

Early Rehabilitation for Patients with Hip Fractures: Spreading Change Across the System

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Abstract

Evidence suggests that patients with hip fractures should begin rehabilitation no later than six days following surgery. The reality is often far different. In an initiative led by the Greater Toronto Area (GTA) Rehab Network, acute care and rehab/complex continuing care hospitals across the GTA have implemented a new early referral process to aid transition of patients from acute care to inpatient rehabilitation as early as possible to improve their outcomes. Two of the participating acute care hospitals have now surpassed the six-day target and two others are within range. The initiative also provides useful learnings to guide other cross-sector change and spread initiatives.

Introduction

More than 12,800 Ontarians are admitted to the hospital with hip fractures each year, and all will require rehabilitation to regain their mobility and function (Discharge Abstract Database 1994-95 as cited in Health Quality Ontario [HQO] and Ministry of Health and Long-Term Care [MOHLTC] 2013).

To ensure care for these patients is evidence-based and cost-effective, HQO and the MOHLTC published quality-based procedures (QBPs) for hip fractures in 2013. The *Quality-Based Procedures Clinical Handbook for Hip Fracture* recommends that all patients with hip fracture receive active rehabilitation following their acute care stay and that rehabilitation begins no later than six days following surgery (HQO and MOHLTC

2013). This recommendation is consistent with findings that early access to an inpatient rehabilitation program post-hip fracture increases the likelihood of patients returning home (Canadian Institute of Health Information 2015).

Recommendation versus Current Practice

The GTA Rehab Network consists of publicly funded hospital and community-based organizations across the Greater Toronto Area (GTA) that provide rehabilitative care. Its focus is to support its members and the GTA Local Health Integration Networks (LHINs) in their efforts to improve patient outcomes and increase efficiencies.

The Network has been collecting and reporting system-level hip fracture data in the Toronto Central LHIN since 2010. The data reveal a significant gap between current practice and the QBP recommendation. In 2014/2015, the six-day target was achieved for less than half (44%) of the patients discharged to inpatient rehabilitation (GTA Rehab Network 2015). Health service providers from other LHINs identified a similar challenge.

Bridging the gap is complex because the care pathway involves surgical, medical and rehabilitation interventions and patient transfers both within and between hospitals. Processes and care pathways have to change. Given its membership across both the acute and rehabilitation sectors, the Network was ideally positioned to facilitate this change.

In early 2014, the Network participated in a project with Michael Garron Hospital, Bridgepoint Active Healthcare-Sinai Health System and Providence Healthcare to refer and aid the transition of patients with hip fracture as early as possible from acute care to inpatient rehab/complex continuing care (CCC). The project was initiated as part of IDEAS, an MOHLTC-funded provincial quality improvement (QI) learning program. A similar project was also underway at University Health Network (UHN), and the success of both projects suggested that an early referral model could help hospitals move towards the new six-day target.

The Intervention

To test interest in adopting an early patient-referral model more widely, the Network convened a Cross-Sector Hip Fracture Task Group in May 2014 with representatives (clinicians and administrators) from 13 acute care programs and 13 inpatient rehab/CCC programs across the GTA. The Task Group decided to initiate implementation of an early patient-referral care model across the GTA based on the IDEAS and UHN projects. Over time, the following project aim emerged:

To standardize and enhance access to rehabilitation post-surgery for patients post-hip fracture across participating hospitals, with the goal of reducing the acute care length of stay from surgery to discharge (to inpatient rehabilitation programs) to an average of six days by December 2016.

Preparing for Change

To implement the model, acute care and rehabilitation hospitals were asked to create partnerships based on their natural referring patterns. In all, 10 partnerships signed on (Table 1).

Initial discussions among the partnerships revealed significant confusion about the eligibility criteria for rehabilitation programs that accept patients with special needs, e.g., patients that required bariatric equipment or hemodialysis. To address this, the Network developed a guideline in consultation with rehab/CCC hospitals to help acute care partners complete these referrals and direct them to the appropriate facility. This was done before beginning the change initiative.

No patients were excluded from consideration for the early patient-referral model. However, if post-surgical patients developed medical issues and no discharge date to rehabilitation could be predicted, then they continued on the usual pathway and were not included in the early referral process.

Participating organizations were asked to begin collecting data on key indicators for five weeks in January/February 2015 to establish a baseline for improvement (Table 2). Because the initiative was using a QI methodology, the Network also worked with HQO to host an educational forum for partners

in March 2015. The event introduced them to the early referral model and the QI methods and tools they would use during implementation.

