

Chapter 4

Section 4.06

Hospitals—Management and Use of Diagnostic Imaging Equipment

Follow-up on VFM Section 3.06, *2006 Annual Report*

Background

Diagnostic medical imaging includes the use of x-ray, ultrasound, magnetic resonance imaging (MRI), and computed tomography (CT) to provide physicians with important information for diagnosing and monitoring patient conditions. Ontario hospitals conducted about 10.6 million diagnostic imaging tests in the 2005/06 fiscal year.

Although CT and MRI examinations are a small percentage of the overall number of diagnostic imaging procedures, our 2006 audit focused on CTs and MRIs since the equipment can cost several million dollars, there are health safety risks associated with such examinations, and the use of CTs and MRIs has been increasing over the years. According to Ministry of Health and Long-Term Care (Ministry) data, between the 1994/95 and 2004/05 fiscal years, the total number of CT examinations increased by almost 200%, and MRI out-patient examinations increased by more than 600%. The Ministry told us that just under 600,000 MRI scans and 1.2 million CT scans were conducted in 2007/08.

In our *2006 Annual Report*, we noted that the three hospitals we visited—Grand River, the University Health Network (consisting of Princess Margaret, Toronto General, and Toronto Western), and Peterborough Regional Health Centre—were managing and using their CTs and MRIs well in some respects. However, we noted areas where these hospitals could improve their management and use of this equipment to better meet patient needs. The observations from our *2006 Annual Report* on the operations of MRIs and CTs included the following:

- Although the Canadian Association of Radiologists (CAR) noted that 10% to 20% of diagnostic imaging tests ordered by physicians were not the most appropriate tests, the hospitals we visited generally did not use referral guidelines to help ensure that the most appropriate test was ordered.
- At two of the hospitals we visited, we noted that Workplace Safety Insurance Board (WSIB) patients received much quicker access to MRI examinations than non-WSIB patients. Hospitals receive about \$1,200 from the WSIB for each MRI examination of a WSIB patient.

- Wait times reported on the Ministry's website combined in-patient and out-patient wait times, even though in-patients generally received their scan within a day. At one hospital, for example, the Ministry-reported wait time for a CT was 13 days, but out-patients actually waited about 30 days.
- Many referring physicians and staff at the hospitals we visited indicated that they were unaware that CTs expose patients to significantly more radiation than conventional x-rays. For example, one CT of an adult's abdomen or pelvis is equivalent to the radiation exposure of approximately 500 chest x-rays. Ontario had not established radiation dose reference levels to guide clinicians in establishing CT radiation exposure levels for patients, although Britain and the United States have.
- Staff at the two hospitals we visited that performed pediatric CT examinations indicated that, in close to 50% of the selected cases, the appropriate equipment settings for children were not used. In addition, a then-recent survey of referring pediatricians in the Toronto area found that 94% underestimated the radiation exposure for children from CT examinations. Radiation levels are particularly important when the patient is a child, since children exposed to radiation are at a greater risk of developing radiation-related cancer later in life.
- None of the hospitals we visited analyzed the number of CT examinations by patient or monitored the radiation dosages absorbed by patients. Nor did they track if these patients had received CT examinations at other hospitals, or in other years, which would add to their lifetime radiation exposure.
- Patient shielding practices, such as the use of a lead sheet to cover body parts sensitive to radiation, varied at the hospitals we visited.
- Most of the interventional radiologists at one hospital, who are exposed to higher levels

of radiation since they perform procedures close to the radiation source, did not wear the required dosimeter, which is used to determine whether their radiation exposure exceeds established maximums.

- The Ministry examines x-ray operations. However, it does not do the same for CT operations because there are no CT operating standards established under the *Healing Arts Radiation Protection Act*—even though CT examinations expose patients to significantly more radiation than x-rays.
- None of the hospitals we visited had a formal quality assurance program in place to periodically ensure that radiologists' analyses of CT and MRI examination images were reasonable and accurate.

