic teaching, clinical teaching and experience, and research.⁵⁰

As R.E. Brown writes in *Financing Medical Education*, the result of this “confusing welter of functions and responsibilities” is that “the public cannot buy an M.D. without buying a total package of training, research and services.”⁵¹

The funding situation is less complex for nursing and the allied health professions in Canada. In these cases, a main source of funding is the provincial funding provided to universities. According to the CNFS figures, the funding awarded by the provinces for each nursing student ranges between \$9,200 and \$19,100. However, nursing programs may receive funding from sources other than provincial department of education grants. In addition, they receive separate awards in support of research activities.⁵² In

⁴⁸ Ontario Ministry of Health and Long-Term Care. Academic Health Science Centres. Alternative Funding Plans (2002). *AHSC AFP : Update (2)* - September, 2002, [available online], http://www.health.gov.on.ca/english/providers/project/ahsc/ahsc_bul02/ahsc_230902.html, pp. 9-12.

⁴⁹ Ibid, p. 11.

⁵⁰ J. Townsend (1983). *Financing Medical Education in Medical Education and Societal Needs: A Planning Report for Health Professions*, pp. 243-260. (p. 243), [available online], <http://www.nap.edu/openbook/POD079/html/243.html>.

⁵¹ R.E. Brown (1973). *Financing Medical Education* in W. Anlyan et al. *The Future of Medical Education*. Durham, N.C. Duke University Press.

⁵² Nova Scotia Council on Higher Education (1998). *University Funding Formula* - (continued...)

contrast to this, the CNFS figures show that provincial funding for each paramedicine student ranges between \$8,000 and \$11,600. No other information on additional funding to paramedicine programs is readily available at this time.

Alternative approaches to evaluating training programs for health professionals

The opacity of the funding, accounting and costing systems for training in the health professions presents a challenge to funding agencies wishing to determine what to fund, where money gets spent and whether spending is cost-effective. Prima facie, a simple solution to cost estimating in such cases would be to find a reliable benchmark for establishing training costs. However, as we have seen, it is difficult to generalize about the cost of training from a single cost estimate. In recent years, funding agencies concerned about their own evaluation and accountability functions, have taken steps to address the challenges presented by health training cost estimates. Specifically, they have developed and/ or collaborated on the development of new approaches to cost of training estimation and program evaluation. One such approach is the Ontario government's Alternative Funding Plan (AFP). Another is the United States Department of Health and Human Services Human Resources Services Administration model. In both cases, the funding agencies have taken steps to design, either collaboratively or independently, a model for estimating the cost of training that answers to their evaluation and accountability needs as funding agencies. On the new approaches, categories for data reporting and data requirements have been standardized to ensure that services and activities are properly quantified and measured.⁵³

Ontario's Alternative Funding Plans approach

Ontario's AFPs, as described in the *Report of the Provincial Working Group: Alternative Funding Plans for Academic Health Science Centres*, address many topics relating to funding and accountability.⁵⁴ The AFPs are proposed for Academic Health Science Centres (AHSCs), i.e., medical teaching centres that

⁵² (...continued)
Technical Report, [available online], link from http://www.ednet.ns.ca/index.php?sid=865172598&t=sub_pages&cat=350. Nursing programs may receive money from sources other than provincial departments of education, e.g., provincial departments of health. See pp. 4-5 and p. 28. Health Canada. The federal government also funds certain programs. See, for example, Health Canada (2001). *Government of Canada announces funding for rural Ontario nurse practitioners program*, [available online], http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2001/2001_19_e.html.

⁵³ Ontario Ministry of Health and Long-Term Care (2002). *Academic Health Science Centres. Alternative Funding Plans. AHSC AFP : Update (2) - September, 2002.* [available online], http://www.health.gov.on.ca/english/providers/project/ahsc/ahsc_bul02/ahsc_230902.html, pp. 11-12.

⁵⁴ Ontario Ministry of Health and Long-Term Care (2002). *Report of the Provincial Working Group: Alternative Funding Plans for Academic Health Science Centres*, [available online], www.health.gov.on.ca/english/public/pub/ministry_reports/ahsc_fund.pdf, Appendix E, pp. 32-34.

appoint clinical teaching staff. Since many AHSC clinical staff have cross-appointments in faculties of medicine, AHSCs reflect the traditional overlap between the university faculty of health sciences (or school of medicine) and the affiliated teaching hospital. Ontario's proposed AFPs are novel in that they filter funding through AHSCs rather than universities and are based on a complex funding and accountability agreement between members of a network comprised of representatives from universities, teaching hospitals, medical staff, medical associations and governments.⁵⁵ As such, the Ontario AFP embodies a collaborative effort and multiple viewpoints.