TABLE 1.
Participating hospital sites by partnership

Acute care partner	Rehab partner(s)
Credit Valley Hospital – Trillium Health Partners	Credit Valley Hospital – Trillium Health Partners Runnymede Healthcare Centre
Humber River Hospital	Humber River Hospital West Park Healthcare Centre
Mississauga Hospital - Trillium Health Partners	Mississauga Hospital – Trillium Health Partners Runnymede Healthcare Centre
North York General Hospital	Baycrest Providence Healthcare St. John’s Rehab – SHSC
St. Joseph’s Health Centre	Runnymede Healthcare Centre West Park Healthcare Centre
St. Michael’s	Bridgepoint Active Healthcare – Sinai Health System
Sunnybrook Health Sciences Centre (SHSC)	Baycrest Providence Healthcare St. John’s Rehab – SHSC
The Scarborough Hospital – General Site	Providence Healthcare
The Scarborough Hospital – Birchmount Site	Providence Healthcare
Etobicoke General Hospital – William Osler Health System	West Park Healthcare Centre William Osler Health System

TABLE 2.
Data elements collected by acute care partners

	Project AIM: ALOS from surgery to discharge to inpatient rehab (target ≤ 6 days)			
Referral process indicators	Average days from admission to surgery	Average days from surgery to rehab referral (target ≤ 3 days)	Average days from rehab referral to first rehab response (target ≤ 1 day)	Average days from first rehab response to acute care discharge
Data elements collected	<ul style="list-style-type: none"> • Date of admission • Date of surgery 	<ul style="list-style-type: none"> • Date of surgery • Date rehab referral sent 	<ul style="list-style-type: none"> • Date rehab referral sent • Date of first rehab response 	<ul style="list-style-type: none"> • Date of first rehab response • Date of acute care discharge

ALOS = average length of stay.

From mid-March to June 2015, partners were asked to take on a number of key activities:

- *Confirm partnerships, project leadership and the project charter:* The organizations formalized their partnerships and identified a project lead, team and sponsor. All partners signed on to a project charter that detailed responsibilities and accountabilities.
- *Conduct a “readiness to receive” assessment:* Using the baseline data and analysis and Kaiser Permanente’s Spreading Effective Practices Toolkit (Bellows and Schilling 2013), project leads worked with their teams to identify current referral practices, change ideas, potential implementation challenges and mitigation strategies.
- *Establish a process for data collection:* All organizations put in place their process for data collection and used the same set of outcome, process and balancing measures (Table 3). Balancing measures included a patient experience questionnaire to ensure any changes were consistent with patient-centred care.

TABLE 3.
Project measures

Types of measures	Indicators
Outcome measure	<ul style="list-style-type: none"> • Average length of stay from surgery to discharge to inpatient rehab programs
Process measures	<ul style="list-style-type: none"> • Percentage of total patients post-hip fracture with referrals sent by post-op day 3 to inpatient rehab programs • Percentage of total referrals received by inpatient rehab programs with a 1-day rehab response time • Percentage of RFI and reasons for RFI • Percentage of declined referrals and reasons for declined referrals
Balancing measures	<ul style="list-style-type: none"> • Percentage of service interruption and unplanned discharges • Functional outcome using The FIM® instrument following inpatient rehab program (average admission FIM® score, average discharge FIM® score, average FIM® change score, FIM® efficiency)* • Length of stay during inpatient rehab program • Discharge destinations from inpatient rehab program • Qualitative feedback of patients related to their experience in transitioning from acute care to rehab setting • Feedback (qualitative) from project leads/teams of participating organizations regarding the experience of being part of the initiative and its impact on their organization

RFI = request for information. *The FIM® instrument is a trademark of Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

Implementing Changes

All organizations adopted the same overarching change ideas to achieve the six-day target: acute care hospitals committed to complete and send a rehabilitation referral for all patients with hip fracture by day three post-surgery and rehab/CCC hospitals committed to respond in one day.

However, to address the larger change ideas, many smaller process changes had to be implemented across entire healthcare teams. Partnerships were encouraged to identify change ideas specific to the challenges present in their organizations. For example, in many acute care hospitals, only social workers could initiate referrals; teams were able to eliminate unnecessary delays by changing the practice to allow any member of the team to begin the referral process. Other acute care hospitals improved efficiency by developing or revising preprinted order sets for hip fracture. And among rehabilitation hospitals, several hospitals made changes so that referrals could be processed seven days a week. A more extensive list of change ideas is included in Table 4.