We made a number of recommendations for improvement and received commitments from the hospitals and the Ministry that they would take action to address our concerns.

Current Status of Recommendations

The hospitals, as well as the Ministry, where applicable, provided us with information in spring and summer 2008 on the current status of our recommendations. According to this information, progress has been made in implementing most of the recommendations we made in our *2006 Annual Report*, although it will take several years for some to be implemented. In a few areas, staffing and/or funding limitations were cited by the hospitals as the reason for not making more progress in implementing the recommendation. The current status of the action taken on each of our recommendations is as follows.

REFERRAL GUIDELINES

Recommendation 1

To better ensure that patients receive the most appropriate diagnostic test given their clinical symptoms, and thereby help reduce unnecessary tests, waiting lists, and unnecessary exposure to medical radiation, hospitals should:

- *in conjunction with the Ministry, evaluate the benefits of using diagnostic imaging referral guidelines, such as those issued by the Canadian Association of Radiologists, to assist with determining the appropriateness of tests; and*
- *have a process in place to identify possibly inappropriate diagnostic imaging tests ordered by referring physicians, particularly with respect to CT and MRI referrals.*

Current Status

The Ministry commissioned the Institute for Clinical Evaluative Sciences (ICES) to review hospital data to determine the clinical indications and appropriateness of MRI and CT scans performed in Ontario. The Ministry informed us that it received the resulting report in summer 2007, and established a working group to recommend MRI and CT appropriateness standards on the basis of the findings of the report and the results of a literature review of Canadian, US, and European standards. These appropriateness standards, which include referral guidelines, are to assist health-care professionals in selecting the most appropriate diagnostic imaging test. The working group is expected to report back to the Ministry by the end of the 2008/09 fiscal year, after which the appropriateness standards are to be posted on the ministry website. As well, the Ministry indicated that clinical standards for determining the need to order a CT scan were being piloted at two hospitals at the time of our follow-up, and are expected to be implemented throughout the province in spring 2009.

At the time of our follow-up, one of the hospitals indicated that it had posted the Canadian Association of Radiologists' referral guidelines on the

hospital's intranet, and had requested the chiefs of staff to make medical staff aware of them.

All three of the hospitals indicated that every request for a MRI or CT scan is being reviewed by a radiologist for appropriateness prior to the scan being scheduled. As well, the hospitals stated that, when warranted, the radiologist or hospital staff would communicate with the referring physician to suggest a more appropriate diagnostic test. One hospital noted that the appropriateness of an MRI or CT scan may be further assessed at the time of the scan—for example, should there be additional medical information available at that time—and changed to a more appropriate test.

ACCESS

Appointment Scheduling

Recommendation 2

Hospitals should establish policies to ensure that all patients, including Workplace Safety and Insurance Board patients, are prioritized for MRI and CT examinations in a similar manner based on medical need.

Current Status

The Ministry told us that all patients, including Workplace Safety Insurance Board (WSIB) patients, should be prioritized using a priority assessment tool, with priority 1 being the most urgent and priority 4 being the least urgent. As well, the Ministry indicated that it had established target time frames for conducting MRIs and CTs, based on each priority level. At the time of our follow-up, one hospital indicated that it prioritized all MRI and CT requests into these groups on the basis of the priority indicated by the referring physician and the patient's diagnosis, and scheduled the related MRIs and CTs within the Ministry's targeted wait times for each priority level. Although this hospital still maintained specific time slots for WSIB patients, it indicated that those times could be superseded for emergency patients, if needed. Another hospital noted that it also continues to give priority to WSIB patients and schedules these patients outside of the

hours funded by the Ontario Health Insurance Plan (OHIP). However, the third hospital indicated that it continued to follow its established policy, as it did at the time of our 2006 audit, of prioritizing and scheduling all patient access to MRIs and CTs on the basis of the urgency of the request, and that it did not book WSIB or other third-party requests on any higher-priority basis.