One of the motivations for the move toward AFPs was to shift from a fee-for-service payment method to a system of global funding that would allow AHSCs to align the remuneration of physicians more closely with the deliverables and services rendered. In order to accomplish this, the various funding sources to AHSCs were merged in exchange for a new method of reporting on deliverables. The resulting approach was not only desirable for physicians, but also for universities, hospitals and the funding agencies mandated to oversee health care spending. Indeed, according to the Ontario Ministry of Health and Long-Term Care's Provincial Working Group, the AFP addresses several long-standing funding and accountability issues in relation to the financing of medical education:

An alternative funding plan aligns the interests of the university, the teaching hospital and the involved medical staff by merging (notionally or actually) multiple funding sources for the remuneration of involved medical staff for clinical service, education, research and associated administration. In exchange for the merger of funding sources, the parties of an AFP agree to meet a comprehensive set of deliverables in each of clinical service, education, research and associated administration.⁵⁶

Of particular benefit to funding agencies is that, in linking funding to deliverables, the AFP introduces an evaluation framework that aligns AHSC reporting and analysis more neatly with existing government and other funding evaluation frameworks. With the more traditional cost estimate approach, financial reporting had been either too broadly or too narrowly construed by the universities, making it difficult to evaluate the overall cost-efficiency of spending in relation to specific outcomes and deliverables. This is a pressing issue for the funding agencies accountable for the funds contributed to the training of health professionals. It is addressed under the AFP requirement for "measurable deliverables:"

- a) **Defined Deliverables:** The AFP will define deliverables for clinical service, teaching, research and administration for the AHSC and internally at the level of the department and the individual physician.
- b) **Governance Structure:** The AFP will commit the AFP governance structure to measure clinical service, teaching, research and administrative performance and be accountable through regular defined reporting requirements.
- c) **Accountability:** The AFP governance structure is accountable to the Government of Ontario for the achievement of the deliverables.⁵⁷

Of particular interest the "Defined Deliverables" element. Indeed, a clear understanding of program deliverables is necessary in order to meet the governance structure and accountability criteria listed as b) and c) above. The various deliverables defined by Ontario's AFP's are fully articulated in the Provincial

⁵⁵ Ibid, pp. 6-7.

⁵⁶ Ibid, p. 6.

⁵⁷ Ibid, p. 21.

Working Group's Report, under Appendix E, pp. 31-41.⁵⁸ There, the AFP deliverables are made explicit in terms of defined performance indicators, units of measure, macro, mid-macro and micro level data requirements and data availability. These definitions are to be applied in the collection and reporting of data as well as in the evaluation of education, research and clinical service components of Academic Health Sciences Centres (AHSCs).

The main categories proposed as categories for evaluation in Appendix E include undergraduate education, post-graduate education, grad science education, continuing medical education, public education, educational administration, research activity and clinical activity. There are ten pages of tables in all, and so more material than can be discussed here. One straightforward example, however, that can be considered here in general terms, concerns undergraduate medical education. In this case, the performance indicator is defined as the total undergraduate enrollment. The corresponding unit of measure proposed is the undergraduate student FTEs. The data required for collection is specified according to three levels of analysis: i.e., macro-level data on total undergraduate enrollment, mid-macro level data reflecting the contributions of clinical units, and micro level data reflecting the clinical contributions of physicians. The model further indicates where the raw data is available, in this case, through the university.

With the AFP vision in place, the outstanding challenge for Ontario is to develop an accompanying legal framework that will make the vision of accountability a reality:

The challenge facing the ministry and its key stakeholders is to make the transition from the Report of the Provincial Working Group's vision to a legal document that all parties to an AHSC AFP will sign. A draft AHSC AFP framework is currently being developed to capture the deliberations of the parties and to meet government, institutional and physician accountability requirements.⁵⁹

Ultimately then, the Ontario AFP approach is intended to produce data and analyses for use by multiple stakeholders. For example, the AFP can supply evidence for remuneration to AHSCs as well as evidence for program evaluation to funding and government agencies.⁶⁰ As such, the AFP model will not only help AHSCs to decide where to spend funds, but it will also help funding agencies to assess accountability.