TABLE 4.
Change ideas

Acute care hospitals	Rehabilitation hospitals
Shared change ideas	Shared change ideas
Initiate and complete rehab referral application by post-op day 3	Rehab application review: Consider (or weigh more heavily) patient’s pre-morbid level of function and psychosocial status to determine response to application
Send completed rehab referral to appropriate rehab program by post-op day 3	Respond to acute care within 1 day of receiving referral application with the assumption that patient is medically stable or is expected to become medically stable by a specified date
Organization-specific change ideas	Organization-specific change ideas
Allow any member of the team to initiate referrals	Standardize referral review process and implement a training program for all referral review coordinators who will make decisions
Change clinical care pathways <ul style="list-style-type: none"> • Establish criteria to determine need for ICU admission for patients post-hip fracture surgery • Standardize criteria to determine the need for pre-op cardiology consult • Develop and/or revise pre-printed order sets 	Implement 7 day/week admission and same day admission process to rehab programs
Standardize referral process including roles/responsibilities related to initiation and completion of referral and completion timelines	Increase staff resources on weekends to facilitate referral reviews and provide therapy
Implement education program for physician, nursing, health profession team members on referral process change	Enhance staff skills to support patients at an earlier stage of recovery
Address interprofessional and/or cross sector communication processes	

The Network recognized from the outset that the partnerships would require significant support for the initiative to be successful. With that in mind, the Network provided project management infrastructure, the necessary QI and data collection tools, guidance on how to apply QI approaches (with the support of HQO quality coaches) and communication support. Data analysis support was also critical, and an IDEAS Alumni Achievement Award allowed the Network to hire a data analyst from March to September 2016.

The Network also organized and hosted a monthly meeting for each of the partnerships to allow them to review their progress using the latest data, engage in problem-solving and apply their learnings using repeated plan-do-study-act (PDSA) change cycles. As the initiative progressed, knowledge exchange became a priority for the partners. In response, the Network hosted another forum in November 2015 to provide partners with an opportunity to gather and share their preliminary outcomes and challenges and to learn from each other. It was also an opportunity to update and engage other system partners such as the Community Care Access Centres and the LHINs.

The Data Challenge

QI is always data-driven: data allow organizations to assess what is and is not working, so that adjustments can be made. But gathering, reporting and analyzing data were a significant challenge for the partnerships.

The challenge was particularly evident for acute care partners. Hospital decision support teams can provide the “big dot” data of average length of stay (ALOS) for the entire acute care pathway – admission to discharge. However, these data are not available for specific components of the pathway (e.g., surgery to rehabilitation referral or surgery to discharge to rehabilitation) that could reveal opportunities for improvement. Although the electronic resource matching and referral system (RM&R) used by many hospitals in the GTA captures these components, it does not report the data by diagnostic groups, e.g., hip fractures. As a result, acute care hospitals had to collect and report data manually for many project measures.

In addition, the patient volume captured in the baseline data was insufficient to create an accurate baseline against which to measure progress. To address this, the initiative adopted the ALOS for the entire acute care pathway as a proxy measure.

Measuring Impact

The partnerships began implementing the early referral model as they were ready, resulting in staggered start dates. This case study presents the interim results for six of the initial 10 partnerships for the period up to July 2016. (As the initiative evolved, some of the hospital sites had to drop out and one partnership began implementation much later.)

Over an implementation period ranging from 3 to 15 months, two of the acute care hospitals surpassed the six-day target for ALOS from surgery to discharge to inpatient rehabilitation and two others

were within 1.5 days (Table 5). Across all hospitals, 53% (150/284) of patients were discharged within six days after surgery (median of six days) (Figure 1). Seven patients had prolonged medical issues/psychiatric needs, resulting in a LOS greater than 20 days; six of the seven were from Hospitals A, C and E, all of which had a higher ALOS from surgery to discharge to inpatient rehabilitation.

The proxy measure indicates that five of the six acute care hospitals made significant progress towards the target: the ALOS from admission to discharge to inpatient rehabilitation dropped between 0.3 and 3.2 days (Table 5). Equally important, the shortened acute care stay had no negative impact on balancing measures. The ALOS in rehabilitation did not increase despite admitting patients to rehabilitation earlier; in fact, it decreased. Similarly, there was no significant change to the average admission and discharge FIM® (Uniform Data System for Medical Rehabilitation 1997) scores or to the percentage of patients who were discharged home after completing their rehabilitation program.

For rehab/CCC hospitals, the target was to respond to referrals within one day. All of them have reached or surpassed that target, with the first response time ranging from 0.4 to 1.0 days. Rehabilitation programs located within acute hospitals do not currently report response times, so the Network is unable to determine whether they are meeting the target.