Wait Times

Recommendation 3

To help hospitals better manage their MRI and CT waiting lists, and provide the public with more reliable and useful wait-time information, hospitals should:

- *seek further guidance from the Ministry to clarify the starting point for the calculation of each patient's wait time, to ensure that wait-time data are being consistently reported across all hospitals; and*
- *measure and report wait times using the Ministry's new Wait Time Information System, including information on patient priority levels, ability to meet benchmarks, and out-patient wait times.*

Current Status

The Ministry indicated that the Wait Time Information Office developed a set of standards, an assessment tool, and scorecards for the measurement of the data quality of the wait-time information collected and reported by hospitals. These materials, intended to help ensure that hospitals consistently collected and reported wait-time data, were circulated between December 2006 and February 2007 to hospitals that participated in the Ministry's Wait Time Strategy (Strategy). In addition, the Ministry commented that it has provided extensive training for all users of the Wait Time Information System (WTIS). As well, the Ministry indicated that a Data Certification Council was created in March 2007. This Council is to review the processes for collecting and reporting wait time information prior to

it being publicly displayed on the Ontario government website.

All three hospitals we visited participated in the Strategy and indicated that they reported wait-time information in accordance with the Ministry's requirements. Furthermore, with respect to data consistency, at the time of our follow-up, the hospitals indicated that they all used the date the hospital received the referral form as the starting point for measuring patient wait times for a CT or MRI scan.

At the time of our follow-up, WTIS reported CT and MRI wait times from the date the scan was ordered to the date the scan was verified by a radiologist. Furthermore, the Ministry indicated that as of summer 2007, all hospitals participating in the Strategy were required to report MRI and CT wait times by priority level. As well, new features were added to WTIS that enable users to view patient wait times by priority level in comparison to targeted wait-time benchmarks. Users can now also view MRI or CT wait-time information, from the date the scan was ordered to the date the scan was completed, for out-patients.

All three hospitals we visited had their wait times reported on WTIS, including information on patient priority level, patients meeting the targeted wait-time benchmarks by priority level, and out-patient wait times for CT and MRI scans. In addition, one hospital indicated that its medical imaging management team reviews wait-time data weekly for CTs and MRIs for each priority level, while another hospital indicated that it reviews its wait-time data with its Local Health Integration Network (LHIN) partners quarterly. The third hospital indicated that it reviews wait-time data monthly and also discusses this data, along with diagnostic imaging capacity, with others providing these services within its LHIN.

Patient Cancellations and No-shows

Recommendation 4

In order to ensure that hospitals are utilizing their MRI and CT equipment efficiently, hospitals should monitor the reasons for cancellations and take proactive action where possible to minimize the impact of last-minute cancellations and no-shows.

Current Status

The Ministry indicated that WTIS allows hospitals participating in the Strategy to track why scans were cancelled, enabling hospitals to take proactive action where possible.

At the time of our follow-up, one hospital indicated that it tracks all “no-shows” in its scheduling system, although it does not monitor the reasons for the no-shows. However, the hospital maintains a list of patients who can fill last-minute vacant bookings. The hospital told us that, to help reduce no-shows and last-minute cancellations, it mails reminder notices to all patients two weeks before an MRI appointment. These reminder notices include screening criteria, which are used to help determine if patients have any reasons preventing them from undergoing the MRI. As well, this hospital stated that it has implemented clerical support to better manage the scheduling of MRI appointments.

Another hospital indicated that it monitors patient no-shows and cancellations on a weekly basis and conducts periodic audits as to the reasons why these have occurred. To minimize the impact of no-shows and last-minute cancellations, it adds cases to specific shifts (such as the midnight shift) in order to take into account a certain percentage of no-shows and cancellations; performs equipment quality assurance testing during times when patients have not showed; maintains an on-line list of patients who are willing to fill last-minute vacancies; and, when staffing levels allow, calls all MRI and CT patients at two of its sites to remind them of their appointment 48 hours in advance.