For organizations that work with multiple stakeholders, the Ontario AFP serves as an example of a collaborative, network-oriented approach to developing standards for funding and evaluation. It also holds the promise of a streamlined accountability function. It should be noted, however, that AFPs are not entirely uncontroversial. AFPs were originally marketed as a tool to address a perceived remuneration

⁵⁸ Ibid, p. 32-41.

⁵⁹ Ontario Ministry of Health and Long-Term Care. Academic Health Science Centres. *Alternative Funding Plans (2002)*. *AHSC AFP : Update (2) - September, 2002*. [available online], http://www.health.gov.on.ca/english/providers/project/ahsc/ahsc_bul02/ahsc_230902.html.

⁶⁰ Ontario Ministry of Health and Long-Term Care (2002). *Report of the Provincial Working Group: Alternative Funding Plans for Academic Health Science Centres*, [available online], www.health.gov.on.ca/english/public/pub/ministry_reports/ahsc_fund.pdf, Appendix E, pp. 32-33.

crisis for physicians.⁶¹ Hence, a primary motivation for adopting AFPs – from the physician viewpoint – was to propose an alternative to the traditional fee-based compensation paid to service providers. According to Dr. Jonathan Meddings, University of Alberta’s Chair of medicine, the new funding arrangement was proposed at a critical juncture: “Underlying all of this is unfortunately ... a sense that what was an implicit contract between the funding agency — the hospital or regional board — and the provider of services — the physician or the surgeon — is really falling apart.”⁶² It seems, however, that the emergence of multiple AFPs is now a cause of some concern to academics, particularly with respect to the need for uniform standards for remuneration. The main difficulty, it seems, is the existence of multiple AFPs across a single province: “That creates inequities and uneven playing fields, with 2 people in AFPs in 2 different places being paid differently for the same work ... we need to move toward standardization,” Meddings proposes.⁶³

While there are evidently outstanding issues around physician remuneration, it is clear that issues underlying the introduction of AFPs and the benefits of AFPs are wider in scope than the issue of physician remuneration alone. The emergence of AFPs and the discussion surrounding them suggest that AFPs represent multiple movements on multiple fronts with respect to the financing of medical education.⁶⁴ Significant results for governments and other funding agencies include that the AFP is a

⁶¹ Standing Senate Committee on Social Affairs, Science and Technology (2002). *The Health of Canadians – The Federal Role Interim Report* Volume Five: Principles and Recommendations for Reform - Part I, [available online], <http://www.parl.gc.ca/37/1/parlbus/commbus/senate/com-e/soci-e/rep-e/repapr02vol5-e.htm#1.3%20%20%20%20%20There%20is%20a%20Need>.

N.B. In Canada, labour accounts for about 75% of the 160 billion (10.6% of GDP) spent annually on health care, i.e., about 120 billion dollars. According to the Report of the Premier’s Advisory Council on Health in Alberta (usually referred to as “the Mazankowski report”), over half the budget increase for health care in Alberta went to salary increases in 2001-02. According to the Canadian Institute for Health Information article entitled *Health care spending to reach \$160 billion this year*, available at http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_13nov2007_e, physicians receive 13.6 billion of this amount (8.5%) of the 160 billion dollars that Canada spends annually on health care. According to the Canadian Institute for Health Information article entitled *Number of physicians in Canada in line with population growth*, available at http://www.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_25oct2007_e In 2006, there were 62,307 physicians in Canada in 2006. Hence, Canada spends \$218, 274 per physician in salaries to physicians. Given that about 33 million people are presently living in Canada, this amounts to about \$4,120 per person annually in support of physician salaries.

⁶² Diana Swift (2005). *Academic alternative funding plans: The key to maintaining excellence in teaching and research?* in *Primary Care Reform: Reshaping health care in Canada*, p. 39, published by the Canadian Medical Association, [available online], www.cma.ca/.../CMA/Content/Images/Inside_cma/WhatWePublish/LeadershipSeries/English/alternative_funding.pdf.

⁶³ Ibid, p.38.

