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FEDERAL FUNDING FOR HEALTH RESEARCH

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PARLIAMENTARY INFORMATION AND RESEARCH SERVICE
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INTRODUCTION

In 2004, the federal government invested $1.1 billion in health research – its highest level ever. Of this amount (see Table 1), 82% (or $906 million) was carried out by the higher education sector, industry and non-governmental organizations ("extramural" research), while 18% (or $195 million) was performed in the federal government's own laboratories ("intramural" research). This paper briefly describes the various federal funding sources for health research and examines trends in federal funding in this field.

Table 1
Federal Funding for Health Research
by Sector of Performance, 2004

Sector of Performance	Millions of Dollars	Percentage
Federal Government	195	17.7
Higher Education	890	80.8
Industry	13	1.2
Non-governmental Organizations	3	0.3
Total	**1,101**	**100.0**

Source: Statistics Canada, "Estimates of Total Spending on Research and Development in the Health Field in Canada, 1988 to 2004," *Science Statistics*, Catalogue 88-001-XIE, Vol. 29, No. 5, July 2005.

FEDERAL FUNDING BODIES

The federal government invests in health research through several funding bodies, including three granting agencies, a number of departments and agencies, and some foundations. The distribution of the federal health research investment by funding source is provided in Table 2.

Table 2
Distribution of Health Research Funding by Source
2004-2005 (Estimation)

Funding Source	Percentage Distribution
Granting Agencies:	
• Canadian Institutes of Health Research(*)	58.9
• Natural Sciences and Engineering Research Council	7.5
• Social Sciences and Humanities Research Council	1.2
Departments and Agencies:	
• Health Canada	4.8
• National Research Council	5.9
• Canadian Institute for Health Information	0.2
Foundations:	
• Canada Foundation for Innovation	9.0
• Genome Canada	4.7
• Canadian Health Services Research Foundation	0.8
Indirect Costs Program	6.8
Total	**100.0**

(*) Includes spending under the following programs: Networks of Centres of Excellence, Canada Research Chairs, and Canada Graduate Scholarships.

Source: Adapted from: Canadian Institutes of Health Research, *Balance of Funding in Canadian Health Research and Future Funding Requirements*, September 2006, http://www.cihr-irsc.gc.ca/e/153.html.

A. Granting Agencies

The three granting agencies, which finance only extramural research, include the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC).

CIHR is the principal federal funding body for health research. As shown in Table 2, it funded approximately 58.9% of all federal investment in health research in 2004-2005. CIHR, which reports to Parliament through the Minister of Health, was created in 1999-2000 and consists of 13 research institutes (see Table 3). These institutes are not "bricks and mortar" buildings or research centres, but virtual networks of researchers brought together to work in a multidisciplinary and collaborative manner on specific health research themes. CIHR funds both investigator-initiated research (72% of its research investments) and strategic research

into areas identified as high priority for the health care system (28% of research investments). CIHR funding covers the direct costs of research including support for human capital (salary of investigators and research assistants, research training and funding of postdoctoral fellows and graduate students); equipment (purchase or rental, operation and maintenance); other research-related resources; and knowledge translation (activities related to the exchange, synthesis and diffusion of research findings).

Table 3
CIHR'S 13 Research Institutes

Institute of Aboriginal Peoples' Health
Institute of Aging
Institute of Cancer Research
Institute of Circulatory and Respiratory Health
Institute of Gender and Health
Institute of Genetics
Institute of Health Services and Policy Research
Institute of Human Development, Child and Youth Health
Institute of Infection and Immunity
Institute of Musculoskeletal Health and Arthritis
Institute of Neurosciences, Mental Health and Addiction
Institute of Nutrition, Metabolism and Diabetes
Institute of Population and Public Health

Source: Canadian Institutes of Health Research, http://www.cihr-irsc.gc.ca.

NSERC is the federal granting agency which finances research into natural sciences and engineering, while SSHRC is the federal granting agency focusing on research into social sciences and humanities. Both agencies report to Parliament through the Minister of Industry. As with CIHR, the funding of NSERC and SSHRC focuses entirely on extramural research. Unlike CIHR however, only a proportion of their respective budgets covers health research. This proportion is not a fixed share but fluctuates according to the nature of the research projects funded. In 2004-2005, as indicated in Table 2, NSERC and SSHRC contributed 7.5% and 1.2%, respectively, of all federal funding for health research. As is the case with CIHR, funding provided by NSERC and SSHRC covers the direct costs of research and includes support for human capital, equipment, other research-related resources and knowledge translation.