The third hospital indicated that, although its system enables it to document the reasons for CT

and MRI cancellations, at the time of our audit, it was conducting no formal monitoring. This hospital stated that short-notice cancellations of out-patient CT scans do not result in downtime, owing to the heavy daily volume of emergency-room and in-patient requests for CT scans. Although, because of staffing constraints, the hospital does not notify MRI patients of their upcoming appointment, it does maintain a list of MRI patients available on short notice, to minimize non-productive time.

UTILIZATION

Recommendation 5

To better provide patients with timely access to required examinations, hospitals, in conjunction with the Ministry, should develop strategies to increase the utilization of MRI and CT equipment, including increasing the time available for performing clinical procedures.

Current Status

At the time of our follow-up, the Ministry noted that, through its Wait Time Strategy, additional funding was provided to hospitals in the 2006/07 and 2007/08 fiscal years to increase their utilization of MRI and CT scanners. The Ministry indicated that it had introduced, in conjunction with the Local Health Integration Networks (LHINs), a draft protocol in fall 2007 regarding processes for obtaining approval for new MRI and CT scanners.

One hospital indicated that it provides CT scans 16 hours a day, seven days a week, including statutory holidays and weekends, and that the addition of another CT scanner in June 2008 provided increased capacity. However, this hospital noted that MRI utilization has diminished as a result of the loss of staff to other local hospitals, but that the hospital expected to increase staffing levels and expand the hours of MRI operation by October 2008. This hospital suggested that the Ministry should consider maximizing the utilization of existing MRI scanners, which would include conducting a regional assessment of the impact on human

resources of staffing newly approved MRI scanners before approving their installation.

Another hospital stated that it is moving toward providing MRI scans 24 hours a day, seven days a week, as well as extending its hours for CT scans, but that difficulties in obtaining staff have limited the extension of hours. However, radiologist coverage of certain procedures has extended into the evenings and weekends in order to help address demand. As well, the removal of underutilized dedicated time for special procedures has increased the available time for other scans. The hospital has also adopted CT workflow processes in order to increase patient throughput and reduce patient wait time. The hospital also commented that it has improved the availability and utilization of MRI scanners by implementing in August 2007 a daily tracking system and performing regular monitoring for available time slots, with the daily goal of no unbooked time.

The third hospital indicated that it is working with its LHIN and the Wait Time Information Office to increase the utilization of its MRI and CT scanners, and has requested additional funding from its LHIN to operate its MRI and CT scanners for more hours.

SAFETY

MRI Safety

Recommendation 6

To help ensure the safety of patients and hospital staff with regard to the operation of MRIs, hospitals should address the recent recommendations endorsed by the Ontario Health Technology Advisory Committee, which were designed to promote consistent and safe MRI practices in Ontario.

Current Status

At the time of our follow-up, the Ministry told us that it had reviewed the recommendations related to the operation of MRIs that were endorsed by the Ontario Health Technology Advisory Committee (Committee) and established the Diagnostic

Imaging Safety Committee. In February 2007, the Ministry reviewed the recommendations of the latter committee and indicated that it was in the process of implementing a strategy to ensure MRI safety. This strategy includes requesting the applicable health-professional colleges to review and, where necessary, revise or develop appropriate policies, guidelines, or practice standards related to MRI safety. As well, the Ministry stated that it had established an expert working group to develop and implement an education strategy for patients and health-care providers on the appropriateness of ordering and the safety of MRI scans. The education strategy is expected to be implemented commencing fall 2009.

To promote the safe operation of MRIs, one of the audited hospitals indicated that it has labelled equipment as to MRI compatibility, has posted signs warning of restricted access to the MRI area, and has put locks on doors accessing the MRI area. As well, it has conducted ongoing MRI safety education for patients and personnel, including staff such as housekeeping and porters. Furthermore, the hospital stated that any new MRI installations are to address all safety issues consistent with the Committee's recommendations. Another hospital indicated that it continues to use its extensively documented policies on MRI safety, which support the recommendations endorsed by the Committee. This hospital also noted that the physical layout of its new MRI suite, which became operational in June 2008, enabled it to more fully follow the Committee's recommendations. As well, this hospital stated that it labelled equipment as to MRI compatibility and posted signs warning that access to the MRI is restricted. The third hospital indicated that hospital staff have attended educational sessions conducted by the Ontario Hospital Association to increase their understanding of the Committee's recommendations.

