

# **Exploring the Hip Fracture and Joint Replacement Landscape in a Changing Context: Implications and Recommendations**

**GTA REHAB NETWORK**

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## EXECUTIVE SUMMARY

### Background and Introduction

Joint replacement and hip fracture patients accounted for approximately 50% of all inpatient rehabilitation cases<sup>1,2</sup> and approximately 67% of all inpatient musculoskeletal (MSK) rehabilitation cases<sup>3</sup> in Ontario in 1999-2000.<sup>4</sup> At that time, the Health Services Restructuring Commission (HSRC) reports raised concerns about an over-utilization of inpatient rehabilitation for joint replacement patients while Alternate Level of Care (ALC) initiatives<sup>5</sup> reported that the hip fracture population accounted for at least 15% of all Alternate Level of Care cases. In spite of this, the hip fracture and joint replacement populations have been treated homogeneously under the heading of MSK rehabilitation when it comes to delivering services.

With the inception of the Total Joint Network (TJN)<sup>6</sup> in 2005, the issues related to total joint replacement care are improving, offering opportunity to improve the orthopaedic landscape for populations such as hip fracture. Understanding the change that initiatives such as the Total Joint Network have been able to accomplish requires an understanding of the system prior to implementation of the change. For this reason, this document seeks to provide an overall understanding of the size and characteristics of the orthopaedic rehabilitation landscape for these populations in 2002-2003.<sup>7</sup>

The objectives of this report were therefore to:

- 1) Quantify and characterize the number of hip fracture, hip replacement and knee replacement patients who had records in the Discharge Abstract Database (DAD) and in the National Rehabilitation Reporting System (NRS) in 2002-2003, as well as for whom information was captured at the Community Care Access Centres (CCACs) of Toronto in 2003-2004.
- 2) Quantify and characterize the supply of inpatient rehabilitation services using the program and admission criteria information available from the GTA Rehab Network's *Rehab Finder* program and admission criteria database.
- 3) Use the data and analysis to provide recommendations for implementation by the GTA Rehab Network and for consideration by the Local Health Integrated Networks, the Ministry of Health and Long-Term Care, and program directors and administrators at GTA Rehab Network member organizations.

<sup>1</sup> Jaglal, S., Walker, J., Badley, E., Markel, F., Naglie, G., Steele, C., Verrier, M., Williams, J., *Epidemiological Variables and Utilization in Rehabilitation in Ontario* (2001).

<sup>2</sup> The figure was reconfirmed by CIHI's recent annual report on the National Rehabilitation Reporting System.

<sup>3</sup> This was calculated by exploring the total of all musculoskeletal diagnoses including amputations as the denominator to the number of hip fracture and joint replacement patients.

<sup>4</sup> Jaglal, S., Walker, J., Badley, E., Markel, F., Naglie, G., Steele, C., Verrier, M., Williams, J., *Epidemiological Variables and Utilization in Rehabilitation in Ontario* (2001).

<sup>5</sup> GTA Rehab Network, *Analysis of Alternative Levels of Care (ALC) Snapshots: Patients Awaiting Rehabilitation in ALC and Inpatient Rehabilitation Capacity* (Toronto, 2004).

<sup>6</sup> The TJN model of care enrolls patients in one of two streams: (a) 3 days in acute care followed by 7 days in inpatient rehab, or (b) 5 days in acute care with rehab delivered at home post-discharge.

<sup>7</sup> Another initiative led by Dr. Aileen Davis in partnership with the GTA Rehab Network will examine parts of the system from a more current perspective.

The data elements reported in this report are categorized by age and hospital group and include:

Acute care (DAD)	Rehabilitation (NRS)	CCAC	Supply ( <i>Rehab Finder</i> )
<ul style="list-style-type: none"> <li>Number of cases</li> <li>Age distribution</li> <li>Length of stay</li> <li>Resource intensity weights</li> <li>Complexity levels</li> <li>Discharge locations and dispositions</li> </ul>	<ul style="list-style-type: none"> <li>Number of cases</li> <li>Age distribution</li> <li>Length of stay</li> <li>Admission, Discharge, and Change in FIM scores.</li> </ul>	<ul style="list-style-type: none"> <li>Units of service</li> <li>Types of services</li> <li>Number of clients</li> <li>Age and gender of clients</li> </ul>	<ul style="list-style-type: none"> <li>Location</li> <li>Bed numbers: general &amp; population specific</li> <li>Admission, exclusion, discharge criteria</li> <li>Program goals</li> <li>Special needs</li> </ul>

## Limitations

The limitations in this report are associated with either the scope or the nature of the available databases. Perhaps the most important is the use of 2002-2003 data, which may not be fully representative of the current landscape. In addition, there are coding issues and data collection inconsistencies across databases. For the supply database, the availability of services is for MSK in general so the number of beds is over-reported relative to the number of joint replacement and hip fracture cases. In addition, the scope of this report precludes consideration of outpatient programs as well as consideration of expected growth rates. Finally, the report does not contain an analysis of the GTA/905 CCAC data and the data for the CCACs of Toronto relates to 2003-2004.

## Key Findings

*Table i: Overall summary of acute care patient data as explored in the report (2002-2003)<sup>8</sup>*

	Hip Fracture <sup>9</sup>	Hip Replacement <sup>10</sup>	Knee Replacement
Total acute care cases	2,827	3,723	4,959
% of patients over the age of 86	33%	3%	2%
% of patients aged 66-85	53%	57%	61%
% of patients aged 19-65	13%	40%	37%
RIW <sup>11</sup> (average) of acute care patients	2.4-2.5	2.4-2.8	2.2-2.4
% of patients - no complexities (CIHI designated)	45%	65%	67%
Length of stay <sup>12</sup> (average)	9-15 days	6-8 days	5-6.5 days
% discharged to another facility <sup>13</sup> (rehab, CCC, etc)	46%	51%	55%
% discharged home without formal support	16%	21%	23%
% discharged to home with formal support	7%	11%	9%
% discharge to LTC	26%	6%	4%

<sup>8</sup> Please see full report for greater detail, explanatory notes, limitations, and data by age and hospital group.

<sup>9</sup> Includes all hip fracture patients, including those who have had a joint replacement in order to treat the fracture.

<sup>10</sup> Does not include hip fracture patients who have had a joint replacement.

<sup>11</sup> Range relates to the discharge location of the patient.

<sup>12</sup> Depends on discharge destination. ALOS is longest for people discharged home with support.

<sup>13</sup> Full report provides a breakdown by hospital group and age group.

**Table ii: Summary of inpatient rehabilitation data explored in the report (2002-2003)<sup>14</sup>**

	Hip Fracture <sup>15</sup>	Hip Replacement <sup>16</sup>	Knee Replacement
Total rehabilitation cases	1,016	1,654	2,045
% of acute of acute care cases in 02-03	36%	44%	41%
% of patients over the age of 86	34%	8%	5%
% of patients aged 66-85	60%	65%	67%
% of patients aged 19-65	6%	27%	27%
Average rehabilitation length of stay <sup>17</sup>	30 days	19 days	15 days
Average admission FIM score	81	91	97
Average discharge FIM score <sup>18</sup>	93	105	110
Average FIM change (discharge-admission)	12	14	13
FIM elements that change >2 points	<ul style="list-style-type: none"> <li>• Dressing lower body</li> <li>• Locomotion</li> <li>• Locomotion - stairs</li> <li>• Transfer - shower</li> </ul>	<ul style="list-style-type: none"> <li>• Locomotion</li> <li>• Locomotion - stairs</li> <li>• Dressing lower body</li> <li>• Transfer - shower</li> </ul>	<ul style="list-style-type: none"> <li>• Locomotion</li> <li>• Locomotion - stairs</li> <li>• Transfer</li> <li>• Transfer - shower</li> <li>• Dressing lower body</li> <li>• Bathing</li> </ul>

**Table iii: Summary of data from the Toronto Community Care Access Centres (2003-2004)<sup>19</sup>**

Number of cases (hip fracture and joint replacements) <sup>20</sup>	251
% Hip fracture of total cases	66%
% Hip replacement of total cases	21%
% Knee replacement of total cases	11%
% of all hip fracture and joint replacement patients receiving physiotherapy	53%
% of all hip fracture and joint replacement patients receiving nursing	50%
% of all hip fracture and joint replacement patients receiving homemaking	50%

<sup>14</sup> Please see full report for greater detail, explanatory notes, limitations, and data by age and hospital group.

<sup>15</sup> This figure includes all hip fracture patients who have had a joint replacement in order to treat the fracture.

<sup>16</sup> Includes revisions.

<sup>17</sup> This includes outliers. Modal length of stay for patients at the Toronto community hospitals and GTA/905 hospitals is actually much closer to 10-12 days and modal length of stay for rehabilitation centres varies between 8-30 days depending on age group.

<sup>18</sup> The admission FIM scores vary greatly by hospital and age grouping. See breakdown in body of report for more detail.

<sup>19</sup> CCAC data from the 905 CCACs was not obtained in a format that could be used for this report.

<sup>20</sup> Knee replacement code: 9341, V436; Hip replacement codes: 9359, V346; Hip fracture codes: 8200, 8208.

**Table iv: Supply of musculoskeletal rehabilitation services in the GTA (Rehab Finder, 2005)**

	Rehabilitation Centres	Toronto Hospitals	905 Hospitals
Number (No.) of general beds used for MSK	10	88	206
Number of beds dedicated to MSK only	261	54	13
Maximum average length of stay listed for beds	28	7	14
Crude estimate of patient cases, given capacity <sup>21</sup>	2,066 <sup>22</sup>	1,711 <sup>23</sup>	1,632+ <sup>24</sup>
No. of programs for inpatient MSK rehab	6	8	6
No. of programs described as "complex MSK"	2	0	2
No. of beds for non weight bearing patients	75	0	0
No. of beds for maximum 30 min. tolerance <sup>25</sup>	98	30	29
No. of beds taking patients with NG tubes	63	28	173
No. of beds taking patients who wander	63	0	63
No. of beds for patients with behaviour issues	63	20	0
No. of beds for patients with psychiatric issues	249	28	63
No. of beds taking tracheostomies	100	20	125
No. of beds with continuous oxygen	145	20	206
No. of beds accepting internal & external referrals	271	20	138

### Recommendations, Actions and Implications:

The analysis of the data presented in this initiative as well as discussions with individuals from across the system has led to seven major recommendations and eighteen actions that are required in order to achieve them. The recommendations are listed briefly here (not in priority order) and then are explained and *operationalized* in the paragraphs that follow.

- 1: Invest in real time mechanisms for matching patient need to musculoskeletal rehabilitation programs
- 2: Optimize existing inpatient rehabilitation bed capacity to better serve vulnerable or underserved populations
- 3: Differentiate simple from complex rehabilitation and general from specialized rehabilitation beds
- 4: Discuss with CIHI the possibility of a reduced FIM dataset since many of the FIM elements are not relevant to joint replacements or hip fractures.
- 5: Develop, in collaboration with CIHI, a cross continuum dataset for MSK rehab that provides organizations with the demographics and outcomes for the patient experience across the continuum
- 6: Standardize the service delivery approach in order to achieve consistency in utilization of resources/outcomes.
- 7: Consolidate services to achieve critical mass, optimize outcomes and ensure access for all patients.

<sup>21</sup> This calculation is based on the total number of beds for MSK (not only total joint and hip fracture) x 261 days/year (assumption of five-day operation per week)/minimum listed length of stay and assuming 85% occupancy. It is noted that the five-day operating assumption does not hold for many organizations.