In partnership with Industry Canada, the three granting agencies (CIHR, SSHRC and NSERC) administer the Networks of Centres of Excellence (NCE) Program, the Canada Research Chairs (CRC) Program, the Indirect Costs of Research (ICR) Program and the Canada Graduate Scholarships (CGS) Program. Only a portion of the budget of these four programs is allocated to health-related research.

The NCE Program, which was launched in 1990-1991, funds research and training in Canadian universities, with a focus on collaborative research between universities and the private sector. An important focus of the program is the development of spinoff companies that can bring new technologies to market. In order to qualify for funding, each centre must provide matching funds. Successful NCE applicants are funded for a seven-year cycle. The networks are eligible to apply for a second funding cycle. The NCE Program funds support for human capital, equipment and knowledge translation. The share of spending on health research is not determined. It is interesting to note, however, that 10 of the 23 established NCEs currently conduct health research (see Table 4).

Table 4
Networks of Centres of Excellence in the Field of Health

NETWORK	WEB SITE
Canadian Obesity Network	http://www.obesitynetwork.ca
National Initiative for the Care of the Elderly	http://nicenet.aging.utoronto.ca
Advanced Foods and Materials Network	http://www.afmnet.ca
Allergy, Genes and Environment Network	http://www.allergen-nce.ca
Canadian Arthritis Network	http://www.arthritisnetwork.ca
Canadian Genetic Diseases Network	http://www.cgdn.ca
Canadian Network for Vaccines and Immunotherapeutics	Not available
Canadian Stroke Network	http://www.canadianstrokenetwork.ca
Stem Cell Network	http://www.stemcellnetwork.ca
PrioNet Canada	http://www.prionetcanada.ca

Source: Network of Centres of Excellence, http://www.nce.gc.ca.

The CRC Program was established in 2000-2001 with the goal of appointing 2,000 research chairholders in universities across the country. The main objective of the program is to attract and retain outstanding researchers. These chairholders help universities and their affiliated research institutes and hospitals become world-class centres of research and research training. Chairholders are allocated by tier level and by discipline group, with Chairs being split equally between tier levels, and with NSERC, CIHR and SSHRC accounting for 45%, 35%, and 20% of Chairs, respectively. There are two tiers of chairholders:

- Tier 1 Chairs, tenable for seven years and renewable indefinitely, are for outstanding researchers acknowledged by their peers as world leaders in their fields. For each Tier 1 Chair, the university receives $200,000 annually for seven years.

- Tier 2 Chairs, tenable for five years and renewable once, are for exceptional emerging researchers, acknowledged by their peers as having the potential to lead in their field. For each Tier 2 Chair, the university receives $100,000 annually for five years.

The Indirect Costs of Research Program was established in 2002-2003 to provide support for a portion of the indirect costs of federally funded research done by Canadian institutions. The term “indirect costs” refers to the central and departmental administrative costs that institutions incur to support research, but that are not attributable to specific research projects. Indirect costs is a broad term that includes, for example, renovation and maintenance of research facilities and equipment, purchase of library computer systems, databases and information technologies, training in research ethics, and promotion of research programs to the public. Funding under the ICR program, therefore, is not provided to individual researchers but is allocated to the institution where the research is taking place (either universities or hospitals). The ICR program is administered by SSHRC and the funds are allocated to the three granting agencies on the basis of each agency’s funding level, averaged over the three most recent years. Funds are then provided to eligible institutions on a progressive range of rates, with higher rates applying to institutions that receive less funding from the granting agencies. These progressive rates are intended to help smaller institutions that cannot realize the economies of scale available to larger institutions. In 2004-2005, spending under the ICR program accounted for 6.8% of all federal health research funding (see Table 2).

The CGS Program, which was introduced in 2003-2004, provides special recognition and financial support to the most outstanding eligible scholars pursuing graduate studies in a Canadian university. The candidates are expected to have an exceptionally high potential for future research achievement and productivity. The scholarships are awarded through national competitions by the three granting agencies in proportion to the distribution of the full-time graduate student community as follows: CIHR (10%), NSERC (30%) and SSHRC (60%). Each granting agency administers its share of the CGS Program. The maximum amount for a single award at the master’s level is $17,500 for up to one year. This award is non-renewable. For doctoral students, the award corresponds to an annual stipend of $30,000, along with an annual research allowance of $5,000.