⁶⁴ S.E.D. Shortt et al (1999). *Evaluation of the Alternative Funding Plan at the Southeastern Ontario Academic Medical Organization: Final Report*, [available online], (continued...)

collaborative effort, that it introduces a standard evaluation framework, that the AFP evaluation framework ties funding to deliverables and that the cost of training can be linked to these deliverables.

The Health Resources Services Administration approach

An agency of the US Department of Health and Human Services, the Health Resources Services Administration (HRSA) offers competitive grants programs for the Health Professions. The HRSA grant programs share important similarities, in terms of design and objectives, with the OLCDB Contribution Program. For example, the HRSA Health Professions program devotes much of its funding to the training of health professionals. More specifically, its program objectives include improving service to underserved areas and increasing the representation of minority groups in the health professions. Recently, the HRSA redesigned the reporting and evaluation components of its Health Professions program.⁶⁵ The resulting approach is novel in that it eliminates a number of performance indicators

⁶⁴ (...continued)

<http://chspr.queensu.ca/downloads/Reports/Evaluation%20of%20Alternative%20Funding%20Plan%201999.pdf>

⁶⁵ The history of the HRSA transition to this new approach is as follows: In 2002, a US government assessment of the HRSA Health Professions program yielded the overall assessment that the program was “ineffective”. The four evaluation components that comprised the HRSA Health Professions program evaluation were as follows: program purpose and design; strategic planning; program management; and, program results/ accountability. While ratings in the 60-73% range were assigned in the first three categories; the rating of “13%” was assigned in the area of program results/ accountability. Evidently, this latter result represented a score so low that the overall effectiveness of the program was called into question. The HRSA determined to address the assessment of its Health Professions program.

Following the poor program evaluation result, the HRSA began to search for ways to improve its performance in the area of program results and accountability. In particular, the HRSA sought better ways to track and measure the cost-efficiency of HRSA-funded training programs. The method that the HRSA had used prior to receiving its poor evaluation in the area of program results and accountability involved tracking numbers of students and graduates of the program – e.g., the numbers of HRSA-funded graduates &c. who practice in underserved areas, the number of HRSA-funded graduates &c. who provide support and primary care, the number of minority students/ residents &c. who complete training and the number of minority students, faculty &c. in training. The assumption underlying this method is that an increased number of program graduates or completers is an indicator of improved access. Unfortunately, the original method of program evaluation did not include any efficiency measures, and this presented a problem in relating to financial accountability.

By 2005, a considerable effort had been made to redress the Health Professions program’s results/ accountability component. That year, the HRSA held an all-grantee meeting to announce changes to its programs in the area of performance measurement. The

(continued...)

intended to measure improved access – measures that focussed on counting the number of program graduates or completers – with an efficiency measure that defines cost-efficiency in terms of the cost to the HRSA program per graduate or program completer:

- Maintain the average cost per graduate or program completer to the program of providing long-term training and education.⁶⁶

Hence, the new HRSA approach involved tracking the stability of its own cost of training and endeavouring to try to maintain average costs on a per graduate basis:

The costs of training vary significantly depending on the health professions towards which specific grant programs are geared, and the types of expenditures prescribed by law (tuition, stipends, faculty development, etc.) The baseline for FY 04 (\$4,550) represents the average cost to Title VII and Title VIII of providing longer-term training for every graduate or program completer in each of the grant programs (excluding continuing education and other short-term, low-intensity training). Cost calculations are based on total grant awards. This is a new area of measurement for Health Professions and Nursing Education and Training Programs, so we will carefully analyze the data to determine whether average costs can be maintained or possibly reduced in FY 05 and beyond.⁶⁷

The proposed data source for the HRSA's new efficiency measure is data submitted through a new online grant management and reporting system. As indicated above, "Cost calculations are based on total grant awards."

⁶⁵ (...continued)

stakeholder meeting was followed with workshop sessions introducing new performance measures, core measures, and national outcome measures for the grantee programs. As the HRSA Administrator, Elizabeth Duke, explained,

The importance of these new performance measures to Health Professions programs can hardly be overemphasized. They will allow us to tell a richer story of the link between the education and training HRSA grants pay for and the federal government's efforts to serve the underserved and reduce health disparities.

