

Chapter 25

Saskatchewan Health Authority—Efficient Use of MRIs in Regina

1.0 MAIN POINTS

By January 2020, the Saskatchewan Health Authority implemented three and made progress on the other four of the seven recommendations we made in 2017 about the efficient use of magnetic resonance imaging (MRI) services in Regina.

The Authority developed work standards to have staff track the actual completion dates of each stage of MRI services and reasons for rescheduling MRI appointments in its IT system. The Authority also implemented an audit process to validate the accuracy of data in that system.

In addition, the Authority began to regularly analyze MRI volume data on a weekly and monthly basis to identify significant patient waits for MRI services, but more work remains.

The Authority needs to analyze the dates of the different stages of MRI services that it now tracks to determine causes and ways to address significant delays.

The Authority did not yet formally assess the quality of MRI interpretations radiologists provide; however, the Authority was in the process of developing a peer review program to do so.

The Authority appropriately monitored the selection and volume of MRI scans sent to contracted licensed private operators, but had not yet developed a process to monitor the timeliness and quality of MRI scans performed by private MRI operators.

Once the Authority implements processes to assess the timeliness and quality of all MRI scans, it needs to determine the nature and timing of additional information senior management and the Board will need to receive to better monitor MRI service delivery.

Having timely and quality MRI service delivery alleviates patient stress, avoids unnecessary referrals, and reduces costs.¹ It also facilitates timely and appropriate diagnosis or treatment to help improve patient outcomes.

2.0 INTRODUCTION

2.1 Background

Under *The Provincial Health Authority Act*, the Saskatchewan Health Authority is responsible for the planning, organization, delivery, and evaluation of the health services that it provides. This includes provision of MRI services.

¹ www.ncbi.nlm.nih.gov/pmc/articles/PMC2576308/ (24 March 2020).



Efficient use of MRI services can support timely diagnosis and monitoring of injuries and disease. Effective MRI services involves physicians appropriately using MRIs as diagnostic tools, patients receiving quality MRI scans within an appropriate timeframe, and physicians obtaining the reliable interpretations of the scans within a reasonable timeframe.

The Authority has seven MRI scanners in five Saskatchewan hospitals located in Moose Jaw Dr. F.H. Wigmore Regional Hospital, Regina General Hospital (two), Saskatoon City Hospital, Royal University Hospital (two), and St. Paul’s Hospital in Saskatoon.²

In addition, it has contracted two licensed private imaging operators to supplement hospital-based MRI services in Regina.³

Figure 1 shows the number of patient visits and MRI scans performed at each location—Regina, Regina licensed private operators, Saskatoon, and Moose Jaw in the 2018–19 fiscal year.

Figure 1—Number of Patient Visits and MRI Scans Performed at Each Location in 2018–19

	Regina	Regina Licensed Private Operators	Regina Total	Saskatoon	Moose Jaw
Number of Patient Visits	10,292	4,575	14,867	17,978	2,021
Number of Exams	13,499	5,692	19,191	30,414	2,743

Source: Adapted from information provided by the Saskatchewan Health Authority.

Also, *The Patient Choice Medical Imaging Act* gives residents the option of personally paying for MRI services through a licensed private operator. The Act requires private operators to provide a free MRI scan to an individual on the public MRI wait list for each scan personally paid for by residents (i.e., one-for-one model).

2.2 Focus of Follow-Up Audit

This audit follows up on seven recommendations we made in our *2017 Report – Volume 1*, Chapter 10 about the former Regina Qu’Appelle Regional Health Authority’s processes for the efficient use of MRIs.⁴ We concluded that for the period from February 1, 2016 to January 31, 2017, Regina Qu’Appelle had effective processes other than areas identified in our seven recommendations.⁵

To conduct this audit engagement, we followed the standards for assurance engagements published in the *CPA Canada Handbook—Assurance* (CSAE 3001). To evaluate the Authority’s progress toward meeting our recommendations, we used the relevant criteria from the original audit. The Authority’s management agreed with the criteria in the original audit.