<sup>22</sup> For the rehabilitation centres ALOS is 28 days.

<sup>23</sup> This does not include capacity available by virtue of the 88 beds which are also available for MSK but shared with other populations, so the calculation is based on only 54 beds while an additional 88 are actually available but not dedicated to MSK. We also assume five-day/week operation and 85% occupancy. For this group of hospitals, ALOS is 7 days.

<sup>24</sup> Because the GTA/905 hospitals have no designated MSK beds (general rehab beds only), we estimated 50% of general rehab beds dedicated to hip fracture and joint replacement patients, based on the work by Jaglal, Walker, et al. We also assume a 7-day/week operation and 85% occupancy. For this group of hospitals, ALOS is 14 days.

<sup>25</sup> This refers to the number of minutes that a patient is able to tolerate therapy.

### **Recommendation 1: Invest in real time mechanisms for matching supply and demand**

In the Greater Toronto Area and possibly across Ontario, we need to develop better mechanisms for tracking the characteristics of both patients and programs. Our study has shown it to be very difficult to match, either qualitatively or quantitatively, supply and demand for orthopaedic rehabilitation. This issue can be addressed by developing program descriptors that are designed deliberately to match the most important patient characteristics. In this manner, confidence can be developed in the calculations that are required to ascertain whether there is an appropriate match between system capacity and patient need and to clearly identify where surplus/gaps exist.

- **Action 1.1:** Develop standard patient grouping language, programs, and service descriptions that acknowledge the heterogeneity of the musculoskeletal rehabilitation group and enables better matching of supply and demand.
- **Action 1.2:** Develop an electronic referral and wait list system that would enable the tracking of referrals in order to understand access issues and gaps.
- **Action 1.3:** Clarify and differentiate the use of general and specialized beds.

### **Recommendation 2: Optimize existing inpatient rehabilitation bed capacity**

The crude calculations presented in this report show an estimated capacity of the current musculoskeletal inpatient rehabilitation system (which includes all MSK diagnoses in addition to hip fracture and joint replacements) to be approximately 6,000 patients a year.<sup>26</sup> Since many of the joint replacement patients are now being transferred to home care rehabilitation, opportunity exists to relieve alternate level of care and patient flow pressures by converting the use of some of these rehabilitation beds for more complex patients. A possible example of a population that could benefit from such a transition is the hip fracture population since approximately 26% of patients are discharged to a long-term care facility and nearly 15% of ALC cases<sup>27</sup> are hip fracture cases.

- **Action 2.1:** Explore service delivery requirements for underserved and vulnerable populations or populations that are awaiting rehabilitation with a view to converting usage of inpatient rehabilitation beds from joint replacement care to other types of more complex rehabilitation care.

### **Recommendation 3: Differentiate simple and complex musculoskeletal patients/programs and general from specialized rehabilitation beds.**

Hip fracture and joint replacement care are currently consolidated in general musculoskeletal programs. This report has shown important differences in the functional and demographic characteristics of these patients. As more joint replacements are sent home as a result of the Total Joint Network protocol, opportunity exists to shift the rehabilitation program focus to accommodate more complex musculoskeletal patients. Our study showed that very few programs in the GTA are available for complex musculoskeletal cases and that those that are available differ in terms of their service offerings. Similarly in the community setting, professional rehabilitation services and personal support services are differentiated. According to discussions with CCAC representatives, many home care patients have

<sup>26</sup> This calculation is very crude and based on the total number of beds for MSK x 261 days/year (assumption of 5-day/week operation)/minimum listed length of stay and assuming 85% occupancy. It should be noted that comparing this calculation to the number of joint replacements and hip fractures is problematic because there are other MSK populations using the MSK beds in addition to the joint replacement and hip fracture population. It should also be noted that some of the assumptions, i.e. 5-day operation, are considered problematic.

<sup>27</sup> GTA Rehab Network, *Analysis of Alternate Level of Care (ALC) Snapshots: Patients Awaiting Rehabilitation in ALC and Inpatient Rehabilitation Capacity* (May 2004).

multiple co-morbidities and are complex from a medical perspective. Differentiating where and when complex services are required, what they entail and how many patients need them, in both the community and hospital settings is required.

- **Action 3.1:** Conduct a study to describe the program components of complex musculoskeletal rehabilitation both in the hospital and in the home care setting. This study would then provide the key elements of a complex MSK program, which could facilitate funding and service planning and utilization of MSK beds for other purposes.
- **Action 3.2:** Explore the complex rehabilitation or medical needs of patients who are sent for home care rehabilitation and the use of each of the professional and homemaking services offered to hip fracture and joint replacement patients.

**Recommendation 4: Discuss the potential of a reduced FIM set with CIHI since not all indicators are relevant to hip fracture and joint replacement rehabilitation.**

Use of the FIM tool to assess rehabilitation performance for hip fracture and joint replacement patients, based on the 2002-2003 data appears problematic from this report for two reasons. First, for nearly 5,000 rehabilitation patients, only 4-6 of the FIM elements exhibit a change upon discharge. While this could reflect the inability of rehabilitation to have a measurable impact on hip fracture and joint replacement patients, it is more likely to reflect a lack of suitability of the tool for measuring rehabilitation outcomes for these populations.<sup>28</sup> Given the size of these populations and the findings of this report, using the FIM data to determine funding could also result in adverse consequences for these populations. In addition, for many organizations, we see a small decrease in FIM scores between admission and discharge. This could be due to a measurement error, but should be investigated.

- **Action 4.1:** Hold an outcome measurement session to determine specific outcome measures for MSK rehabilitation. These should include outcome measures suitable for tracking patients' progress from acute to rehabilitation and to the home.
- **Action 4.2:** Discuss with CIHI and JPPC the FIM findings from this report and explore the possibility of a reduced dataset for hip fracture and joint replacement patients.
- **Action 4.3:** Conduct further exploration to determine why the FIM scores from some hospitals appear to decrease from admission to discharge.

**Recommendation 5: Develop cross continuum dataset for musculoskeletal rehabilitation in collaboration with CIHI**

Our learnings from the use of four different databases on the musculoskeletal population indicate significant scope for reducing data collection burdens while improving the quality and coordination of information across the system. Opportunity exists especially between the National Rehabilitation Reporting System and the Discharge Abstract Database to discuss a cross continuum dataset for each patient. This will facilitate record linkage and analysis. It may also reduce data collection requirements.

- **Action 5.1:** Hold a consensus session to determine a meaningful dataset for the continuum of care for population groups within the musculoskeletal rehabilitation.
- **Action 5.2:** Discuss with the Canadian Institute for Health Information, the feasibility of providing Network member organizations with data linked reports that span from acute care to rehabilitation.

<sup>28</sup> At the Veterans Health Administration (VHA) in the United States, medical centres are mandated to use the FIM tool to measure and track rehabilitation outcomes for new stroke, lower-extremity amputees and traumatic brain injury (TBI) patients only.

### **Recommendation 6: Standardize the service delivery approach in order to achieve consistency in utilization of resources/outcomes**

This study has shown regional and program variations in the length of stay and outcomes for each of the joint replacement and hip fracture populations, raising questions about the extent to which patients across the region receive equitable access to evidence based care. For joint replacement patients this is being addressed through the work of the Total Joint Network for joint replacements, however a similar initiative is needed in the area of hip fracture rehabilitation. In order to demonstrate effective, efficient and equitable care for hip fracture patients and their families in the Greater Toronto Area, there must be a more deliberate attempt to quantify and compare actual and expected outcomes and to link expected functional outcomes with length of stay and resource needs. In addition, discharge locations should be linked to patient needs in a clear and appropriate manner by exploring differences between discharge destinations. Where patients are sent home with the expectation that an informal caregiver be involved in the convalescence or reintegration period, appropriate supports should be in place for the caregiver.

- **Action 6.1:** Develop standards for what should be achieved in a hip fracture rehabilitation program. Articulate and measure these in common terms.
- **Action 6.2:** Redevelop the service delivery model for hip fracture patients by convening panels of experts to determine and standardize program components. This will provide a better understanding of the infrastructure required to treat this group.
- **Action 6.3:** Develop definitions to clarify the meaning of rehabilitation or the bundle of services offered under the heading of rehabilitation in each of the different service settings in order to establish role clarity and differentiation of discharge settings.
- **Action 6.4:** Develop resources, which support the informal caregiver by offering information, coping strategies, and support groups.

### **Recommendation 7: Consolidate services to achieve critical mass, optimize outcomes and ensure access for all patients.**

The number of locations at which musculoskeletal programs and services are offered raised questions about how the system is balancing critical mass with considerations of proximity to the patient's home. While excellent care close to home is ideal, studies have shown that quality improves with critical mass.<sup>29</sup> With a larger number of centres offering care, case volume per facility decreases. In addition, some organizations make their inpatient rehabilitation beds available for referrals from across the region, while others restrict use of their rehab beds to their own acute care patients. Where this is not the case, organizations are often dealing with issues of patient flow and maintain closed access in order to alleviate pressures on alternate level of care beds.

- **Action 7.1:** Explore the establishment of centres of excellence, which would consolidate rehabilitation offerings for different populations within musculoskeletal rehabilitation while considering proximity of care issues. The centres of excellence should include the home care component (Community Care Access Centres). Due consideration should be given to managing patient flow.
- **Action 7.2:** Develop a policy of open access whereby patients from within or from outside the organization can get access to all inpatient rehab and outpatient ambulatory care services. Consideration must be given to the impact of such a policy on patient flow.
- **Action 7.3:** Conduct an outpatient and home care focused study on the MSK population group, which includes both utilization and service availability information.

<sup>29</sup> Tracy, J. and Zelmer, J., *CIHI Survey: Volumes and Outcomes for Surgical Services in Canada*. Healthcare Quarterly (2005). V. 8. n.4. (In a systematic review of 331 studies on the relationship between outcomes and volume, it was found that 68% of the studies showed better outcomes with higher volume). It is noted that critical mass vs. proximity considerations for surgery may be different than for rehabilitation.



## 1.0 BACKGROUND AND INTRODUCTION

*Over 50% of inpatient rehabilitation cases in Ontario are hip fracture and joint replacement cases.<sup>30</sup> This document synthesizes available data and expert opinion on these two population groups in order to provide an overview of the orthopaedic landscape in the Greater Toronto Area (GTA) and to make recommendations for a more coordinated model of care.*

### 1.1 Objectives

The objectives of this project were to:

- 1) Characterize the orthopaedic landscape in terms of the:
  - Number and characteristics of joint replacement and hip fracture patients in acute care beds
  - Number and characteristics of joint replacement and hip fracture patients who receive inpatient rehabilitation
  - Supply (quantity, characteristics and location) of rehabilitation services available for MSK in the GTA.
- 2) Provide recommendations based on the data, evidence and expert opinion to lead to a more coordinated model of musculoskeletal rehabilitation, specifically as it pertains to hip fracture and joint replacement rehabilitation.

### 1.2 Report Overview

The first two sections of this report provide an overview of the background and approach used for this project. The third, fourth and fifth sections of the report provide facts, figures and population-specific recommendations for each of the knee replacement, hip replacement and hip fracture population groups. The sixth chapter provides an overview of the programs and services available for this population. The report concludes with overall recommendations based on an analysis of the data and discussions regarding a more coordinated model of care for these two populations.

