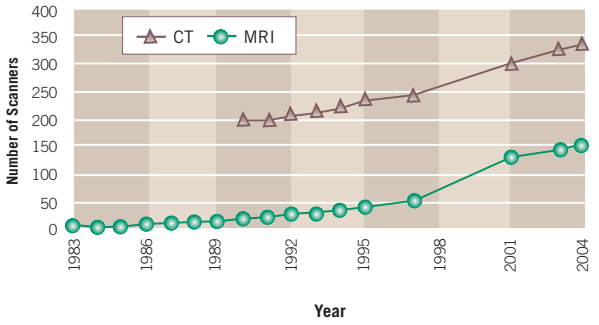
More Scans, More Scanners

In 2003, about two million Canadians aged 15 and over reported having had a non-emergency MRI, CT or angiography in the past year (Statistics Canada 2003). That's up 25% since 2001.

These scans were delivered by more machines than ever before. By the beginning of 2004, Canada had 338 CT scanners, up 44% from a decade earlier (Canadian Institute for Health Information 2004). The number of MRI machines grew by almost four times over the same period, from 40 to 151 scanners. (See Figure 1.)

FIGURE 1

Number of magnetic resonance imaging (MRI) and computed tomography (CT) scanners, Canada, 1983–2004



Sources: OECD Health Data 2002, OECD (1983–1990): National Inventory of Selected Imaging Equipment, Canadian Coordinating Office for Health Technology Assessment (1991–2001); National Survey of Selected Medical Imaging Equipment, Canadian Institute for Health Information (2003 and 2004).

Notes:
(a) The numbers of MRI and CT scanners in free-standing imaging facilities were imputed for years prior to 2003 based on data collected in the 2003 National Survey of Selected Medical Imaging Equipment.
(b) Inventories were not conducted annually.
(c) Quebec data were incomplete for 2000; therefore, all 2000 data are excluded.

Despite these increases, Canada continues to rank below the midpoint among member countries of the Organization for Economic Co-operation and Development (OECD) for the number of MRI scanners and CT scanners per million population. For example, Canada ranked 13th among the 20 OECD countries reporting MRI data for the latest year comparable data were available. However, having more machines does not necessarily mean that more people receive imaging services. Manitoba, for example, had about 2.6 MRI scanners per million population in 2001, half the number England reported. Yet the province reported a higher scan rate – 17 scans per 1,000 people in 2001–02, compared to 14 in England (Canadian Institute for Health Information 2003). (Given that Manitoba's definition of scans is narrower than England's, this comparison likely underestimates the difference in scan rates.) This example illustrates that a wide range of factors may explain the variations in international supply and utilization patterns for medical imaging services and technologies.

Where Do Scans Take Place?

Many imaging facilities are located in hospitals, but there is also a well-established tradition in Canada of free-standing imaging facilities, which may be for- or not-for-profit. These facilities range from specialized services run by physicians, radiologists, dentists, chiropractors or mammography programs to broad-based imaging centres offering a wide range of tests. In 2003, 96% of Canadians who received a CT scan and 90% of those who had an MRI said that their test took place in a hospital or public clinic (Statistics Canada 2003).

Regardless of the type of facility in which the test occurs, funding can come from a variety of sources. Who pays can depend on many factors, such as why the test is needed, what type of exam is performed and where the facility is located. Hospitals with CT and MRI scanners reported that the vast majority of their operating funding came through provincial or territorial governments. In free-standing facilities, however, private health insurance, other private insurance, and out-of-pocket payments were the leading source of operating revenue. (See Figure 2.)

FIGURE 2

Percentage distribution of operating revenue by source for selected types of medical imaging equipment and total number of machines installed in hospitals and free-standing imaging facilities, Canada, as of January 1, 2004

	Hospital-Based Equipment		Free-Standing Facilities	
Sources of Operating Funds	**CT**	**MRI**	**CT**	**MRI**
Provincial/Territorial Government	93%	87%	20%	5%
Workers' Compensation Board	<1%	1%	2%	1%
Private Health Insurance, Other Private Insurance, Out-of-Pocket Payments	<1%	1%	59%	74%
Other Types of Funding	6%	10%	20%	20%
# Machines Where Funding Sources Reported	286	103	10	20
Total # of Machines	327	127	11	24