² Patients in Lloydminster can receive MRI services at the community-based scanner provided through a contract between the Saskatchewan Health Authority, Alberta Health Services, and Lloydminster Medical Imaging.

³ www.saskatchewan.ca/residents/health/accessing-health-care-services/medical-imaging/procedures/magnetic-resonance-imaging-exam (3 March 2020).

⁴ The former Regina Qu’Appelle Regional Health Authority became part of the Saskatchewan Health Authority in December 2017.

⁵ auditor.sk.ca/pub/publications/public_reports/2017/Volume_1/10_RQRHA%20MRI.pdf (20 April 2020).

To complete our follow-up audit, we interviewed relevant Authority staff, examined the Authority's policies and procedures, IT system, reports, and other data related to MRI services. We examined the scheduling and completion process for a sample of MRI scans completed at the Regina General Hospital and by the contracted MRI private operators in Regina.

3.0 STATUS OF RECOMMENDATIONS

This section sets out each recommendation including the date on which the Standing Committee on Public Accounts agreed to the recommendation, the status of the recommendation at January 31, 2020, and the Authority's actions up to that date.

3.1 Better Tracking of Data at Each Stage of MRI Services

We recommended the Saskatchewan Health Authority track actual dates of each stage of MRI services and reasons for rescheduling MRI appointments to help it determine the causes of significant waits of patients for MRI services. (2017 Report – Volume 1, p. 141, Recommendation 2; Public Accounts Committee agreement June 13, 2018)

Status—Implemented

We recommended the Saskatchewan Health Authority validate the accuracy of MRI services data in its Radiology Information System. (2017 Report – Volume 1, p. 141, Recommendation 3; Public Accounts Committee agreement June 13, 2018)

Status—Implemented

The Authority tracks actual dates of each stage of MRI services and reasons for rescheduling in its IT system called the Radiology Information System (RIS). It also implemented an audit process to validate the accuracy of data in RIS.

The Authority uses RIS to track key information on its MRI service delivery. For example, for each MRI scan, RIS tracks the following dates:

- Received the physician's requisition
- Booked the patient
- Any reschedules of booked scan
- Scan completed

In 2017, the Authority developed several work standards to guide its staff to track additional information about each step of providing an MRI in RIS. For example, the Authority requires staff to record the following in RIS:



- Date request sent to radiologist for protocolling⁶
- Date radiologist returns protocolling
- Date request sent to licensed private operators
- Reasons for rescheduling of MRI scans

For each of 15 completed MRI scans we tested, staff properly recorded in RIS all of the key dates. In the three cases we tested that required rescheduling, staff recorded the reasons. For example, one patient was scheduled to have an MRI done at night. The patient did not feel comfortable driving at night, and requested the MRI to be rescheduled.

Beginning fall 2019, the Authority also implemented an audit process to check the accuracy of MRI requisitions in RIS (e.g., correct patient details, correct date MRI request received). Staff complete the audits daily and report the results to management weekly. Each of 15 MRI scans we tested had accurate information about the MRI requisition recorded in RIS.

Having additional and accurate information in RIS allows the Authority to determine causes of significant patient waits for MRI services and develop targeted strategies to address the causes of MRI service delays.

3.2 Authority Working on Regularly Analyzing MRI Services Data

We recommended the Saskatchewan Health Authority regularly analyze MRI data to determine causes of significant waits of patients for MRI services. (2017 Report – Volume 1, p. 140, Recommendation 1; Public Accounts Committee agreement June 13, 2018)

Status—Partially Implemented

The Authority has begun to regularly analyze data to determine significant patient waits for MRI services, but more work remains.

The Authority uses data from its IT system called Radiology Information System (RIS) to closely monitor completion of MRI scans. The Authority produces weekly and monthly reports on volumes of MRI scans completed, as well as wait times for MRI scans (see **Section 3.6** for more details on reports). These reports help medical imaging staff to quickly identify any current issues to address (e.g., decrease of weekly numbers of MRI scans due to staff vacancies).⁷

The Authority tracks wait lists for cardiology MRIs and breast MRIs separately as both have special procedures (e.g., a specialized radiologist must be present for a cardiology MRI; there are three specialized radiologists in Regina). We found, as at February 17, 2020, patients who need cardiology MRIs and breast MRIs were waiting the longest; an average of 67 days for cardiology MRIs, and 33 days for breast MRIs.