B. Departments and Agencies

Numerous departments and agencies finance health research. These include Health Canada; the National Research Council (NRC); the Public Health Agency of Canada; the Canadian Food Inspection Agency; Human Resources and Social Development Canada; Environment Canada; Agriculture and Agri-Food Canada; the Canadian Population Health Initiative or CPHI (which is part of the Canadian Institute for Health Information); and Statistics Canada. Health Canada, NRC and CPHI provide most of this funding.

Health Canada, the federal department of health, performs intramural health research in 50 laboratories in 15 locations across the country. It also funds extramural health research through the Health Policy Research Program and the Natural Health Products Research Program. In addition, Health Canada administers its Postdoctoral Fellowship Program, which supports promising researchers and scientists and helps advance the research and innovation that take place in the department's labs. The fellowships are granted for up to two years with an annual stipend of $43,000. Approximately 10 fellowships are awarded each year. A proportion of Health Canada's health research is conducted and/or financed in collaboration with the Public Health Agency of Canada, the Canadian Food Inspection Agency, Human Resources and Social Development Canada, Environment Canada and Agriculture and Agri-Food Canada. In 2004-2005, as indicated in Table 2, Health Canada's share of all federal health research funding amounted to 4.8%.

The NRC is a federal agency which conducts intramural research in its laboratories and observatories. It also participates in collaborative projects, providing contributions in cash and in-kind (primarily expertise and time of professional staff NRC finances research into numerous fields, including bioinformatics, nanotechnology, aerospace, health, the environment, biotechnology, genomics, construction, communications, manufacturing, etc.). Only a portion of its funding is devoted to health research. In 2004-2005, some 5.9% of federal funding for health research was provided by NRC.

In 1999-2000, the Canadian Institute for Health Information established the Canadian Population Health Initiative (CPHI) to finance research and knowledge transfer in the field of population health. CPHI initially funded six research projects and six infrastructure

development initiatives. In July 2000, it launched a Research Request for Proposals (RFP). Since that time, CPHI has funded 44 research projects and development initiatives. Given the establishment of CIHR and its work in the area of population health, CPHI decided to close its RFP and has since shifted its focus from research funding to knowledge translation. In 2004-2005, CPHI contributed only 0.2% of federal health research funding.

C. Foundations

Finally, there are three foundations which provide funding for health research: the Canada Foundation for Innovation (CFI), Genome Canada, and the Canadian Health Services Research Foundation (CHSRF).

CFI, which was created by the federal government in 1997-1998 as an independent corporation to fund research infrastructure, reports to Parliament through the Minister of Industry. "Research infrastructure" consists of the (state-of-the-art) equipment, buildings, laboratories and databases required to conduct research. CFI normally funds up to 40 percent of a project's infrastructure costs, while the funding partners from the public, private and voluntary sectors provide the remainder. Funding is in the form of multi-year commitments, rather than fiscal-year funding. The main areas supported by CFI are health, environment, sciences and engineering. Since its creation, CFI has invested $686 million in infrastructure spending in 841 projects related to health research (see Table 5). It is interesting to note that, for each Canada Research Chair, CFI commits $125,000 in infrastructure funding (although CFI and CRC have separate administrative structures). CFI also provides a special fund of $450 million to support maintenance and operating costs of funded infrastructure; facilities can receive 30% of the value of funded infrastructure costs from this fund for maintenance. In 2004-2005, CFI contributed 9% of all federal funding for health research.

Table 5
Canada Foundation for Innovation
Funding in Health Research Infrastructure by Program
(As of 28 April 2006)

Funding Program	Number of Projects	Level of Funding ($)
Canada Research Chairs Infrastructure Fund	241	37,269,336
CFI Career Awards	3	1,239,066
College Research Development Fund	3	864,584
Exceptional Opportunities	0	0
Innovation Fund	161	529,024,410
International Access Fund	0	0
International Joint Venture Fund	0	0
Leaders Opportunity Fund (with CRCs)	0	0
Leaders Opportunity Fund (with federal funding agencies)	0	0
Leaders Opportunity Fund (CFI alone)	20	3,276,092
Leading Edge Fund	0	0
National Platforms Fund	0	0
National Initiatives Fund	0	0
New Initiatives Fund	0	0
New Opportunities Fund	400	64,350,837
Research Development Fund	3	1,036,705
Research Hospital Fund	10	48,920,674
TOTAL	**841**	**685,981,704**

Source: Canada Foundation for Innovation, On-line Database, available at: http://www2.innovation.ca/pls/fci/fcienrep.base, and Library of Parliament.