### 1.3 Motivation

The Greater Toronto Area Rehabilitation Network membership includes all of the publicly funded organizations involved in the provision of rehabilitation services in Greater Toronto Area (GTA). Its vision is an integrated rehabilitation system that is responsive to the needs of rehabilitation patients and their families and that achieves equitable and timely access to quality services at the right time and in the right place.

The musculoskeletal population is of special importance in rehabilitation because it accounts for a large volume of cases and a large proportion of the total number of inpatient rehab cases. According to data from the National Rehabilitation Reporting System (NRS), a full 49% of inpatient rehab cases in Canada are orthopaedic cases.

In the Greater Toronto Area (GTA), there are over 12,000 knee replacement, hip replacement and hip fracture inpatient cases. Approximately 30% of these patients go to inpatient rehab.<sup>31</sup> In addition, nearly all of the publicly funded rehabilitation providers have services and programs for musculoskeletal rehabilitation.

<sup>30</sup> Jaglal, S., Walker, J., Badley, E., Markel, F., Naglie, G., Steele, C., Verrier, M., Williams, J., *Epidemiological Variables and Utilization in Rehabilitation in Ontario* (2001).

<sup>31</sup> Ibid, 2001.

This initiative was prompted by a report published by Jaglal, Walker et al which showed that joint replacement and hip fracture patients accounted for approximately 50% of all inpatient rehab cases in Ontario;<sup>32</sup> Health Services Restructuring Commission reports pointing to a possible over utilization of inpatient rehabilitation for joint replacement patients; and Alternate Level of Care initiatives<sup>33</sup> which reported the hip fracture population as accounting for at least 15% of all Alternate Level of Care cases.

Given the assumption that joint replacement patients were over-utilizing the rehabilitation system but that hip fracture patients take up alternate level of care beds, it becomes evident that the issues in musculoskeletal rehabilitation are not homogeneous. Patients within this large category of rehabilitation may not be receiving equitable access to inpatient rehabilitation.

This document is therefore designed to synthesize data and initiatives as they relate to hip fracture and joint replacements for the purpose of providing a road map for a more coordinated model of musculoskeletal MSK rehabilitation. While multiple stakeholder groups will be in a position to carry out diverse activities, it is important that the initiatives lead to a common vision that will guide the organization of musculoskeletal services for these populations in the future.

#### 1.4 Current Orthopaedic Landscape

The Toronto Hip and Knee Task Force was established by the Ministry of Health and Long-Term Care (MOHLTC) in October 2004 in order to improve access and reduce waiting times for joint replacements in Toronto. The Task Force identified the steps needed to improve the efficiency of the current system, helped to streamline access to hip and knee surgeries by addressing capacity and utilization management issues, and developed a business case for increased volume of hip and knee surgeries. The Task Force membership included representatives from the MOHLTC; acute, community and rehab hospitals; the Community Care Access Centres (CCACs); the Ontario Joint Replacement Registry; the GTA Rehab Network; The Arthritis Society; Arthritis Community Research & Evaluation Unit; and physicians, including orthopaedic surgeons, rheumatologists, general practitioners, physiatrists and anesthesiologists.

The Total Joint Network (TJN) was struck in April 2005. It is a collaboration of the publicly funded providers of joint replacement care in the Greater Toronto Area. Through a grant from the Ministry of Health and Long-Term Care, the TJN developed a strategy to implement an integrated model of care for patients undergoing total joint replacements that standardizes best practices, reduces the total length of stay and improves integration across the continuum of care. Membership of the TJN includes acute and community hospitals, rehab hospitals, CCACs, the GTA Rehab Network, Ontario Joint Replacement Registry and The Arthritis Society.

Under the TJN proposal, joint replacement patients are enrolled in one of two streams:

- three days in acute care, seven days in inpatient rehab and discharge; or
- five days in acute care, discharge and rehab delivered at home.

Detailed data collection and evaluation is currently being used to track progress along care pathways and reasons for variance, complication and readmission rates, functional health status and patient satisfaction at three months post-surgery.

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<sup>32</sup> Jaglal, Walker et al (2001)

<sup>33</sup> GTA Rehab Network (2004)

## 2.0 APPROACH

The approach used in the development of this report involved a number of steps. These are summarized here and expanded upon later in this section.

- **Establishment of committee membership:** Recruitment of musculoskeletal leaders in the rehabilitation system.
- **Development of guiding principles:** Scan of various coordinated models to determine guiding principles and a conceptual framework that would guide the strategy development.
- **Acquisition and analysis of utilization data sources:** An analysis of utilization (demand) data based on 2002-2003 National Rehabilitation Reporting System Data, Discharge Abstract Database Data,<sup>34</sup> and Community Care Access Centres for 2003-2004 (data from the CCACs in the City of Toronto only).
- **Analysis of supply data sources:** An analysis of capacity and supply data (service availability) was undertaken based on a review of *Rehab Finder* which contains program and service descriptions, capacity information and admission criteria information.
- **Development of micro-level recommendations:** Synthesis of findings from each of the data sources to explore the characteristics of musculoskeletal rehabilitation patients in light of the available services.
- **Synthesis of system level recommendations:** Development of recommendations for a more coordinated model based upon the data.
- **Validation:** Two externally hired consultants first analyzed the data in this report. When groupings were changed, the data was analyzed twice to ensure consistency in results. External readers were also asked to review the report for consistency.

### 2.1 Committee Membership

The GTA Rehab Network's interest in the musculoskeletal population began in 2001 when a group was struck to explore opportunities in musculoskeletal rehabilitation. The MSK Task Group's mandate became focused through the Network's 2003-2004 Operating Plan when a decision was made to explore MSK data available through local and national databases. GTA Rehab Network member organizations were asked to appoint individuals with the following characteristics:

- Familiarity with the clinical, managerial and system elements involved in the delivery of musculoskeletal (MSK) rehabilitation
- Ability to represent the views of the organization through consultation with relevant professionals
- Acumen needed to analyze, discuss, and propose solutions to address system issue.

### 2.2 Development of Guiding Principles

The task group agreed on the following conceptual categories for this initiative.

1. **Integration across the continuum:** An integrated model of hip fracture and joint replacement rehabilitation should include the entire continuum from primary care, acute care, rehabilitation, home care services and long-term care. It should also include health promotion, illness prevention and effective community reintegration.
2. **Patient centred and equitable access delivery model:** This strategy proposes that rehabilitation services be developed according to patient needs and goals rather than being dictated by length of stay constraints. Patients take an active role in determining their own goals and are provided with the

<sup>34</sup> Both the National Rehabilitation Reporting System and the Discharge Abstract Database data were ordered from the Canadian Institute for Health Information.

appropriate educational materials to enable them to manage their expectations and be active and responsible participants in their care. The notion of equitable access to care across organizations and across regions was also embraced.

3. **Standards and guidelines for programs and triage tools:** A coordinated system should have discrete programs with clearly defined *a priori* guidelines for treatment and triage. Levels of care (intensity) need to be clearly delineated using common terms. A triage tool should be developed to help guide patients not only to the appropriate level of care but also to the location of care, i.e. home, outpatient/day hospital, inpatient, complex continuing care or long-term care.
4. **Best practice and research based:** Where available, evidence and best practice will be drawn upon. Where necessary, research questions will be identified. Where care pathways are available, they will be discussed as possible practice guidelines for the system.
5. **Context consideration and flexibility:** This strategy will present a model that is sensitive to the context in which it is embedded and that maintains flexibility for patients and providers.
6. **Appropriate resource support and change management:** Where recommendations are made to change current practice, there will also be sensitivity to ensuring that costing of the resources required to support change is undertaken.
7. **Data for planning, monitoring and evaluation:** For ongoing planning and management purposes, a consistent data set is required. This includes standard referral, response, and preadmission forms, standard outcome measures, standard admission criteria and program description templates, utilization and waiting list information.

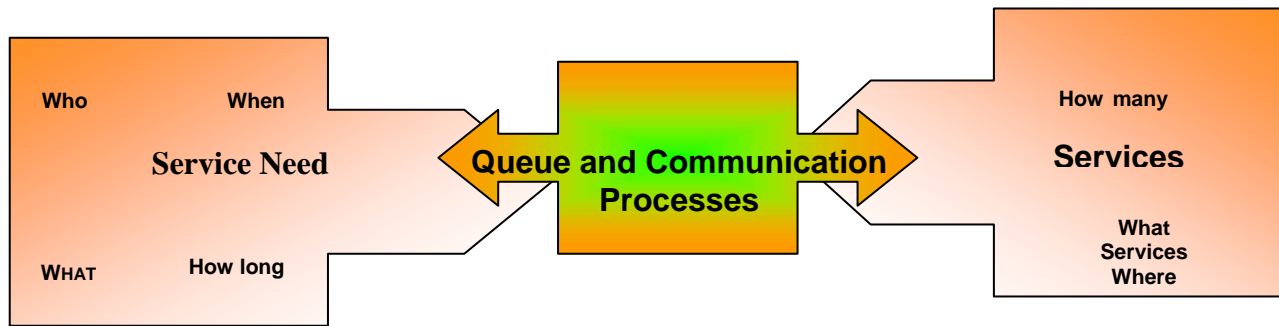
### 2.3 Conceptual Framework

In addition to the principles noted in the previous section, two major propositions drove the data requests and analysis:

**Proposition 1:** Although hip fracture and joint replacement patients constitute two discrete groups with different rehabilitation needs, the current organization of rehab services does not recognize this. Within the hip fracture group, there may be patients who suffer with co-morbidities, physical and cognitive issues and depression. These conditions may preclude them from admission to a regular rehabilitation program.

**Proposition 2:** In a coordinated model, the supply (capacity of services) would match the demand for service (utilization). Appropriately matched, patients would be referred to the right location, timing and intensity of care. Therefore, we must find ways of differentiating both patients and programs and facilitating their matching. Figure 1, below, demonstrates the model.

Figure 1: Model of supply and demand (Rafferty et al, 2002)<sup>35</sup>



## 2.4 Data Sources and Units of Analysis

Available utilization data for this project was taken from the Discharge Abstract Database (DAD), the National Rehabilitation Reporting System (NRS), and the Community Care Access Centre (CCAC) data. Supply data was taken from the GTA Rehab Network's *Rehab Finder*. These sources are described below.

### Discharge Abstract Database – Acute Care Utilization Data

The Discharge Abstract Database contains a discharge abstract for every acute care patient discharged from an Ontario hospital. By comparing the characteristics and numbers of acute care patients in the discharge abstract database data to the characteristics and numbers of rehab patients in the rehabilitation reporting system database, it was possible to develop some understanding<sup>36</sup> of who gets access to inpatient rehab, who does not, and where they go upon discharge. This will help us to determine opportunities for improving access and patient flow. It will also put the NRS data analysis (inpatient rehabilitation) in the context of the full group of patients. This data was used to answer the following questions:

1. How many hip replacements, knee replacements and hip fractures are there by age and hospital type?
2. What is the average length of stay (ALOS) in acute care for each of the hip fracture, knee replacement and hip replacement groups?
3. What is the average Resource Intensity Weight (RIW) for each of the hip fracture, hip replacement, and hip replacement patients discharged to different types of institutions?
4. Where are patients discharged by complexity level?

### National Rehabilitation Reporting System – Inpatient Rehabilitation Utilization Data

The National Rehabilitation Reporting System contains data on each patient admitted and discharged from a designated inpatient rehabilitation bed in Ontario. This database was used to develop a profile of joint replacement and hip fracture rehabilitation patients. Specifically, the data request was used to answer the following questions:

1. What is the socio-demographic, cognitive, functional, and medical profile of each of the hip fracture and joint replacement populations?
2. Do FIM scores for these groups of patients change from admission to discharge? Specifically, what components of the FIM change for these groups of patients?