CT Safety

Recommendation 7

To help minimize the impact of radiation exposure for patients and hospital personnel, hospitals, in conjunction with the Ministry, should:

- ensure that both physicians and patients are aware of the radiation exposure from CTs in order to make better informed decisions on the use of CTs versus other diagnostic imaging options;
- develop and implement standardized patient CT-radiation-exposure protocols, based on international and national best practices, that would ensure that the patient's radiation exposure is as low as reasonably achievable and is consistent among hospitals, and monitor adherence to these protocols through a quality assurance program;
- obtain information from other hospitals regarding CTs and other diagnostic imaging procedures for those patients who have had or will have a significant number of such examinations; and
- ensure that all hospital personnel exposed to occupational radiation wear the recommended dosimeters to enable accurate tracking of radiation to ensure radiation exposure does not exceed the limits established in the Occupational Health and Safety Act.

In addition, to help ensure the consistent and appropriate protection of patients from medical radiation, the Ministry should review and take appropriate action on the recommendations (once available) of the Healing Arts Radiation Protection Commission and the Ontario Health Technology Advisory Committee, and ensure that CT operations are subject to an appropriate level of review.

Current Status

At the time of our follow-up, the Ministry and the hospitals indicated that a number of actions were being taken to help minimize the impact of radiation exposure on patients and hospital personnel. Specific measures included the following:

- *Educating physicians and patients on radiation exposure from CTs*—At the time of our follow-up, the Ministry told us that it had established an expert working group to develop an education strategy—for patients and for providers, including physicians—to address the issues of safety and appropriateness when ordering CT scans. The Ministry anticipated that the education strategy would be ready for implementation in fall 2009.

One hospital indicated that, in February 2007, it provided pediatricians with an education session on the level of patient radiation exposure from CTs. It also held an education session open to all staff in October 2007, and a session specifically directed at its Medical Advisory Committee in July 2008. Although this later session promoted physician discussions with patients regarding radiation levels, no additional action was taken with respect to educating patients. Another hospital indicated that a comprehensive staff-training program was available on-line, and that handouts were provided to medical radiation technologists during a group training session in November 2007. With respect to patient education, the hospital noted that it had CT-related pamphlets that discuss radiation in general. The hospital commented that it is waiting for the Ministry's initiative regarding further patient education about the level of radiation from CT scans. The third hospital indicated that radiologists already received training in radiation safety as part of the education process to become a radiologist, and that if there is an issue with the patient dose, it can be raised with the referring physician. As well, this hospital noted that it does not have the human resources to develop its own educational programs, but that it was supportive of work being done at the provincial level. The hospital also commented that, although it has no formal process to educate patients on the level of radiation exposure from CTs versus

other types of diagnostic imaging, all patients' questions related to this would be answered by the hospital's professional CT staff.

- *CT-radiation-exposure protocols*— The Ministry informed us that, in December 2006, it sent a letter to the Ontario Hospital Association, the College of Physicians and Surgeons of Ontario, and the College of Medical Radiation Technologies of Ontario requiring all hospitals to review their CT practices to ensure that patient safety is not being compromised, in particular with respect to radiation levels used for children. On December 20, 2006, shortly after the Standing Committee on Public Accounts held a hearing on this section of our report, the Committee sent a letter to the Ministry and the Ontario Hospital Association requesting confirmation that pediatric CT protocols had been disseminated to all hospitals. In early 2007, the Ministry confirmed that the Ontario Hospital Association had circulated pediatric CT protocols to all hospitals and encouraged hospitals to contact the academic pediatric centres for additional information. As well, in March 2007, the Ontario Hospital Association and the Ministry held a conference on diagnostic imaging and ensuring patient safety, which included a session on pediatric protocols. The Ministry also indicated that it is funding a project to establish diagnostic reference levels (DRLs) for CT examinations in Ontario, and will require hospitals and independent health facilities to report on their use. The primary goal of the project is to increase awareness of radiation doses associated with CT examinations across the province and to use DRLs as a tool to manage and reduce the radiation dose associated with CT examinations. This project is expected to be completed by summer 2010.