Genome Canada was created in 2000-2001 as a not-for-profit organization that also reports to Parliament through the Minister of Industry. Its mandate is to develop and implement a national strategy in genomics and proteomics research for the benefit of all Canadians. To fulfil this mandate, Genome Canada funds large-scale research projects through six regional Genome Centres established across the country. These Centres have primary responsibility for delivering the research programs. As is the case with CFI, but unlike the granting agencies, Genome Canada supports these large-scale multi-disciplinary research projects with the active participation of partners in the public, not-for-profit and private sectors in Canada and abroad. Also, as with CFI, financial commitments are multi-year investments. Research projects funded cover several areas, including health, agriculture, environment, forestry, fisheries, bioinformatics and ethics. It is estimated that approximately 68.5% of the funding provided by Genome Canada is devoted to health research. In 2004-2005, Genome Canada contributed 4.7% of all federal health-research funding.

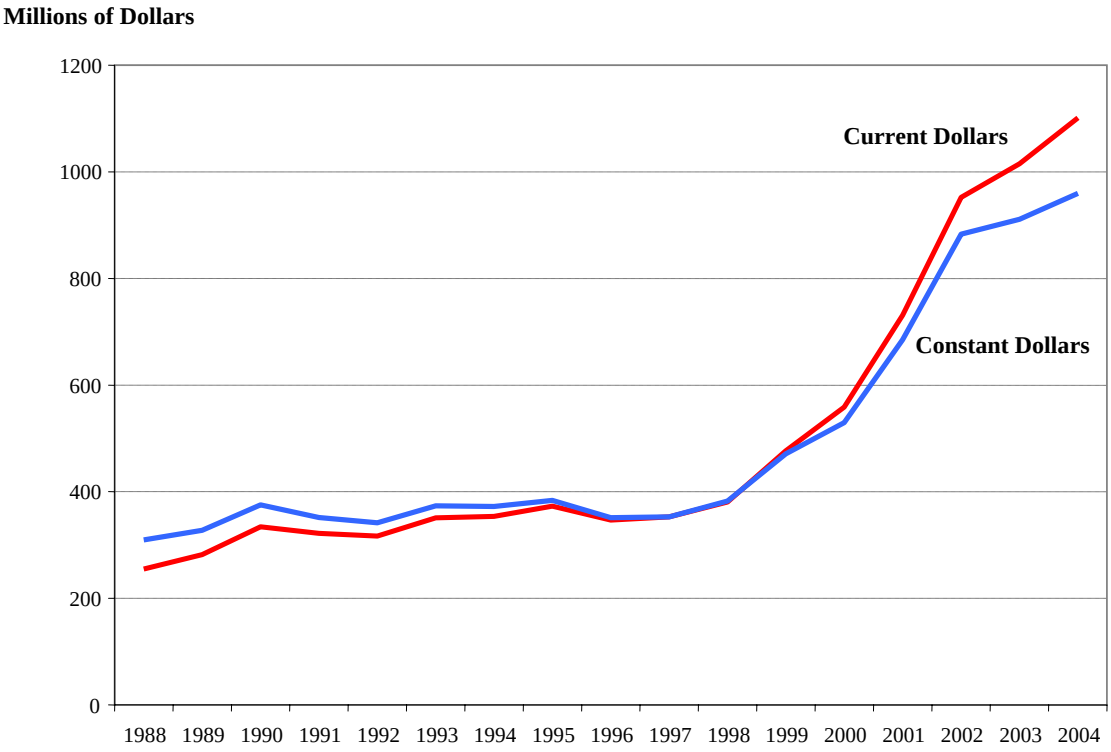
CHSRF, which was established in 1997-1998, funds extramural research on the organization and delivery of health services under priority theme areas; it does not fund any clinical research. Unlike CIHR, the research themes are not based on particular health conditions such as cancer or mental illnesses, but are determined in consultation with various research partners. All CHSRF funding is devoted to health research. In 2004-2005, CHSRF provided less than 1% of federal health research funding.