<sup>35</sup> Rafferty, C., Markel, F., McMillan, I. Rodgers, J. *How do patients and physicians rate urgency of care? A comparison of urgency rating for general surgery*. Hospital Quarterly. Spring 2002, 31-40.

<sup>36</sup> See the limitations section for a discussion of the limitations of this approach

3. What is the average length of stay by hospital group?
4. What is the average FIM change by age and population group?

The FIM tool is an 18-item seven-level functional assessment designed to evaluate the amount of assistance required by a person with a disability to perform basic life activities safely and effectively. There are five types of FIM assessments: admission, goals, interim, discharge and follow-up. The FIM assessments are used clinically to monitor the outcomes of rehabilitative care.

### **Community Care Access Centre Data – Homecare Utilization Data**

The Community Care Access Centres in Toronto collated the number of hip fracture and joint replacement patients in their care during the 2003-2004 and 2004-2005 periods. They also provided a breakdown by age, gender and type of service received. No data was available from the GTA/905 Community Care Access Centres. The diagnoses codes that were requested included knee replacement codes 9341, V436; hip replacement codes 9359, V346; and hip fracture codes 8200, 8208.

### **Rehab Finder – Supply Data**

*Rehab Finder* is a database that was produced by the GTA Rehab Network. It contains the program descriptions for the 34 publicly funded organizations providing rehabilitation at Network member organizations. Included in these program descriptions are the admission criteria, the special needs that each program can accommodate, referral information and catchment areas. There is also some information on the size and capacity of the program as well as on the facility and its location. The database is publicly available for both professionals and the general public on the GTA Rehab Network's website ([www.gtarehabnetwork.ca](http://www.gtarehabnetwork.ca)).

## **2.5 Limitations**

### **Utilization Data**

- **Unlinked records:** For this project, we did not link National Rehabilitation Reporting System records to the Discharge Abstract Database records or to the Community Care Access Centre records for each patient.
- **Coding issues:** Each of the National Rehabilitation Reporting System, the Discharge Abstract Database and the Community Care Access Centre database have coding discrepancies that are being addressed with the evolution of these local and provincial databases.
- **Missing data:** For some data elements, a large proportion of data is missing, un-coded or unavailable.
- **Changing system:** Between 2002 and today there have been a number of important system changes and therefore, care must be taken in using 2002/2003 data as a baseline. In addition, no growth projections or considerations are made in this report.
- **Lack of outpatient data:** The most problematic aspect of this report is its lack of outpatient data and discussion. Outpatient activity is important in the continuum of care for musculoskeletal patients.
- **Available Community Care Access Centre data:** Data from the CCACs of Toronto is in a different format and conforms to different standards than the data from CIHI. It also pertains to the 2003/2004 year. This report does not contain an analysis of data from the GTA/905 region CCACs.
- **Use of FIM measure as outcomes data:** The 2002/2003 data from the NRS represents the first full year of data from the National Rehabilitation Reporting System. As such, there may have been problems in using the FIM tool and therefore reporting errors rather than actual patient outcomes may explain some of the findings presented in this report.

## Supply Data

While *Rehab Finder* is one of the most powerful tools in the system through which to analyze supply of rehabilitation services, there are number of limitations that must be noted:

- **Recency and representativeness of the information:** *Rehab Finder* is based on the information organizations provide. There may be differences in interpretation or information may be out of date. The information presented on organizations' programs represents formal admission criteria and program information. This may not reflect the patient group that is actually served. In addition, nearly all organizations indicated they consider flexibility in their programming on a case-by-case basis. This means that the written criteria may not present a true picture of the cases being accepted.
- **Missing data:** Organizations that accept referrals for rehabilitation from their own acute care beds were not required to complete certain sections of the database, resulting in incomplete information. Outpatient and Community Care Access Centre information is limited.
- **Conceptualization of rehab programs:** *Rehab Finder* only enables an analysis of the musculoskeletal rehabilitation population rather than analysis of programs by diagnostic group or procedure. It is therefore likely that the supply of services is over-represented since about 1/3 of musculoskeletal rehabilitation cases are neither hip fracture nor joint replacements.<sup>37</sup>

## Units of Analysis and Data Elements

Throughout this report, we have explored differences across three age groups, notably the 19-65, 66-85, and 86+ age group. We also used four hospital groupings: Toronto community hospitals which are non-teaching hospitals offering both acute care and rehabilitation (NRS and DAD data); the regional rehabilitation centres (NRS only) which are mostly teaching hospitals specializing in rehabilitation and complex continuing care; the acute care teaching hospitals which (with the exception of Sunnybrook and Women's College Health Sciences Centre) do not have designated rehab beds (DAD data only); and the GTA/905 community hospitals which have both acute care and designated rehab beds (NRS and DAD data). Specific organizations included in each group are presented in Table 2.

### *Hospital groupings used in the analysis*

Rehabilitation Centres (NRS only)	Toronto Community Hospitals (DAD & NRS)	GTA/905 Community Hospitals (DAD & NRS)	Acute Care Teaching Hospitals (DAD only)
<ul style="list-style-type: none"> <li>• St. John's Rehab Hospital</li> <li>• West Park Healthcare Centre</li> <li>• Toronto Rehab</li> <li>• Providence</li> <li>• Baycrest</li> <li>• Bridgepoint Health</li> </ul>	<ul style="list-style-type: none"> <li>• Humber River Regional</li> <li>• Toronto East General</li> <li>• Scarborough Hospital</li> <li>• North York General</li> <li>• St. Joseph's Health Centre</li> </ul>	<ul style="list-style-type: none"> <li>• Trillium</li> <li>• Credit Valley</li> <li>• Rouge Valley</li> <li>• Halton Healthcare</li> <li>• Southlake</li> <li>• York Central</li> </ul>	<ul style="list-style-type: none"> <li>• University Health Network</li> <li>• Mt. Sinai Hospital</li> <li>• St. Michael's Hospital</li> <li>• Sunnybrook and Women's College Health Sciences Centre</li> </ul>

<sup>37</sup> Jaglal, Walker et al. (2001)

## 3.0 KNEE REPLACEMENTS

### 3.1 Introduction

The joint replacement landscape in the Greater Toronto Area is experiencing changes as a result of initiatives of the Total Joint Network (TJN). Given the TJN objective of decreasing wait lists by increasing the number of patients that can be accommodated in a given time period, the system is experiencing a reduction in the acute care and rehabilitation lengths of stay, a decrease in the number of patients that access inpatient rehab, and an increase in the number of patients who receive CCAC support.

This chapter provides a lay-of-the-land before these changes were implemented. By using the data before system change, it will be possible to plan proactively for how an increase in inpatient rehab capacity, resulting from the transition of joint replacement patients from inpatient rehab to the home care setting can be used for other population groups.

The first part of this chapter summarized facts and figures from the data analysis as they pertain to knee replacements. In the second part of the chapter, the micro level recommendations derived from the data are presented. The final section of this chapter provides a more detailed overview of the data and analysis.

### 3.2 Facts and Figures about Knee Replacement (2002-2003)

#### Acute Care

- **Total complement of acute care knee replacement patients:** The total number of acute care knee replacement patients in the GTA in 2002-2003 was 4,959.<sup>38</sup> The acute care teaching hospitals see about 40% of all cases, the Toronto community hospitals see 12% of all cases and the GTA/905 community hospitals see 45%.
- **Age distribution of patients across hospital groups:** Across the total complement of GTA knee replacement patients approximately 2% are over the age of 86, 61% are between the ages of 66-85 and 37% are between 19-65. These figures remain consistent for each of the acute care teaching hospitals, Toronto community hospitals and GTA/905 community hospital groups individually.
- **The discharge disposition of acute care knee replacement patients:** Approximately 55% of patients are discharged to another facility with inpatient acute care, rehab or complex continuing care; 23% are discharged home; 9% are discharged to home with support or palliative care/hospice; and 4% are discharged to long-term care.<sup>39</sup>
- **Acute care lengths of stay (LOS) for acute care knee replacement patients by discharge disposition:** The lengths of stay for each of the discharge destinations for knee replacement patients are as follows: 5.1 days for patients discharged to another facility with inpatient rehabilitation; 5.8 days for patients discharged home; 6.3 days for patients discharged home with support<sup>40</sup>; 6.5 days for patients discharged to palliative care; and 6.3 days for patients discharged to long-term care.

<sup>38</sup> This does not include atypical cases.

<sup>39</sup> The remaining 9% were discharged to a variety of other facilities.

<sup>40</sup> Throughout this report, formal support is used to refer to services that are delivered by a publicly funded provider. This differentiates home care services from care given by an informal caregiver.

- **Resource Intensity Weights (RIWs)<sup>41</sup> of knee replacement patients:** The RIWs are the same across nearly all discharge destination groups, ranging mostly from between 2.2 and 2.4. However, about 25% of data is missing for RIWs and discharge destinations, with most of this being from the acute care teaching hospitals.
- **Complexity of knee replacements (Plx)<sup>42</sup> patients:** Approximately 67% of acute care knee replacement patients are in the lowest complexity level. An additional 20% are in the second lowest category. However, there is a large proportion of missing data for complexity.

### ***Inpatient Rehabilitation (2002-2003)***

- **The total complement of inpatient rehabilitation cases:** There are a total of 2,045 inpatient rehabilitation cases: 43% of these cases are seen at the rehabilitation centres, 15% are seen at the Toronto community hospitals; and 42% are seen at the GTA/905 community hospitals. These figures are similar to the distribution of acute care patients.
- **Age distribution of inpatient rehabilitation cases:** Approximately 5% are over the age of 86; 67% are between the ages of 50-65; and 27% are under the age of 65. There are no statistical differences in age distribution across the three hospital groups. This is very similar to the distribution of acute care cases.
- **Admission FIM for knee replacement patients:** Admission FIMs appear to vary across different age groups but remains similar across hospital groups. For the 86+ age group, the average admission FIM ranges between 89 and 95. For the 66-85 age group, the average admission FIM ranges between 95 and 98. For the 19-65 age group, the average admission FIM ranges between 96 and 101.
- **Discharge FIM and FIM changes<sup>43</sup> for knee replacement patients:** Discharge FIMs and average changes appear to vary across hospital groups and somewhat across age groups. For example, patients discharged from the rehabilitation centres experience a FIM change of 10-12 points. At the Toronto community hospitals, the FIM change is negative for patients<sup>44</sup> aged 86+ by 4 points but increases 4-6 points for all other patients. At the GTA/905 community hospitals the average FIM change ranges between 2-5 points.
- **FIM elements that change more than 2 points:** The FIM elements that change the most are locomotion stairs, locomotion, transfer-showers, dressing lower body, and bathing.
- **Rehabilitation goal achievement for knee replacement cases:** Most knee replacement patients achieve their rehabilitation goals upon discharge.
- **Knee replacement rehabilitation inpatient length of stay:** The rehabilitation length of stay is 8-12 days at each of the Toronto community and GTA/905 community hospitals. The length of stay is 18-28 days at the rehabilitation centres.

<sup>41</sup> Resource intensity weights (RIW) describe the complexity of the patient by combining age, complexity ranking, and resource utilization of the patient. The higher the value, the more resources are required to care for the patient.

<sup>42</sup> Complexity (Plx) is a data element that is calculated by CIHI to categorize patients into one of four groups. Its use is controversial because of the calculation and interpretation methodology.