One of the hospitals indicated that, at the time of our follow-up, two studies were being done in an effort to evaluate the potential for decreasing the CT radiation dose to

the patient in specific clinical settings. The hospital also noted that other low-dose CT protocols are routinely applied in its clinical practice, and that the protocols are continually being re-evaluated depending on the clinical indications and changes in CT equipment. As well, this hospital told us that its radiologists provide feedback to its CT technologists regarding adherence to established protocols as part of an ongoing quality-assurance program.

Another hospital indicated that it had compared its pediatric scanning protocols with those used by two pediatric hospitals, and that staff had observed the CT operations of these two hospitals. The hospital also noted that staff actively participate in CT user-group meetings to promote the sharing and development of best practices. As of April 2007, the hospital said it was also conducting quarterly audits to review scanning protocols used and their appropriateness, both clinically and in relation to patients' radiation exposure.

The third hospital noted that, although it does not specifically monitor adherence to its protocols, all CT exams are completed based on predetermined and programmed protocols, and that its pediatric protocols follow the Hospital for Sick Children's guidelines. As well, new protocols were established for the hospital's new CT scanners. The hospital added that the use of consistent protocols among different hospitals would depend on the make and model of the CT scanner as well as the preferred protocols of the radiologists at each hospital. As well, the hospital indicated that it provides radiation safety training to all professional and support staff working in the CT area. Radiation safety practices were reviewed with the CT technologists and all CT technologists follow the "as low as reasonably achievable" (ALARA) principle for radiation exposure in establishing the CT settings.

- *Obtaining information from other hospitals on prior diagnostic-imaging procedures*—At the time of our follow-up, one hospital told us that it was obtaining information on imaging studies completed at other regional partner hospitals or hospitals outside of its region and reviewing the information prior to the completion of CT scans. Another hospital noted that there was no accurate and effective manner in which radiation-dose information for an individual patient could be calculated and communicated between facilities. The third hospital indicated that, although it may obtain information on a patient's prior CT scan to compare to a current scan, it does not obtain information to determine which patients have had or will have a significant number of such examinations.
- *Wearing dosimeters and tracking radiation exposure*—One hospital indicated that it is compliant with the use of dosimeters as outlined in the *Occupational Health and Safety Act* and that dosimeter results are reviewed and provided to staff. Another hospital told us that all CT staff wear personal dosimeters, and that it reviews radiation exposure reports quarterly to ensure that staff exposure is within established limits. The third hospital stated that, although it provides radiation dosimeters to CT operators, physician compliance with their use is an ongoing issue.

In addition, the Ministry of Labour, which periodically inspects hospital dosimetry records to ensure that radiation exposure limits are not exceeded, indicated that in the 2005 and 2006 calendar years, they inspected about 120 hospitals, which resulted in a total of 53 orders of non-compliance. It told us that the hospitals had complied with all the orders issued. The Ministry of Labour also noted that it inspected about 19 hospitals and nine x-ray clinics in the 2007 calendar year, but that summarized results of the inspections were not yet available at the time of our follow-up.

For 2008, the Ministry of Labour anticipated inspecting a total of 50 hospitals and x-ray clinics.