Participating organizations have also been clear that the success of the initiative should not be measured only by performance against the targets. In a survey, project leads indicated that the most beneficial outcome of the initiative was enhanced communication and collaboration.

Learnings for Future Initiatives

TABLE 5.
Interim results

Hospital site	Pre-implementation baseline	Post-implementation of early referral model	
	ALOS from admission to discharge to inpatient rehab in days*	ALOS from admission to discharge to inpatient rehab in days [§]	ALOS from surgery to discharge to inpatient rehab in days [§] Project AIM ≤ 6 days
A	12.8 (n = 97)	9.6 (n = 76)	8.6 (n = 76)
B	9.4 (n = 28)	6.2 (n = 25)	5.5 (n = 25)
C	8.6 (n = 25)	8.2 (n = 65)	7.5 (n = 65)
D	8.8 (n = 28)	7.8 (n = 72)	6.5 (n = 72)
E	10.7 (n = 149)	14.9 (n = 24)	12.0 (n = 24)
F	9.0 (n = 75)	6.2 (n = 22)	5.0 (n = 22)

ALOS = average length of stay.

*Baseline (pre-implementation) period: 4–12 months in 2014 or 2015. [§]Implementation period: Hospital A to D, 9–15 months ending July 2016; Hospital E and F, 3 months ending July 2016.

Implementing change initiatives is complex, and each of the participating organizations has learnings relevant to their own context. However, as the coordinating organization, the Network has a bird's-eye view of the process of initiating change across multiple partners and sectors and offers the following learnings to guide similar change and spread initiatives:

- *Invest in building relationships:* Acute and rehabilitation partners met regularly to review their performance and to identify opportunities for improvements. The use of objective data was key to these discussions. As the meetings continued, partners developed a mutual understanding of the pressures and challenges each faced, allowing them to problem-solve more effectively. Midway through the initiative, the Network also introduced a case analysis approach. Partners often found it easier to identify and solve systemic process issues by seeing how they played out in specific patient situations.
- *Data is critical:* Data collected manually allowed partners to track specific components of the referral process and provide important insights to guide change ideas and assess their impact. However, manual data collection is clearly not sustainable over the long term. As noted above, the required data are captured in RM&R, so this process could be automated. However, modifications to how the data are reported would be required. In addition, not all organizations have access to the electronic RM&R system.
- *Engagement matters:* Partnerships in which project sponsors, leads and teams were fully engaged in the change initiative saw the most significant results.
- *Build in necessary supports:* The Network provided the infrastructure – coordination, tools, knowledge translation – to support partners and sustain their participation. Without the data analysis support provided by the Network, the initiative could not have proceeded.
- *Stuff happens:* Competing organizational priorities and staff turnover are a reality. Some partnerships could not see the initiative through.

Moving Forward

As their process changes become well established, the partnerships are moving to an ongoing audit phase supported by the Network.

To support this transition, the Network is providing a set of suggested strategies to maintain the project's momentum. One of the key recommendations is that partners put in place monthly

monitoring of “big dot” data elements by their hospital decision support teams so that project sponsors and leads can monitor performance and take action if necessary. The Network is also advocating that partners continue their regular meetings; the strong, collaborative relationships created through the initiative have established an important foundation for continued efforts on this, and other cross-sector change initiatives and should be maintained.

The Network will continue to check in with all project teams on a quarterly basis, and the Network's Cross Sector Hip Fracture Task Group will also continue to monitor issues as they arise. **HQ**

References

- Bellows, J. and L. Schilling. 2013. “Kaiser Permanente®: Spreading Effective Practices Toolkit. Retrieved December 14, 2016. <http://kpcmi.org/wp-content/uploads/2016/12/spreading-effective-practices-toolkit_v201310.pdf>.
- Canadian Institute of Health Information (CIHI). 2015. *Factors Predicting Return Home from Inpatient Rehabilitation following Hip Fracture Surgery*. Ottawa, ON: CIHI. Retrieved December 5, 2016. <https://secure.cihi.ca/free_products/NRS_Hips_2015_EN_web.pdf>.
- GTA Rehab Network. 2015. “Toronto Central LHIN Acute Care Hip Fracture Quarterly Reports.” Unpublished.
- Health Quality Ontario and Ministry of Health and Long-Term Care. 2013. *Quality-Based Procedures Clinical Handbook for Hip Fracture*. Toronto, ON: Health Quality Ontario. Retrieved June 15, 2013. <http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/qbp_hipfracture.pdf>.
- Uniform Data System for Medical Rehabilitation. 1997. *A division of UB Foundation Activities, Inc. holds the trademark for the 18-item FIM® instrument*. Amerst, NY: Author.

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