<sup>43</sup> Through our search, no references on the significance of change in FIM score were found for this population.

<sup>44</sup> See the limitations section. There are a number of reasons for the negative FIM performance, which could range from the newness of the FIM tool, to reporting mechanisms, to length of stay or treatment plans.

### 3.3 Recommendations for Knee Replacement Patients

- Explore the service offerings of different rehabilitation settings:** Given that the RIWs of the patients discharged to different rehabilitation settings, such as inpatient rehab, complex continuing care, and home care appear constant, we need to explore what the differences are in the services delivered in each setting. This information can then be used to develop an appropriate and consistently applied triage tool to ensure patients are discharged to the right setting and that patients are receiving equitable access to care. The information may also be used to ensure that each setting is resourced according to the services it delivers.
- Explore the implications of low complexity/high admission FIM levels of knee replacement patients:** Given that knee replacement patients have a very low complexity level and have relatively high admission FIM scores, explore whether more cost effective models of care are available for these patients. This recommendation is being addressed by the Total Joint Network.
- Reduce amount of missing data reporting for acute care knee replacement patients:** Given that about 25% of data is missing for RIWs and discharge destinations further effort should be made to simplify and standardize the coding and reporting for this population.
- Explore delivery of rehabilitation services for the population group over the age of 86:** Given that FIM changes are high for the 86+ population group and that only 5% of 86+ knee replacements get inpatient rehabilitation, potential exists to explore if a greater percentage of 86+ can benefit from inpatient rehabilitation.
- Define and articulate expected outcomes:** Given that most knee replacement patients achieve their rehabilitation goals upon discharge and that only a few FIM elements change from admission to discharge, rehabilitation goals should be standardized and measured in order to demonstrate value to the patient, system and funders. This will also help to streamline data elements collected. This recommendation is being addressed by the Total Joint Network.
- Explore and reduce variation in acute care length of stay and FIM change scores:** Given that most knee replacements at the rehabilitation centres are in hospital for 14-28 days; 7-8 days at the Toronto community hospitals and 4-14 days at the GTA/905 hospitals, further work should be done to understand the differences in LOS and set benchmarks to ensure that the most appropriate care is given in the most efficient manner. Similarly, given that FIM scores change across different hospital groups, we should explore variations in practice to determine what will result in the best outcomes for the patient. Parts of this recommendation are being addressed by the Total Joint Network.
- Explore capacity of home care services:** Given that only 12% of knee replacement patients receive home care services currently and that practice patterns are increasing this percentage, a study of resource needs of knee replacement home care services needs to occur. Parts of this recommendation are being addressed by the Total Joint Network.
- Explore use of outpatient rehabilitation services:** Given the scarcity of outpatient programs and services in the region, explore the use of outpatient rehabilitation services along the continuum of care for knee replacement patients and study the impact of outpatient usage on patient flow.

### 3.4 Data and Analysis

*Table 1.1: Distribution of typical knee replacement patients discharged from acute care in 2002/2003 by hospital group and by age group*

Hospital Group	Age Group			Total
	19-65	66-85	86+	
Acute Care Teaching Hospitals	714	1221	31	1966
	36	62	2	40%
Toronto Community Hospitals	270	498	9	777
	35	64	1	16%
GTA/905 Community Hospitals	837	1333	46	2216
	38	60	2	45%
Total	1821	3052	86	4959
	37	62	2	100

- The breakdown of patients by age group across different hospital groups is consistent with about 37% between the age of 19-65; 62% between 66-85; and about 2% over the age of 86.
- The breakdown of patients by hospital group is consistent with approximately 40% receiving care at the acute care teaching hospitals, 16% receiving care at the Toronto community hospitals and 45% receiving care at the GTA/905 community hospitals.

*Table 1.2: Knee replacement acute care average length of stay (ALOS) by discharge disposition (2002/2003 data)*

Hospital Group	Discharge Location	N	%	ALOS	SD
Acute Care Teaching Hospitals	Hospital (acute, rehab, other)	848	43%	5.5	2.8
Toronto Community Hospitals	“	394	51%	4.2	2.3
GTA/905 Hospitals	“	1500	68%	5.1	2.4
<i>Total</i>	“	2742	55%	5.1	--
Acute Care Teaching Hospitals	Home - no formal support	565	29%	5.3	3.0
Toronto Community Hospitals	“	315	41%	6.4	1.9
GTA/905 Hospitals	“	268	12%	6.3	3.1
<i>Total</i>	“	1148	23%	5.8	--
Acute Care Teaching Hospitals	Home - formal support	232	12%	5.6	2.5
Toronto Community Hospitals	“	46	6%	7.4	2.6
GTA/905 Hospitals	“	171	8%	6.9	3.4
<i>Total</i>	“	449	9%	6.3	--
Acute Care Teaching Hospitals	Other types of facilities	260	13%	6.4	2.2
Toronto Community Hospitals	“	0	0%	--	--
GTA/905 Hospitals	“	180	8%	6.6	2.9
<i>Total</i>	“	440	9%	6.3	--
Acute Care Teaching Hospitals	Long-term care	61	3%	6.9	5.6
Toronto Community Hospitals	“	22	3%	8.3	9.0
GTA/905 Hospitals	“	97	4%	5.4	3.5
<i>Total</i>	“	180	4%	6.3	--

- The breakdown of patients by discharge destination is consistent across hospital groups. Approximately 55% of patients are discharged to another hospital; 23% discharged home; 9% discharged to home with support or palliative care/hospice, and 4% discharged to long-term care.
- The lengths of stay for each of the discharge destination for knee replacement patients are as follows: 5.1 days for patients discharged to another facility; 5.8 days for patients discharged home; 6.3 days for patients discharged home with support; 6.5 days for patients discharged to palliative care; and 6.3 days for patients discharged to long-term care.

**Table 1.3: Resource intensity weights (RIW)<sup>45</sup> for knee replacement patients across different hospital groups and different discharge destinations (2002-2003)**

Institution From	Institution To <sup>46</sup>	N	%	RIW	SD
Acute Care Teaching Hospitals	General Rehab	1104	56%	2.4	0.6
Toronto Community Hospitals	“	435	56%	2.3	0.6
GTA/905 Hospitals	“	1564	71%	2.3	0.6
<i>Total</i>	“	<i>3103</i>	<i>63%</i>	--	--
Acute Care Teaching Hospitals	Special Rehab	11	1%	2.4	0.5
Toronto Community Hospitals	“	0	0	--	--
GTA/905 Hospitals	“	156	7%	2.6	0.8
<i>Total</i>	“	<i>167</i>	<i>3%</i>	--	--
Acute Care Teaching Hospitals	Home Care	227	12%	2.2	0.4
Toronto Community Hospitals	“	21	3%	2.3	0.4
GTA/905 Hospitals	“	140	6%	2.3	0.4
<i>Total</i>	“	<i>388</i>	<i>8%</i>	--	--
Acute Care Teaching Hospitals	Chronic Care	18	1%	2.5	1.1
Toronto Community Hospitals	“	0	0%	--	--
GTA/905 Hospitals	“	34	2%	2.7	1.2
<i>Total</i>	“	<i>52</i>	<i>1%</i>	--	--
Acute Care Teaching Hospitals	Missing	585	12%	--	--
Toronto Community Hospitals	“	319	6%	--	--
GTA/905 Hospitals	“	312	6%	--	--
<i>Total</i>	“	<i>1216</i>	<i>25%</i>	--	--

- The RIW system is a relative resource allocation methodology for estimating a hospital's inpatient-specific costs for both acute and day procedure care. RIW are used to standardize the expression of hospital case volumes, recognizing that not all patients require the same health care resources. Volume is then expressed as “weighted cases.” A national-level length of stay predictor or expected length of stay (ELOS) is calculated using a series of regression analyses. The ELOS is used as an indicator in hospital utilization management analyses. It can be used prospectively for discharge planning, or retrospectively as a practice benchmark.<sup>47</sup>

<sup>45</sup> Resource Intensity Weights are calculated by CIHI based on the age, length of stay, and diagnoses of a patient. Its value is in conducting relative comparisons of patients.

<sup>46</sup> The data element used in this RIW table -- “Institution To Type” -- is not the same element as discharge disposition.

<sup>47</sup> [http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=casemix\\_riw\\_e](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=casemix_riw_e)

- This data includes the complement of patients who receive publicly funded services (it does not include patient discharged home without formal support). The RIWs are the same across most discharge groups; ranging mostly between 2.2 and 2.4.
- The definition of general and specialized rehabilitation is determined by the facility and does not refer to the difference between rehabilitation in community hospitals and rehabilitation centres.
- About 25% of data is missing for RIWs and discharge destinations, with most of this being from the acute care teaching hospitals.
- Approximately 25% of patients are discharge homed without formal support. We do not know if some of these patients then obtained outpatient care.

**Table 1.4: Number of inpatient rehab knee replacement clients by age groups across different hospital groups (2002-2003)**

	<b>19-65</b>	<b>66-85</b>	<b>86+</b>	<b>TOTAL</b>
Rehabilitation Centres	227	615	46	886
	26%	69%	5%	34%
Toronto Community Hospitals	91	232	44	339
	27%	68%	5%	13%
GTA/905 Hospitals	232	579	44	855
	27%	68%	5%	53%
<b>TOTAL</b>	<b>550</b>	<b>1426</b>	<b>106</b>	<b>2082</b>
	21%	68%	5%	100%

- The distribution of patients by age group across each type of hospital group is constant. There are approximately 3% over the age of 86; 68% between the ages of 50-65; and 27% under the age of 65. This is similar to the distribution of acute care patients by age.
- The proportion of patients in acute care teaching hospitals is 40%, the proportion of patients in Toronto community hospitals is 15%; and the proportion of patients in the GTA/905 hospitals category is 40%. This is similar to the breakdown of acute care patients across hospital groups, if we consider that the rehab centre group in rehab parallels the acute care teaching hospital group in acute care.
- Hip replacement patients with 5+ co-morbidities make up about 40% of the rehab centre population over the age of 66; 9-24% of the Toronto community hospital population; 25-35% in the GTA/905 hospitals.<sup>48</sup>

<sup>48</sup> Halton-Peel numbers are much lower (2-17%) whereas in York and Durham the percentage is (21-59%) depending on age.

**Table 1.5: Admission, discharge & change in FIM for different hospital and age group knee replacement patients (2002-2003)**

Hips		19-65	66-85	86+
Rehabilitation Centres	Admission FIM	101	98	99
	Discharge FIM	110	109	107
	<i>Change FIM</i>	9	11	8
Toronto Community Hospitals	Admission FIM	103	98	93
	Discharge FIM	109	102	91
	<i>Change FIM</i>	6	4	-2
GTA/905 Hospitals	Admission FIM	96	95	95
	Discharge FIM	98	100	103
	<i>Change FIM</i>	2	5	8

- Admission and discharge FIMs differ across age groups and hospital types. The greatest changes are most often seen in the 86+ age group and in the rehabilitation centres for the 66-85 age group.
- Most hip replacement patients are entering hospital with a FIM of over 100 and being discharged with a FIM of 4-15 points higher.
- Most knee replacement patients achieve their rehabilitation goals by discharge. The percentage that do not get discharged home is 1-2% in the GTA/905 hospitals and rehabilitation centres and slightly higher at the Toronto community hospitals (7%)

**Table 1.6: Average length of stay for patients in inpatient knee replacement rehab beds (2002-2003)**

	19-65	66-85	86+
Rehabilitation Centres	18	20	28
Toronto Community Hospitals	10	12	8
GTA/905 Hospitals	9	10	12

- Most knee replacements at the rehabilitation centres are in hospital for an average of 18-28 days; 8-12 days at the Toronto community hospitals and 4-12 days at the GTA/905 hospitals.