⁶ Protocolling is assessing the request for a MRI scan to determine optimal type of imaging required.

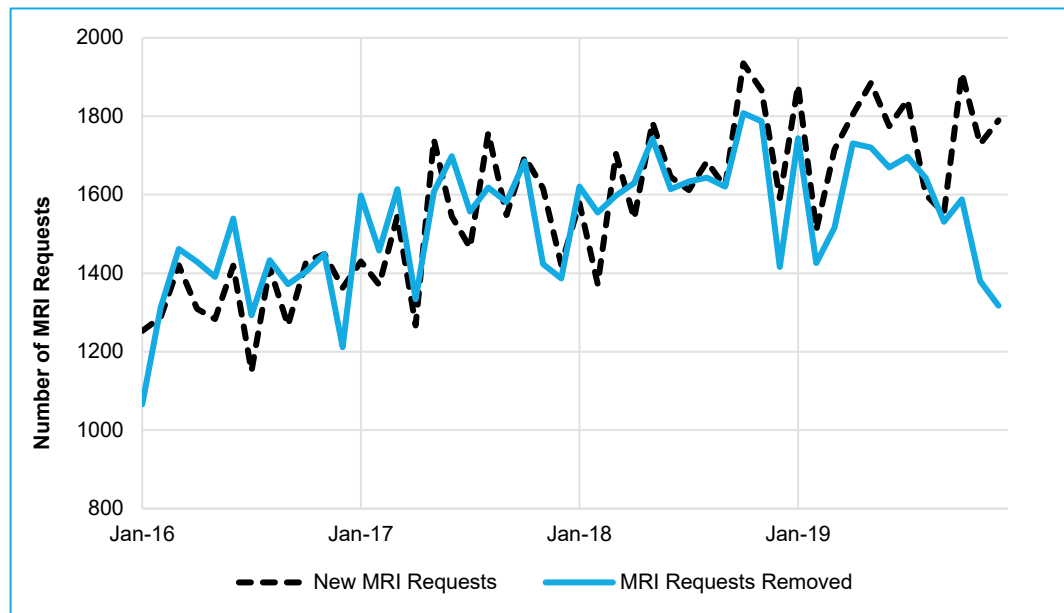
⁷ Medical Imaging staff include supervisors, managers, directors, and an executive director.

The Authority is aware demand exceeds Regina's capacity to perform MRI scans. It estimates the demand for MRI services will grow 4 percent annually.

Consistent with previous years, the Authority did not meet demand for MRI scans in 2019 in Regina (see **Figure 2**), which resulted in patients waiting more days than the MRI guidelines suggest. The MRI wait-time guidelines include four priority levels as follows:

- Level 1 (emergency) MRI should be done within 24 hours
- Level 2 (urgent) within 2–7 days
- Level 3 (semi-urgent) within 8–30 days
- Level 4 (non-urgent) within 31–90 days

Figure 2—Number of New MRI Requests (Demand) and MRI Requests Removed in Regina^A



Source: Information provided by the Saskatchewan Health Authority.

^A MRI Requests Removed includes completed MRI requests and cancelled MRI requests (e.g., patient moved, patient privately paid for MRI).

At December 31, 2019, Regina had 3,237 patients waiting for MRI scans.⁸ Of those:

- 54 percent of patients (1,741) had not waited for more than 7 days for an MRI in Regina
- 96 percent of patients (3,123) were classified as semi-urgent or non-urgent
- However, 5 percent of patients (143) had been waiting for more than 90 days (the longest wait-time guideline)

See **Figure 3** for number of patients waiting to be scheduled by priority level.

⁸ At December 20, 2016, Regina had 2,809 patients waiting for MRI scans. December 20, 2016 was the timing of information provided in our original audit.