TRENDS IN FEDERAL FUNDING

Graph 1 shows the evolution of federal funding for health research between 1988 and 2004. There has been a marked increase in federal funding for health research since 1996, with an average growth of 16% annually (or 14% in real terms). In 2004 it stood at $1.1 billion, its highest level ever. In the past several years, the federal government has demonstrated its commitment to health research through a series of significant investments, most notably in CIHR, CFI, Genome Canada, and the NCE, CRC and ICR programs.

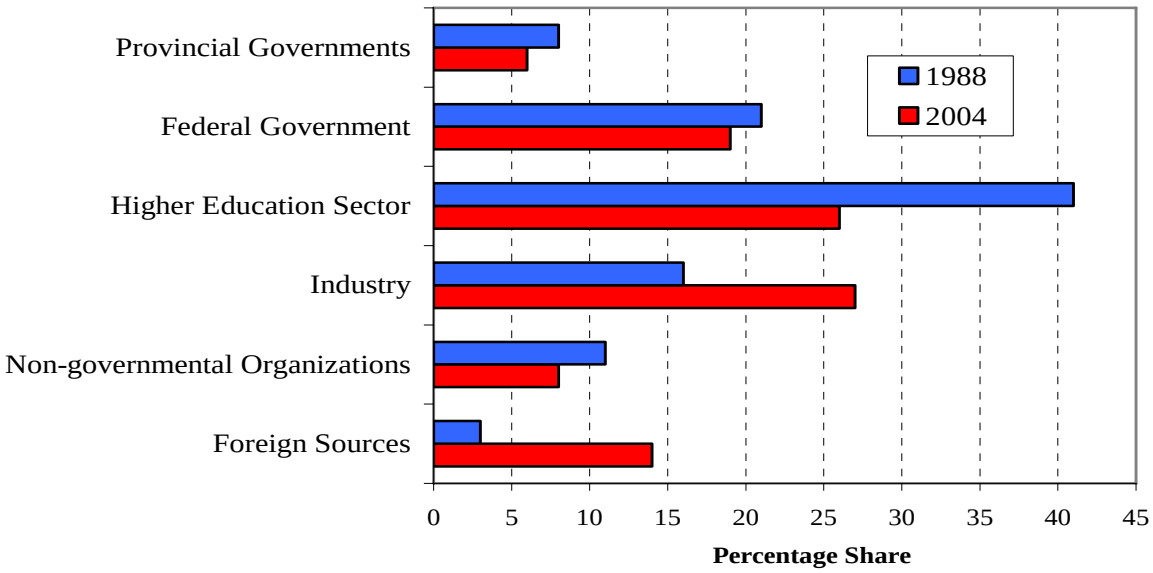
Despite these substantial increases, the proportion of health research in Canada funded by the federal government declined slightly from 21% in 1988 to 19% in 2004 (see Graph 2). By comparison, the private sector has been the leading source of funds for health research in Canada since 2000 and has been steadily increasing its investment. In 2004, it funded 27% of all health research in Canada.

Graph 1
Federal Funding for Health Research, 1988 to 2004



Source: Statistics Canada, Catalogue 88-001-XIE, July 2005, and Library of Parliament. It should be noted that the conversion into constant (1997) dollars was made by using the implicit chain price index for the GDP at market prices (Cansim, Table 380-0056).

Graph 2
Expenditures on Health Research in Canada
by Source of Funding, 1988 and 2004



Source: Statistics Canada, Catalogue 88-001-XIE, July 2005, and Economics Division, Library of Parliament.

COMMENTARY

There has been a major infusion of federal investment in health research since 1996. However, since the proportion of federal funding to health research in Canada has remained largely unchanged over the years, some organizations claim that the federal government must invest more in health research.

The growth in the federal government's investment in health research has been achieved through increased CIHR budgets, the establishment of new programs (NCE, CRC and ICR) and the creation of new funding bodies (namely CFI, Genome Canada and CHSRF). Many feel that for a country the size of Canada, there are too many federal funding organizations in the field of health research. In reviewing the information for these bodies, it becomes difficult to determine whether there is sufficient coordination to avoid duplication in the funding of projects. Others feel that there is some element of competition between the various federal funding bodies. For some, these bodies constitute simply an overlapping level of administration.

Some federal funding bodies, such as CFI and Genome Canada, operate under a matching fund policy which requires leveraging additional investments from the private sector, non-government organizations or provincial governments. It would be interesting to know how this approach to health research has been an enhancement to the traditional single-source funding.