## 4.0 HIP REPLACEMENTS

### 4.1 Introduction

As is the case with knee replacement patients, the hip replacement landscape is changing as the work of the Total Joint Network reorganizes service delivery patterns so that more hip replacement patients can have their surgeries done in a shorter time. Part of this change involves sending fewer patients to inpatient rehabilitation. As such, it is important to understand the possible magnitude of change as we begin moving this group of patient out of inpatient rehabilitation, thus opening the doors for other more complex populations.

This chapter presents many of the same types of data as in the knee replacement chapter. The first section provides a summary of the hip replacement patient profile based on the DAD and NRS data analysis. The second section provides the recommendations from the data and the third section provides a more in depth look at the supporting data.

### 4.2 Facts and Figures about Hip Replacements (2002-2003)

#### **Acute Care**

- **Total complement of hip replacement patients:** There were a total of 3,723 elective acute care hip replacements in 2002-2003 in the Greater Toronto Area. About 30% of these were at the acute care teaching hospitals; 12% at the Toronto community hospitals; and 58% were at the GTA/905 community hospitals.
- **Age distribution of acute care hip replacement patients:** Approximately 40% of patients are between the ages of 19-65 years; 57% of patients are between 66-85 years and 3% of patients are over the age of 86.
- **Discharge “institution to” of hip replacement patients:** The percentage of patients discharged to each location are as follows: 51% to another hospital (may include intra-hospital transfer to another ward) that may have rehab, acute or complex continuing care beds; 21% to home without formal<sup>49</sup> support; 11% home with formal support; 11% to hospice type setting; and 6% to long-term care.
- **Acute Care Lengths of Stay (LOS) for hip replacement patients:** The average lengths of stay for patients by discharge disposition are 6-7 days for discharge home, to another facility or to a hospice and approximately 8 days for long term care and home with support. There are no statistically significant differences in the percentage of patients of different discharge dispositions for different hospital groups.
- **Resource intensity weights (RIWs) for hip replacement patients:** Resource intensity weights (RIWs) are statistically similar across different types of institutions to which hip replacement patients are discharged. The RIWs range between 2.4 and 2.8. Approximately 23% of the data for RIWs is missing.
- **Discharge locations for hip replacement patients:** Nearly 60% of hip replacement patients are discharged to inpatient rehab with an additional 10% discharge home with home care. There is a large percentage (25%) of cases with missing data for this element.

<sup>49</sup> Throughout this report, formal support is used to refer to services that are delivered by a publicly funded provider. This differentiates home care services from the care given by an informal caregiver.

- **Complexity level of acute care hip replacement patients:** CIHI has developed a categorization of patients according to complexity where 1 is no complexity and 4 is high complexity. According to this scale, 63% of patients in acute care have no complexities; 33% have a complexity level of 2 or 3; and 6% have a complexity level of 4. Twenty-three percent of hip replacement patients have missing data for this element.

### ***Inpatient Rehabilitation (2002-2003)***

- **Total complement of hip replacement patient cases:** In 2002/2003 there were a total of 1,652 inpatient rehabilitation cases. Thirty percent of these were seen at the acute care teaching hospitals, 12% of these were at the Toronto community hospitals; and 58% were at the GTA/905 hospitals.
- **Age distribution of inpatient rehabilitation hip replacement patients:** The breakdown of patients by age group across the three hospital groups is 27% under the age of 65; 65% between 66-85 and 8% over the age of 86. Differences between the proportions of patients in different age groups at the different hospitals are not statistically significant.
- **Goal achievement for hip replacement rehabilitation patients:** Only about 2-5% of hip replacement patients in inpatient rehabilitation do not achieve their rehabilitation goals<sup>50</sup> in hospital.
- **Admission FIM scores for hip replacement patients:** Admission FIM scores differ by hospital and age groups. For the 86+ population, the average admission FIM was 78-80, while for all of the other age groups, the average admission FIM ranged between 90 and 98.
- **Discharge FIM scores and FIM change for hip replacement patients:** Discharge FIM score ranges vary widely across age and hospital groups. The average FIM score change at the regional rehab centers ranges from 90-106 depending on the age group (representing a change of approximately 10 FIM points). At the Toronto community hospitals, the average FIM scores upon discharge range from 70 for the population over the age of 86, to 104 for the population between the ages of 19-65 (representing a FIM change of 5 to -7 points). At the GTA/905 community hospitals, the average FIM scores upon discharge range from 78 to 90, (representing a FIM change of 7-8 points).
- **FIM elements that change 2 or more points for hip replacement patients include:** Locomotion, Locomotion stair, Dressing Lower Body, and Transfer Shower.
- **The average length of stay for inpatient rehab hip replacement patients:** The average length of stay for rehab patients in all age groups varies depending on the hospital group. It is longest at the rehabilitation centres where the length of stay is 22 to 32 days.

### **4.3 Recommendations for Hip Replacement Patients**

- **Explore the most efficient and effective model of care for non complex patients:** Given that the majority of hip replacement patients are between the ages of 50-76, have a low complexity level, have a fairly high admission FIM and are not usually living alone, hip replacement patients should be discharged home if home care rehabilitation offers the same outcomes at a lower cost. This recommendation is being addressed by the Total Joint Network.
- **Standardize the model of care to achieve equitable access to best care:** Given the differences in admission, discharge, and change in FIM scores and lengths of stay between different types of hospital groups, best practices for hip replacement rehabilitation should be shared across hospital

<sup>50</sup> Goals are individually determined.

groups so that everyone achieves optimal outcomes. This recommendation is being addressed by the Total Joint Network.

- **Identify and track appropriate outcome measures:** Given that only five elements in the FIM data set change more than two points for hip replacement patients, completing the entire FIM dataset for hip replacement patients may be sub-optimal. Furthermore, given that rehab goals are almost always achieved but not documented, rehabilitation providers should come to consensus on what the goals of rehabilitation should be for hip replacement patients, link this to outcome measures, and design programs specifically to meet this patient need. A recommendation is made to enter into discussions with CIHI regarding the possibility of a reduced dataset for hip replacement patients.
- **Develop appropriate triage tools:** Given that the proportion of acute care patients receiving inpatient rehab differs across organizations, a standard triage protocol or admission criteria is required. This recommendation is being addressed by the Total Joint Network.
- **Improve the quality and quantity of available hip replacement data:** Given that there is a very large proportion of missing data on hip replacement patients, a recommendation is made to explore coding issues for hip replacement patients.
- **Understand the most appropriate location of care:** Given that the RIWs are similar for patients discharged across different discharge destinations, further exploration should be given to articulating the true difference and purpose of each discharge destination.

#### 4.4 Data and Analysis

*Table 2.1: Distribution of hip replacement patients discharged from acute care in 2002/2003 by hospital group and by age group*

Hospital Group	Age Group			Total
	19-65	66-85	86+	
Acute Care Teaching Hospitals	365	694	43	1102
	33%	63%	4%	30%
Toronto Community Hospitals	178	269	14	461
	39%	58%	3%	12%
GTA/905 Hospitals	950	1153	57	2160
	44%	53%	3%	58%
Total	1493	2116	114	3723
	40%	57%	3%	100%

- There is a total of 3,723 elective hip replacements occurring in the GTA (Table 1).
- Approximately 40% of patients are between the ages of 19-65 years; 57% of patients are between 66-85 years and 3% of patients are over the age of 86.
- There are no statistically significant differences<sup>51</sup> between the different hospital groups on the proportion of patients' in different age groups. The exception is the proportion of patients under the age of 65 at the acute care teaching hospitals.

<sup>51</sup> 95% Confidence Interval

**Table 2.2: Hip replacements acute care average length of stay (ALOS) by discharge disposition in 2002-2003**

	Discharge Disposition	N	%	ALOS Mean <sup>52</sup>	Std Dev
Acute Care Teaching Hospitals	Home with no formal support	218	20	7.8	3.8
Toronto Community Hospitals	“	175	38	6.9	1.7
GTA/905 Hospitals	“	376	17	6.3	3.0
<i>Total</i>	“	769	21	6.8	--
Acute Care Teaching Hospitals	Home with support	131	12	9.4	6.8
Toronto Community Hospitals	“	29	6	7.7	1.5
GTA/905 Hospitals	“	254	12	7.8	6.7
<i>Total</i>	“	414	11	8.22	--
Acute Care Teaching Hospitals	Other type of facility	181	16	7.3	5.2
Toronto Community Hospitals	“	1	0	4.0	--
GTA/905 Hospitals	“	233	11	6.8	3.9
<i>Total</i>	“	415	11	6.91	--
Acute Care Teaching Hospitals	Long-term care	58	5	9.9	8.4
Toronto Community Hospitals	“	25	5	6.8	3.4
GTA/905 Hospitals	“	131	6	7.4	9.0
<i>Total</i>	“	214	5.6	8.01	--
Acute Care Teaching Hospitals	Hospital (acute, rehab, other)	514	47	5.9	3.4
Toronto Community Hospitals	“	231	50	5.3	2.9
GTA/905 Hospitals	“	1166	54	5.6	3.5
<i>Total</i>	“	1911	51	5.66	--

- The discharge abstract database tracks five discharge dispositions: patients sent home without support; home with support; to active care or hospice type facility; long-term care facilities; or other hospital facilities with acute, rehab or complex continuing care beds.
- The percentage of patients discharged to each location are as follows: 51% to another hospital (may include intra-hospital transfer to another ward) that may have rehab, acute or complex continuing care beds; 21% to home without support; 11% home with support; 11% to hospice-type setting; and 6% to long-term care.
- The discharge dispositions do not vary statistically across hospital groups with the exception of the percentage of patients discharged home from the Toronto community hospitals.
- The average lengths of stay for patients by discharge disposition are 6-7 days for patients discharged home, to another facility or to a hospice; and approximately 8 days for discharge to long-term care or home with support. There are no statistically significant differences within the discharge dispositions for different hospital groups.

<sup>52</sup> The total average length of stay represents a weighted average.