The 2005 HRSA announcement of new performance measures was followed, in 2006, by a Letter to Grantees introducing a new web-based comprehensive performance management system and uniform progress report. The new system allowed access to both grantees and HRSA staff. In particular, it allowed grantees to make online grant applications, to monitor the grant application process and to report data to the HRSA on an ongoing basis. Acquiring a better means to collect data was evidently a fundamental component of the HRSA plan to address its reporting and accountability issues.

⁶⁶ United States. Department of Health and Human Services. Health Resources Services Administration (HRSA). *Fiscal Year 2008 Justification of Estimates for Appropriations Committees*. Details of Performance Analysis. Health Professions, p. 7 [available online], <http://www.hrsa.gov/about/budgetjustification08/HealthProfessionsPerformanceAnalysis.htm>.

⁶⁷ Ibid, p.7.

Like the Ontario APF approach, the HRSA approach represents a relevant alternative to the traditional cost estimate model favoured by universities. Not only are these two approaches novel in certain respects, but they take into account the data and reporting requirements of funding agencies in relation to accountability.

Concluding Remarks

This overview has aimed to provide the background and context to support and interpret a detailed cost of training study and to assist more generally with strategic planning activities. With regard to the former, it has surveyed three training programs in the health professions and provincial and national estimates of the cost of training for each of these programs. With regard to the latter, it has undertaken a substantive discussion of some of the difficulties associated with cost estimates for training in the health professions.

Annex A – Francophone College and University Programs offered by CNFS under Training and Retention of Health Professionals

	La Cité collégiale	Collège Boréal	CCNB – Campus de Campbellton	Collège universitaire de Saint-Boniface	Université Sainte-Anne
<i>Programmes collégiaux du CNFS</i>					
1 Aide en santé			•		
2 Aide en soins de santé				•	
3 Assistant(e) en ergothérapie / Assistant(e) en physiothérapie	•	•			
4 Autisme et sciences du comportement (postdiplôme)	•				
5 Commis de bureau – milieu de santé	•				
6 Échographie diagnostique (postdiplôme)		•			
7 Hygiène dentaire	•	•			
8 Massothérapie		•			
9 Préposé(e) aux services de soutien personnels	•	•			
10 Présiences de la santé	•	•			
11 Promotion de l'activité physique et de la santé		•			
12 Santé et services de soins continus					•
13 Sciences infirmières	•	•		•	
14 Services de soutien à l'intégration	•				
15 Soins ambulanciers paramédicaux	•	•			•
16 Soins ambulanciers paramédicaux avancés					•
17 Soins dentaires (niveaux I et II)	•	•			
18 Soins infirmiers auxiliaires	•	•	•		
19 Soins palliatifs	•		•		
20 Techniques d'éducation spécialisée	•				
21 Techniques d'électroneurophysiologie médicale	•				
22 Techniques d'électrophysiologie médicale			•		
23 Techniques de laboratoire médical			•		
24 Techniques de thérapie respiratoire			•		
25 Techniques des services sociaux					•
26 Techniques de travail social	•	•			
27 Techniques de travail social en gérontologie	•				
28 Techniques en pharmacie			•		
29 Techniques pharmaceutiques	•	•			
30 Techniques radiologiques			•		
31 Technologie en radiation médicale		•			
32 Thérapie respiratoire	•				

	Université d'Ottawa (Ontario)	Université de Moncton (Nouveau-Brunswick)	Université Laurentienne (Ontario)	Collège universitaire de Saint-Boniface (Manitoba)	Université Sainte-Anne (Nouvelle-Écosse)	Campus St-Jean (Université de l'Alberta)	Centre de formation médicale du Nouveau-Brunswick
Programmes universitaires du CNFS							
1 Audiologie	●						
2 Éducation physique et santé			●				
3 Ergothérapie	●						
4 Études de la santé			●				
5 Gérontologie	●						
6 Gestion publique (santé)		●					
7 Kinésiologie		●	●				
8 Leadership : activités physiques de plein air			●				
9 Médecine	●						●
10 Nutrition (1er cycle)		●					
11 Nutrition (2e cycle)		●					
12 Orthophonie	●						
13 Pharmacie							●
14 Physiothérapie	●						
15 Promotion de la santé			●				
16 Psychologie (1er cycle)	●		●				
17 Psychologie (2e cycle)		●					
18 Psychologie clinique (3e cycle)	●	●					
19 Sage-femme			●				
20 Sciences de l'activité physique (1er cycle)	●		●				
21 Sciences de l'activité physique (2e cycle)	●						
22 Sciences de la santé	●				●		
23 Sciences de laboratoire médical		●					
24 Sciences du loisir	●						
25 Sciences infirmières (1er cycle)	●	●	●	●		●	
26 Sciences infirmières (programme professionnel)	●		●				
27 Sciences infirmières (formation des infirmières et infirmiers praticiens)	●						
28 Sciences infirmières (2e cycle)	●						
29 Sciences infirmières – infirmière ou infirmier praticien (2e cycle)		●					
30 Sciences infirmières – infirmière ou infirmier praticien en soins de santé primaires (2e cycle)	●						
31 Service social ou travail social (1er cycle)	●	●	●				
32 Service social ou travail social (2e cycle)	●	●	●				
33 Techniques radiologiques		●					
34 Thérapie respiratoire		●					