**Figure 3—Number of Patients Waiting to be Scheduled for a Regina MRI by Priority Level, December 31, 2019**

MRI Priority Level	More than 7 days	More than 30 days	More than 90 days
Level 2 (Urgent)	5	9	0
Level 3 (Semi-Urgent)	482	345	66
Level 4 (Non-Urgent)	241	271	77
Total number of patients	728	625	143

Source: Adapted from information provided by the Saskatchewan Health Authority.

The Authority is working on developing detailed reports to help staff analyze its data about MRI services. It plans to analyze the time it takes to complete different stages of an MRI service to determine causes of MRI service delays (e.g., the length of time it takes to protocol an MRI request and then to book an MRI scan).

Systematic analysis of data on MRI service delivery can help with identification of root causes for delays and opportunities to enhance efficiency.

3.3 Quality of Radiologist Interpretations Not Yet Assessed

We recommended the Saskatchewan Health Authority formally and systematically assess the quality of MRI services that radiologists provide.

(2017 Report – Volume 1, p. 143, Recommendation 4; Public Accounts Committee agreement June 13, 2018)

Status—Partially Implemented

The Authority does not yet formally and systematically assess the quality of MRI services radiologists provide, but work is underway.

In June 2019, the Authority began working with eHealth to develop an IT system to help assess the quality of radiologist interpretations of MRI scans. It plans to use this system to have formal peer reviews of the scans performed. For example, the system would allow a second radiologist to review protocolling decisions, and confirm the interpretation of an image of the original radiologist. The Authority plans to implement this new IT system in 2020–21.

Without formally and systematically assessing the quality of MRI services that radiologists provide, the Authority does not know if radiologists are providing reliable MRI services. Accurate interpretation of MRI scans can be crucial to proper diagnosis and treatment plans for patients.

3.4 Selection and Volumes of MRI Scans Sent to Contracted Operators Monitored

We recommended the Saskatchewan Health Authority regularly monitor the selection and volume of MRI scans sent to private MRI operators.

(2017 Report – Volume 1, p. 144, Recommendation 5; Public Accounts Committee agreement June 13, 2018)

Status—Implemented

The Authority actively monitors the selection and volume of MRI scans sent to licensed private MRI operators, and the volume of MRI scans operators complete each week.

The Authority has contracts with two private MRI operators for a combined capacity of 5,580 MRI scans per year.

In 2017, the Authority developed work standards for its technicians to determine which MRI scans to send to private operators (e.g., semi-urgent and non-urgent MRI requests, MRI requests for claustrophobic patients).

Private operators do about 30 percent of MRIs in Regina. Approximately 72 percent of the MRI scans sent to the private operators are classified as level 3 (semi-urgent), 23 percent as level 4 (non-urgent), and 4 percent as level 2 (urgent).

For 15 MRI scans sent to private operators we tested, each scan sent met the criteria established in the work standards (e.g., each were semi-urgent or non-urgent scans).

We found, as shown in **Figure 4** over the last five years, the Authority fully utilized contracted MRI capacity other than the 2016–17 fiscal year, and for the first nine months of 2019–20.

Figure 4—MRI Capacity and MRI Scans at Contracted MRI Licensed Private Operators

	2015–16	2016–17	2017–18	2018–19	April 2019– December 2019 (9 months)
Contracted capacity	5,580	5,580	5,580	5,580	4,185 ^A
MRI scans	5,840	4,924	6,080	5,692	4,102
% of scans meeting contracted capacity	105%	88%	109%	102%	98%

Source: Adapted from information provided by the Saskatchewan Health Authority.

^A Contracted capacity prorated over nine months.

In addition, between April and December 2019, private operators provided 1,591 MRI scans under the one-for-one model (for each privately paid MRI scan, the private operator provides a second scan of similar complexity to a patient on the public wait list at no cost to the patient or the Authority).⁹

The Authority maintains a separate booking list for those patients who are eligible to have a scan done by a private operator under the one-for-one model. Once private operators complete the scan, they inform the Authority when the scan was completed and staff update RIS. For 10 scans completed under the one-for-one model we tested, RIS was updated within a reasonable time (i.e., within nine days) to record when the second scan was provided.