**Table 2.3: Resource intensity weights (RIW) for hip replacement patients across different hospital groups and different discharge destinations in 2002/2003**

	Institution to type	N	% of patients within hospital group	Mean	Std Dev
Acute Care Teaching Hospitals	Missing data	217	20%	--	--
Toronto Community Hospitals	"	175	33%	--	--
GTA/905 Hospitals	"	447	21%	--	--
<i>Total</i>	"	839	23%	--	--
Acute Care Teaching Hospitals	General Rehab	692	63%	2.4	0.5
Toronto Community Hospitals	"	264	57%	2.4	0.6
GTA/905 Hospitals	"	1257	58%	2.4	0.5
<i>Total</i>	"	2213	59%	2.4	--
Acute Care Teaching Hospitals	Home Care	135	13%	2.5	1.0
Toronto Community Hospitals	"	20	4%	2.1	0.3
GTA/905 Hospitals	"	206	10%	2.6	1.0
<i>Total</i>	"	361	9%	2.5	--
Acute Care Teaching Hospitals	Chronic Care	14	1%	2.9	1.6
Toronto Community Hospitals	"	0	0%	--	--
GTA/905 Hospitals	"	51	2%	2.8	1.3
<i>Total</i>	"	65	2%	2.8	--
Acute Care Teaching Hospitals	Home for aged	13	1%	2.9	1.5
Toronto Community Hospitals	"	0	0%	--	--
GTA/905 Hospitals	"	7	4%	4.1	2.9
<i>Total</i>	"	20	1%	3.8	--
Acute Care Teaching Hospitals	Nursing Home	13	1%	3.2	1.5
Toronto Community Hospitals	"	2	0%	5.0	4.0
GTA/905 Hospitals	"	16	0%	3.4	1.9
<i>Total</i>	"	31	2%	3.4	--
Acute Care Teaching Hospitals	Special Rehab	17	2%	2.6	1.4
Toronto Community Hospitals	"	0	0%	--	--
GTA/905 Hospitals	"	171	8%	2.5	0.5
<i>Total</i>	"	188	5%	2.3	--

- Resource intensity weights are statistically similar across different types of institutions to which hip replacement patients are discharged. The RIWs range between 2.4 and 2.8.
- Institutions with general rehab receive the most patient transfers from acute care. The RIW ranges between 2.4 and 2.8 across all types of discharge destinations.
- Approximately 23% of the data for RIWs is missing. This percentage is consistent across hospitals but is higher at the Toronto community hospitals.
- There is no clear definition at CIHI to differentiate general and special rehab.<sup>53</sup>

<sup>53</sup> The difference between general and special rehab does not refer to the difference between designated rehabilitation beds in community hospitals and designated rehabilitation beds.

**Table 2.4: Number and proportion of patients in different complexity groupings with a hip replacement across different discharge destinations (839 missing cases) in 2002/2003**

	Complexity Level				Unknown	Total
	1	2	3	4		
General Rehab	1475	406	212	119	1	2213
	67	18	9	5	0	
Chronic Care	31	17	7	10	0	65
	48	26	11	15	0	
Nursing Home	12	4	7	7	1	31
	39	13	23	23	3	
Psychiatric Facility	0	0	0	1	0	1
	0	0	0	100	0	
Other	1	2	1	1	0	5
	20	40	20	20	0	
Special Rehab	68	73	31	16	0	188
	36	39	16	9	0	
Home Care	206	83	47	25	0	361
	57	23	13	7	0	
Home for the Aged	5	6	2	6	1	20
	25	30	10	30	5	
Total	1798	591	307	185	3	2884
	62	20	11	6	0	100

- 63% of patients have no complexities; 33% have a complexity of 2 or 3; 6% have a complexity level of 4; 23% of hip replacement patients have missing data for this element.

**Table 2.5: Hip replacement data from the National Rehabilitation Reporting System in 2002/2003**

Hip Replacements	19-65	66-85	86+	TOTAL
Rehabilitation Centres	256	576	82	914
	28%	63%	7%	55%
Toronto Community Hospitals	44	147	21	212
	21%	69%	10%	12%
GTA/905 Hospitals	0	441	85	526
	0%	84%	16%	36%
TOTAL	300	1164	188	1652
%	18%	70%	11%	100%

- Differences between the proportions of patients in different age groups at the different hospitals are not statistically significant.
- The breakdown of patients by age group across the three hospital groups is 27% under the age of 65, 65% between 66-85 and 8% over the age of 86.

- The Toronto community hospitals receive about 12% of all acute care hip replacement patients and a similar proportion of rehab patients. The GTA/905 hospitals receive about 58% of joint replacements and about 36% of inpatient rehab cases. Therefore, an acute care patient in a GTA/905 hospital may have a greater chance of receiving inpatient rehabilitation.
- The acute care teaching hospitals receive about 30% of joint replacement patients. The rehabilitation centres receive about 52% of rehabilitation cases.

**Table 2.6: FIM admission and discharge scores for hip replacements in 2002/2003**

Hip		19-65	66-85	86+
Rehabilitation Centres	Admission FIM	96	93	80
	Discharge FIM	107	106	90
	<i>Change in Total</i>	<i>11</i>	<i>13</i>	<i>10</i>
Toronto Community Hospitals	Admission FIM	99	94	78
	Discharge FIM	104	96	70
	<i>Change in Total</i>	<i>5</i>	<i>2</i>	<i>-10</i>
GTA/905 Hospitals	Admission FIM	--	89	78
	Discharge FIM	--	98	85
	<i>Change in Total</i>	--	<i>9</i>	<i>6</i>

- The National Rehabilitation Reporting System allows us to track FIM scores upon admission and discharge for each patient and tells us whether or not each patient achieved his or her rehabilitation goals.
- Discharge FIM vary widely across age and hospital groups. The average FIM change at the rehabilitation centres ranges between 10-13 depending on the age group. The FIM change from admission to discharge is 2 to -8 at the Toronto community hospitals and 7-9 at the GTA/905 community hospitals.
- We do not have a sense of the clinical significance of FIM changes. We were not able to calculate the statistical significance of the differences between organizations.

**Table 2.7: Average rehabilitation length of stay for hip replacement patients in 2002/2003**

Hip replacement	19-65	66-85	86+
Rehabilitation Centres	22	24	32
Toronto Community Hospitals	9	11	19
GTA/905 Hospitals	--	14	21

## 5.0 HIP FRACTURES

### 5.1 Introduction

Unlike the joint replacement landscape, the hip fracture landscape is yet untouched in many respects. Hip fracture patients challenge our current paradigm of care. They may not always be the patient who is active, participatory, cognitively able and ready for rehabilitation. These patients experience a traumatic event and then experience 4 to 6 weeks within the healthcare system. Providers will then have a short period of time to equip the patient to have the best possible outcomes and quality of life upon their return to the home or community. About 6% of hip fracture patients actually die in hospital and over 30% are over the age of 86. Given the movement away from simple joint replacement inpatient rehabilitation, the hip fracture population presents a very important opportunity to develop programs and services to suit unique population needs.

The first part of this chapter provides a quick overview of the facts and figures from the data and analysis, the second part provides recommendations based on the data analysis and the third part provides a more detailed overview of the data.

### 5.2 Facts and Figures about Hip Fractures (2002-2003)

#### *Acute Care*

- The total complement of acute care hip fracture patients:** The total number of acute care hip fracture patients without hip replacements in the GTA in 2002-2003 was 1,914.<sup>54</sup> The acute care teaching hospitals saw about 40% of all cases, the Toronto community hospitals, 17% of all cases and the GTA/905 community hospitals about 41%. The total complement of hip fracture patients with joint replacements was 913 cases, which means that approximately half of the patients receive operative procedures and the other half will receive a form of total hip arthroplasty procedure. The distribution across hospital groups is the same as for hip fracture patients without joint replacements.
- The age distribution of acute care hip fracture patients:** Across the total complement of GTA hip fracture patients, approximately 33% are over the age of 86, 53% are between the ages of 66-85 and 13% are between 19-65. These figures remain consistent for each of the rehabilitation centre, Toronto community hospital and GTA/905 hospital groups individually. For hip fracture patients without a joint replacement, the distribution across age groups is 60% between the ages of 66-85 and 34% over the age of 86 and 6% between 19-65.
- The discharge disposition of acute care hip fracture patients:** For hip fracture patients who did not have a joint replacement, 46% are discharged to another facility, 26% go to long-term care, 16% go home without formal support<sup>55</sup> and 7% go home with support. The discharge dispositions of hip fracture patients with a joint replacement are similar except that a slightly higher percentage are discharged to another facility and a lower percentage are discharged home without formal support.
- Acute care lengths of stay (LOS) for acute care hip fracture patients:** The lengths of stay for each of the discharge destination for hip fracture patients are as follows: 9.2 days for patients discharged to another facility with inpatient rehabilitation; 11.3 days for patients discharged to long-term care; 11 days for patients discharged home without formal support; and 13-15 days for patients discharged home with formal support. The ranges are similar for hip fracture patients with replacements.

<sup>54</sup> This does not include atypical cases.

<sup>55</sup> Throughout this report, formal support is used to refer to services that are delivered by a publicly funded provider.

- **Resource Intensity Weights (RIWs)<sup>56</sup> of hip fracture patients:** The RIWs are the same across nearly all discharge destination groups, ranging mostly from between 2.4 and 2.5. However, about 30% of data is missing for RIWs and discharge destinations, with most of this being from the acute care teaching hospitals.
- **Complexity of hip fracture (Plx)<sup>57</sup> patients:** Approximately 25% of acute care hip fractures, with or without replacements, are in the two highest complexity levels. When examined across rehabilitation, nursing home settings, and home care services are the most frequent referral sources with 56% going to rehab, 26% going to long-term care (16% going to nursing homes; 10% going to homes for the aged).

### ***Inpatient Rehabilitation (2002-2003)***

- **The total complement of inpatient rehabilitation hip fracture cases:** There were a total of 1,016 inpatient rehabilitation hip fracture cases in 2002-2003. Forty-three percent of these cases are seen at the rehabilitation centres; 25% are seen at the Toronto community hospitals; and 33% are seen at the GTA/905 community hospitals. These figures are similar to the distribution of acute care patients.
- **Age distribution of inpatient rehabilitation cases:** Approximately 37% are over the age of 86; 56% are between the ages of 66-85; and 8% are under the age of 65. This is very similar to the distribution of acute care cases.
- **Admission FIM for hip fracture patients:** Admission FIM scores appear to vary across different age groups but remain similar across hospital groups. For the 86+ age group, the average admission FIM scores range between 71 and 78. For the 66-85 age group, the average admission FIM scores range between 81 and 85. For the 19-65 age group, the average admission FIM scores range between 88 and 90. The cognitive FIM scores are similar across all age groups.
- **Discharge FIM and FIM changes for hip fracture patients:** Discharge FIMs and average changes appear to vary across hospital groups and somewhat across age groups. Generally, patients over the age of 66 benefit most in terms of the change in their FIM scores. Patients discharged from the rehabilitation centres experience a FIM change of 5-16 points. At the Toronto community hospitals, the FIM change is negative for patients aged 86+ or under the age of 86 but increases by 4 points for patients between the ages of 19-66. At the GTA/905 hospitals, the average FIM change ranges between 5-11 points depending on age group.
- **FIM elements that improve from admission to discharge for hip fracture patients by more than two points include:** dressing lower body, locomotion, locomotion-stairs and transfer-shower.
- **Hip fracture inpatient rehabilitation length of stay:** The rehabilitation length of stay is 11-14 days at the Toronto community hospitals. The inpatient rehabilitation length of stay for hip fractures was 22 to 28 days at rehabilitation centres. At the GTA/905 community hospitals, the length of stay is 10-14 days for patients under the age of 85, but 28 days for patients 86 and over.

<sup>56</sup> Resource intensity weights (RIW) describe the complexity of the patient by combining age, complexity ranking, and resource utilization of the patient.

<sup>57</sup> Complexity (Plx) is a data element that is calculated by CIHI to categorize patients into one of four groups. Its use is controversial because of the calculation and interpretation methodology.