Annex B – CNFS working group estimates of training costs

Fourchettes de revenus du système universitaire*

Baccalauréat

Ergothérapie, Études de la santé, Éducation physique, Gériatrie, Kinésiologie, Physiothérapie, Promotion de la santé, Sciences de la santé, Sciences de l'activité physique, Sciences du loisir	\$10,450	\$19,100
Pharmacie	\$11,650	\$19,900
Psychologie	\$13,500	\$14,000
Médecine premier cycle	\$45,000	\$73,500
Sage-femme		
Sciences	\$8,600	\$15,600
Sciences infirmières, Nutrition	\$12,500	\$19,100
Travail social	\$10,500	\$15,000
Sciences de laboratoire médical*	\$20,200	
Thérapies radiologiques*	\$13,500	
Thérapie respiratoire*	\$13,500	

Certificats de premier cycle

Tous les certificats	\$6,900	
----------------------	---------	--

Maîtrise

Sciences de l'activité physique	\$25,000	\$43,000
Audiologie, Ergothérapie, Nutrition, Orthophonie, Physiothérapie, Psychologie	\$16,000	\$33,000
Psychologie	\$22,500	\$24,800
Sciences	\$24,700	
Travail social	\$13,000	\$24,750
Sciences infirmières	\$20,500	\$33,100

Doctorat

Psychologie	\$20,400	\$36,000
-------------	----------	----------

* on a utilisé les revenus de ces programmes en Alberta puisqu'on n'avait pas de données disponibles ailleurs. Ce sont des programmes collaboratifs Univ-collèges

On a utilisé un ajustement de 2.5% par année pour établir la fourchette de 2008-09

* Les revenus comprennent les subventions provinciales et les droits de scolarité.

Fourchettes de revenus du système collégial

Assist. en ergothérapie et physiothérapie	\$8,200	
Aide physiothérapeute	\$7,700	
Autisme et sciences du comportement	\$5,600	
Commis de bureau - milieu de la santé	\$6,000	
Échographie diagnostique**	\$16,000	
Hygiène dentaire	\$11,500	
Massothérapie	\$7,500	
Pré-sciences de la santé	\$6,400	
Préposé au Service de soutiens personnels	\$9,000	
Promotion de l'activité physique et de la santé	\$6,600	
Santé et services de soins continus		
Sciences infirmières	\$9,200	\$14,000
Service de soutien à l'intégration	\$6,500	
Soins ambulanciers paramédicaux	\$8,000	\$11,600
Soins dentaires**	\$9,700	\$14,000
Soins infirmiers auxiliaires (1 an)**	\$11,900	
Soins infirmiers auxiliaires (2 ans)**	\$14,900	
Soins palliatifs	\$2,500	
Techniques d'éducation spécialisée	\$5,700	
Techniques pharmaceutiques	\$5,800	
Techniques de laboratoire médical	\$9,800	\$17,100
Techniques de thérapie respiratoire	\$10,200	\$13,500
Techniques de Travail social	\$5,800	\$11,000
Techniques de Travail social - gérontologie	\$5,800	\$14,200
Technologie en radiation médicale	\$11,000	\$13,000
Techniques radiologiques		
Techniques d'électrophysiologie		
Techniques de réadaptation		

On a utilisé un ajustement de 2.5% par année pour établir la fourchette de 2008-09