Active monitoring promotes the Authority selecting the appropriate type and number of scans to send to private operators. Using private operators helps the Authority to complete additional scans it could not otherwise.

⁹ The one-for-one model came into force on February 29, 2016. Between March and December 2016, the time of our original audit, licensed private operators provided 1,192 MRI scans under the one-for-one model.



3.5 Better Monitoring of Quality and Timeliness of MRI Services Provided by Private Operators Needed

We recommended the Saskatchewan Health Authority regularly monitor the quality and timeliness of MRI services that contracted private MRI operators provide. (2017 Report – Volume 1, p. 144, Recommendation 6; Public Accounts Committee agreement June 13, 2018)

Status—Partially Implemented

The Authority does not sufficiently monitor the quality and timeliness of MRI services contracted licensed private operators provide.

The Authority requires these operators to follow the wait-time guidelines for public MRI scans. Under the one-for-one model, the private operator is to schedule the second scan within 14 days after completing the privately paid scan. As described in **Section 3.1**, the Authority tracks the MRI requisitions and the date they are sent to private operators in RIS, as well as when the private operator books patients for MRI scans.

However, the Authority does not analyze the time it takes private operators to complete MRI scans.

For all five public MRI scans we tested, the time that each private operator took was within the wait-time guidelines (e.g., between eight to 30 days for a semi-urgent MRI scan). They took, on average, 11 days to complete the requested MRI scan (time taken ranged from nine to 18 days).

However, for three of ten scans under the one-for-one model we tested, a private operator took longer than the 14 day requirement. In the three cases, we found it took 17, 24, and 42 days to complete the scan. The private operator did not provide the Authority with reasons for the delays. We did not see evidence of the Authority requesting reasons from the operator.

Lack of timely MRI scans performed at private operators may indicate a concern with their prioritization methods or capacity. This impacts how long patients are waiting for MRI services.

The Authority does not monitor the quality of MRI scans completed by private operators. As described in **Section 3.3**, the Authority is in the process of implementing a formal peer review system to help assess the quality of MRI services; this includes MRI services contracted licensed private operators provide.

3.6 Reporting on Timeliness of MRI Services Received

We recommended the Board of the Saskatchewan Health Authority receive periodic reports on the timeliness and quality of MRI services, including actions taken to address identified deficiencies. (2017 Report – Volume 1, p. 146, Recommendation 7; Public Accounts Committee agreement June 13, 2018)

Status—Partially Implemented

The Board and senior management receive periodic reports on the timeliness of MRI services. They do not yet receive periodic reports on the quality of MRI services.

Each year, the Board receives, as part of the Authority's Business Plan, the number of MRI visits in the province. In February 2020, it also started receiving quarterly updates on timely access to diagnostic services, including MRI services. The report included the number of MRI cases in the province waiting longer than 90 days at month end for the period of April 2015 to December 2019.

In fall 2019, senior management began receiving more information on the Authority's MRI services. For example, management receives weekly reports on volumes of MRI scans for each site broken down by:

- Patient counts (e.g., Regina General Hospital, Royal University Hospital, contracted licensed private operators) with a comparison to the weekly target rate
- Number of MRI procedures by priority level
- Number of MRI procedures by patient type (e.g., day surgery, emergency, inpatient, outpatient)

Each month, management also receives a waitlist analysis report. It includes the number of patients waiting for an MRI by priority level, as well as a breakdown of patients waiting for different types of MRIs (i.e., pediatric, breast and cardiac). The report also notes the date of the longest waiting MRI for each level and type.

Beginning January 2020, management started receiving a quarterly summary and analysis of MRI services in the province. It includes an assessment of licensed private operator volumes, inpatient and outpatient volumes, waitlist management, and wait times. We found this report was also shared with senior management.

As noted in **Section 3.3**, the Authority does not yet assess the quality of MRI services. Once a MRI quality management process is developed, senior management and the Board expect to determine the nature and timing of information required on the quality of MRI services provided.