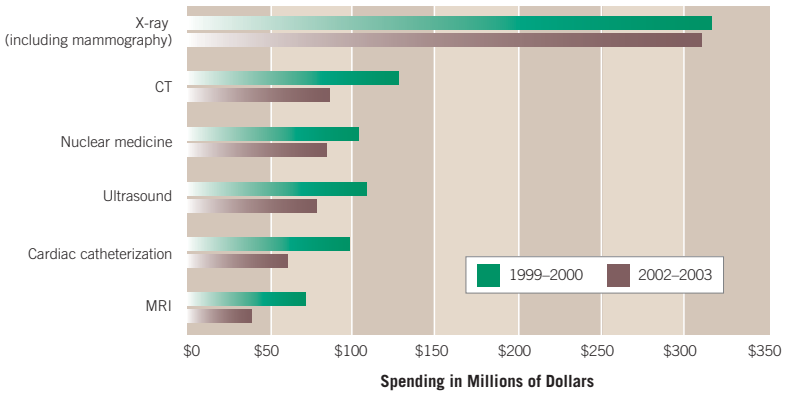
Note: Data pertains only to facilities reporting sources of funds.
Source: National Survey of Selected Medical Imaging Equipment (2004), Canadian Institute for Health Information.

Basic X-Ray Exams: Still Most Common Medical Imaging Procedure

The World Health Organization suggests that diagnostic imaging is needed, as

FIGURE 3

Total hospital operating expenses for selected types of medical imaging equipment, Ontario, 1999–2000 and 2002–2003



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

clinical considerations alone are insufficient to make a correct diagnosis, in 20% to 30% of medical cases worldwide (World Health Organization 2003). They suggest that some 80% to 90% of these diagnostic problems can generally be solved using "basic" x-ray and/or ultrasound examinations.

The range of services provided in Ontario hospitals (the only province for which comprehensive data were available) is close to this mark. Seventy-nine percent of medical imaging examinations, excluding angiography studies, were x-rays or ultrasounds in 2002–03 (Canadian Institute for Health Information 2004). According to CIHI's Canadian MIS Database (CMDB), in 2002-03, hospitals in Ontario spent about $316 million on X-rays alone. (See Figure 3)

A range of imaging professionals are involved in delivering services across the country. Their numbers have remained relatively stable in recent years. In 2003, for example, the rate of medical radiation technologists was 49 per 100,000 population compared to 47 in 2002. There were no changes in the rates of medical physicists and diagnostic radiology physicians: one and six per 100,000 respectively.

Medical Imaging in Canada 2004, CIHI's latest report on diagnostic imaging, incorporates results from the 2004 National Survey of Selected Medical Imaging Equipment and includes a more comprehensive look at the distribution and cost of selected medical imaging technologies and services, how long Canadians are waiting for services, medial imaging human resources in Canada and other issues.

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About the Authors

Gilles Fortin, Senior Researcher at the Canadian Institute for Health Information, is the principal author of the report *Medical Imaging in Canada* 2004. Since joining CIHI in 1995, after many years at Health Canada, he also participated in the production of reports on other aspects of Canada's healthcare system, particularly national health accounts.

Jennifer Zelmer is Vice-President, Research and Analysis for the Canadian Institute for Health Information. In this role, she leads an integrated program of health services and population health-related analytical and research initiatives.

Kira Leeb Since coming to CIHI, Kira Leeb has managed the production of CIHI's annual report on the health of Canada's healthcare system. She has also led or participated in the production of more focused reports on aspects of Canada's healthcare system.

contest

Figure this!

ACCORDING TO A RESEARCHER at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be in the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself but the word as a whole.

This caught our fancy. For this issue of *Healthcare Quarterly* we have a simple contest. Untangle the sentence below and tell us on what page of this issue this sentence appears. (We know that is a lot of reading but at least the words are not jumbled!)

Our wrlod has cangehd, our nedes hvae tremrofsnad, our tehconoliges have depoleved aud our fascil evinoremet is inrcaesnigly srainted.

Submit your answers to: words@longwoods.com. We'll publish the good ones in *Healthcare Quarterly*. The first three winners, as selected by the editors, will win a FREE one-year subscription to the new quarterly journal *Healthcare Policy*.