- *Recommendations from the Ontario Health Technology Advisory Committee and the Healing Arts Radiation Protection (HARP) Commission*—The Ministry indicated that, in response to the Ontario Health Technology Advisory Committee's report, it established the Diagnostic Imaging Safety Committee. This committee submitted to the Ministry its February 2007 report, which contained its recommendations for improving CT safety. As well, in June 2007, the Ministry received the recommendations of the HARP Commission relating to improvements in CT services. At the time of our follow-up, the Ministry commented that it had reviewed the recommendations from the Commission and from the Diagnostic Imaging Safety Committee, and was in the process of implementing a strategy to ensure CT safety. In addition to initiatives mentioned above—such as an education strategy and a project to establish diagnostic reference levels—as with MRIs, this strategy includes requesting the applicable health professional colleges to review and, where necessary, revise or develop appropriate policies, guidelines, or practice standards related to safe CT operations. It was also to include a review by the Ministry of the *Healing Arts Radiation Protection Act* and regulations to ensure that CT scans are only completed if prescribed by a qualified health professional and that CT technologies (including dental CTs) are operated by qualified individuals. In addition, the Ministry noted that it is collaborating with the Ontario Hospital Association, the College of Physicians and Surgeons of Ontario, the Royal College of Dental Surgeons of Ontario, and the College of Medical Radiation Technologies of Ontario to develop strategies to identify and implement best practices in CT operations.

One hospital indicated that, although not currently required to by law, it completes certain HARP testing of its CT scanners on an annual basis and fully supports the specific inclusion of CT scanners under the *Healing Arts Radiation Protection Act*. While the Ministry's interpretation is that CT scanners are included under the *Healing Arts Radiation Protection Act* and regulation, our Office believes that this is generally not clear in the underlying legislation.

EXAMINATION RESULTS

Recommendation 8

To help ensure that referring physicians have accurate information on a timely basis for making patient-related decisions, hospitals should:

- *adopt benchmarks for the timely reporting of both urgent and normal MRI and CT referrals and monitor adherence to those benchmarks; and*
- *implement an independent quality assurance program that includes a periodic, preferably external, review of a sample of each radiologist's analysis of diagnostic images.*

Current Status

The Ministry indicated that, as of the time of our follow-up, it had not yet developed benchmarks for the turnaround time from the date a patient receives an MRI or CT scan to the date the radiologist verifies the report. However, the Ministry noted that the Wait Time Information System (WTIS) was enhanced in fall 2007 to include information accessible to health-care providers on this turnaround time.

One hospital indicated that it had established benchmarks for both urgent and normal MRIs and CTs, and that verbal reports are provided for certain urgent cases. This hospital also indicated that it uses the WTIS data to monitor the turnaround time for radiologists' reports. As well, emergency-room physicians can access audio or preliminary reports. This hospital also noted that it had developed a detailed procedure for referring physicians to

access radiologists' reports after regular business hours, which was implemented in December 2006, and established a call centre in January 2007 to assist referring physicians with access to radiologists or diagnostic services. Another hospital indicated that it had not formally adopted benchmarks for monitoring turnaround times. However, in spring 2008, the hospital implemented a new voice-recognition dictation system to electronically transcribe radiologists' comments. The hospital anticipated that this system would improve the reporting turnaround times and enable it to start measuring and monitoring turnaround times by October 2008. The third hospital indicated that it established a 24-hour benchmark for all radiologists' reports, and that the median turnaround time is now about 24 hours. In addition, urgent reports are prioritized and available immediately after editing by the radiologist or the transcriptionist. Therefore, the hospital feels that it is not necessary to establish benchmarks for the turnaround time for urgent radiologists' reports.

With respect to an independent quality-assurance program, one hospital indicated that an external review of images has taken place on an occasional basis (for example, for breast imaging), but that an independent external review of each radiologist has yet to be done on a more regular basis. This hospital commented that, given the current workload of the radiologists and the Wait Time Strategy initiative to increase the hours available for MRI scans, it is not reasonable to subject any significant volume of radiologists' reports to second reads. Another hospital told us that it did not have the human resources to perform internal reviews of a sample of each radiologist's analysis of diagnostic images. However, this hospital had no objection to external reviews conducted by an independent body. It also indicated that plans were under way to restart departmental rounds in order to review interesting, unusual, or problem cases. The third hospital noted that it was planning to implement a formalized quality-assurance program that includes second reads or peer reviews of selected radiologists' analysis of diagnostic images.