### 5.3 Recommendations for Hip Fracture Patients

- **Reconsider philosophy of care considerations for hip fracture population:** Given that over 1/3 of the hip fracture population is over the age of 86, the goals, outcomes, and philosophy of care for the hip fracture population needs to be explored to ensure that supply of services is appropriate for this group.
- **Explore the needs of complex rehabilitation patients:** Given that the chronic care hospitals (29%) and homes for the aged (17%) have the highest proportion of complexity group 4 patients with a hip fracture, exploring the rehabilitation needs of this population should take place alongside exploration of the system capacity available to manage this population.
- **Develop standard care pathways for hip fracture patients:** Given that approximately 50% of all patients have no complexities, standard rehabilitation care pathways for hip fracture patients should be developed to reduce length of stay, articulate outcomes and measures, and create capacity for patients with more complex medical needs.
- **Explore the use of alternative outcome measurement tools:** Given that not all FIM elements appear to change very much for hip fracture patients, consideration should be given as to whether or not the FIM tool is the most appropriate measure for hip fracture rehabilitation patient outcomes; and whether it is effective to complete an assessment for each of the eighteen elements for the FIM tool.
- **Ensure there are sufficient supports for informal caregivers:** Given that nursing and home making support are the two most important CCAC services for this group and given that the ratio of female to male patients receiving home care services is approximately 1:4, there may be a larger proportion of females fulfilling the role of informal caregiver. Sufficient social supports should be in place for this population group that is carrying a burden of care.

### 5.4 Data and Analysis

*Table 3.1a: Number and distribution of hip fracture patients with a hip replacement across hospital and age groups in 2002/2003*

	19-65	66-85	86+	Total
Acute Care Teaching Hospitals	25	217	135	377
	7%	58%	36%	41%
Toronto Community Hospitals	8	96	50	154
	5%	62%	32%	17%
GTA/905 Hospitals	22	235	125	382
	6%	62%	33%	42%
Total	55	548	310	913
	6%	60%	34%	100%

**Table 3.1b: Distribution of hip fracture patients without a hip replacement by age group across different hospital groupings in 2002/2003**

	<b>19-65</b>	<b>66-85</b>	<b>86+</b>	Total
Acute Care Teaching Hospitals	103	428	267	798
	<i>13%</i>	<i>54%</i>	<i>34%</i>	<i>42%</i>
Toronto Community Hospitals	40	182	112	334
	<i>12%</i>	<i>55%</i>	<i>34%</i>	<i>17%</i>
GTA/905 Hospitals	114	409	259	782
	<i>15%</i>	<i>52%</i>	<i>33%</i>	<i>41%</i>
Total	257	1019	638	1914
	<i>13%</i>	<i>53%</i>	<i>33%</i>	<i>100%</i>

- Approximately 33% of all hip fracture patients are over the age of 86, 53% are between 66-85 and 13% are between 19-65.
- Similar numbers of hip fracture patients are seen at the 905 and acute care teaching hospitals.
- As expected, we see a small percentage of hip fracture patients between the age of 19-65 getting a hip replacement after fracture in order to preserve the natural joint.
- Across all hospital groups, there is approximately 33% of patients with hip fracture getting a hip replacement that are over the age of 86, approximately 60% who are between the ages of 66-85 and only 6% who are under the age of 65.

**Table 3.2a: Average acute care length of stay for patients with hip fracture (without replacement) across different hospital groups and discharge destinations (2002-2003)**

	<b>Discharge Disposition</b>	<b>N</b>	<b>%</b>	<b>ALOS</b>	<b>Std Dev</b>
Acute Care Teaching Hospitals	Hospital (acute, rehab, other)	306	38%	10.0	7.2
Toronto Community Hospitals	“	171	51%	9.2	5.1
GTA/905 Hospitals	“	328	42%	8.4	6.3
<i>Total</i>	“	805	42	9.17	
Acute Care Teaching Hospitals	Long Term Care	201	25%	11.5	7.9
Toronto Community Hospitals	“	94	28%	12.5	10.3
GTA/905 Hospitals	“	202	26%	10.5	8.3
<i>Total</i>	“	497	26	11.28	--
Acute Care Teaching Hospitals	Home without formal support	147	18%	11.8	8.3
Toronto Community Hospitals	“	57	17%	10.7	8.7
GTA/905 Hospitals	“	109	14%	9.8	8.7
<i>Total</i>	“	313	16	10.9	
Acute Care Teaching Hospitals	Home with support	55	7%	13.3	9.9
Toronto Community Hospitals	“	12	4%	14.3	6.9
GTA/905 Hospitals	“	73	9%	13.3	11.8
<i>Total</i>	“	140	7	13.4	
Acute Care Teaching Hospitals	Other type of facility	89	11%	13.9	9.7
Toronto Community Hospitals	“	0	0	0	
GTA/905 Hospitals	“	70	9%	16.0	12.3
<i>Total</i>	“	159	8	--	--

- Approximately 42% of patients are discharged to another hospital after an ALOS of 9 days; 26% of patients are discharged to a long-term care facility with an ALOS of 11 days; 7% of patients are discharged home with support after ALOS of 13 days; 16% are discharged home after 11 days; and 13% are discharged to another type of facility after ALOS of 14 days. There are no statistically different values across hospitals.

**Table 3.2b: Average acute care length of stay across different hospital groups and discharge destinations for patients with hip fracture and hip replacement (2002-2003)**

Type of Hospital	Discharge Destination	N	%	ALOS	S.D.
Acute Care Teaching Hospitals	Hospital (acute, rehab other)	162	43%	10.6	7.4
Toronto Community Hospitals	“	99	64%	9.9	7.0
GTA/905 Hospitals	“	160	42%	8.2	4.8
<i>Total</i>	“	<i>421</i>	<i>46%</i>	<i>9.5</i>	
Acute Care Teaching Hospitals	Long Term Care	98	26%	12.2	9.4
Toronto Community Hospitals	“	30	19%	9.6	6.1
GTA/905 Hospitals	“	123	32%	12.4	10.5
<i>Total</i>	“	<i>251</i>	<i>27%</i>	<i>12</i>	
Acute Care Teaching Hospitals	Home - formal support	20	5%	16.4	11.4
Toronto Community Hospitals	“	6	4%	14.8	13.5
GTA/905 Hospitals	“	30	8%	15.9	11.3
<i>Total</i>	“	<i>56</i>	<i>6%</i>	<i>15.9</i>	
Acute Care Teaching Hospitals	Home - no formal support	50	13%	12.4	7.2
Toronto Community Hospitals	“	18	12%	8.4	5.4
GTA/905 Hospitals	“	25	7%	12.4	9.2
<i>Total</i>	“	<i>93</i>	<i>10%</i>	<i>11.6</i>	
Acute Care Teaching Hospitals	Other type of care	47	12%	12.1	6.9
Toronto Community Hospitals	“	1	1%	3.0	--
GTA/905 Hospitals	“	44	12%	14.3	9.1
<i>Total</i>	“	<i>92</i>	<i>10%</i>	<i>13.1</i>	

- The patterns for hip fracture patients with replacements are very similar to hip fracture patients who do not have replacements both in terms of length of stay and in terms of the percentage of patients sent to each discharge location.

**Table 3.3a: Resource intensity weights (RIW) for hip fracture patients without replacements across different hospital groups and different discharge destinations in 2002/2003**

	Type of Facility	N	%	RIW	S.D.
Acute Care Teaching Hospitals	Missing data	148	44%	--	--
Toronto Community Hospitals	“	49	51%	--	--
GTA/905 Hospitals	“	33	39%	--	--
<i>Total</i>	“	<i>230</i>	<i>12%</i>		
Acute Care Teaching Hospitals	General Rehab <sup>58</sup>	349	44%	2.4	0.9
Toronto Community Hospitals	“	196	51%	2.4	0.9
GTA/905 Hospitals	“	306	39%	2.7	1.1
<i>Total</i>	“	<i>851</i>	<i>44%</i>	<i>2.5</i>	
Acute Care Teaching Hospitals	Nursing home	120	15%	2.6	1.2
Toronto Community Hospitals	“	43	11%	2.2	0.6
GTA/905 Hospitals	“	95	12%	2.7	0.9
<i>Total</i>	“	<i>258</i>	<i>13%</i>	<i>2.6</i>	
Acute Care Teaching Hospitals	Home for aged	57	7%	2.6	1.0
Toronto Community Hospitals	“	16	4%	2.7	1.1
GTA/905 Hospitals	“	58	7%	2.7	1.0
<i>Total</i>	“	<i>131</i>	<i>7%</i>	<i>2.66</i>	
Acute Care Teaching Hospitals	Home Care	55	7%	2.6	2.5
Toronto Community Hospitals	“	6	2%	1.9	0.3
GTA/905 Hospitals	“	61	8%	2.5	1.1
<i>Total</i>	“	<i>122</i>	<i>6%</i>	<i>2.51</i>	
Acute Care Teaching Hospitals	Chronic care	44	6%	3.2	2.8
Toronto Community Hospitals	“	22	6%	3.7	3.7
GTA/905 Hospitals	“	84	11%	3.5	2.7
<i>Total</i>	“	<i>150</i>	<i>8%</i>	<i>3.4</i>	

- RIWs exhibit a large standard deviation. However, the data shows RIWs range mostly from 2.2 to 2.8. They may be slightly higher for patients discharged to chronic care.

<sup>58</sup> This percentage may be larger than the total proportion of patients sent to “other facility” in the previous table because they are coded separately and because the latter may contain data for patients from outside of the region.

**Table 3.3b: Resource intensity weights (RIW) for hip fracture patients with replacements across different hospital groups and different discharge destinations in 2002/2003**

Type of Hospital		N	%	RIW	SD
Acute Care Teaching Hospitals	Missing data	321	10%	--	--
Toronto Community Hospitals	“	142	41%	--	--
GTA/905 Hospitals	“	208	32%	--	--
<i>Total</i>	“				
Acute Care Teaching Hospitals	General rehab	193	51%	2.7	0.8
Toronto Community Hospitals	“	107	69%	2.6	1.0
GTA/905 Hospitals	“	162	42%	2.9	0.8
<i>Total</i>	“	462	50%		
Acute Care Teaching Hospitals	Nursing home	47	12%	2.9	1.4
Toronto Community Hospitals	“	18	12%	2.5	0.8
GTA/905 Hospitals	“	64	17%	3.3	1.1
<i>Total</i>	“	129	14%		
Acute Care Teaching Hospitals	Special rehab	6	2%	2.4	0.3
GTA/905 Hospitals	“	27	7%	3.1	0.7
	“	33	4%	2.9	
Acute Care Teaching Hospitals	Home for aged	38	10%	2.8	0.9
Toronto Community Hospitals	“	7	5%	2.3	0.2
GTA/905 Hospitals	“	26	7%	2.9	1.0
<i>Total</i>	“	71	8%		
Acute Care Teaching Hospitals	Home care	21	6%	3.0	1.2
Toronto Community Hospitals	“	3	2%	3.7	2.7
GTA/905 Hospitals	“	26	7%	3.8	3.4
<i>Total</i>	“	50	5%		
Acute Care Teaching Hospitals	Chronic care	12	3%	4.6	4.8
Toronto Community Hospitals	“	7	5%	2.7	0.5
GTA/905 Hospitals	“	46	12%	3.7	2.7
<i>Total</i>	“	65	5%		

- Approximately 50% of patients are discharged to general rehabilitation; about 15% to a nursing home setting; 5% to home care; and 5% to chronic care. The RIWs vary within and across discharge destinations by hospital group. There is a large proportion of missing data.

**Table 3.4a: Complexity levels (numbers and percentages) of hip fracture patients without replacements who are discharged to different locations in 2002/2003**

	Complexity Level (1 is low; 4 is high; 9 is unknown)					
	1	2	3	4	Unknown	Total
General Rehab	451	203	93	98	6	851
	53	23.85	10.93	11.52	0.71	
Chronic Care	49	32	24	44	1	150
	32.67	21.33	16	29.33	0.67	
Nursing Home	128	65	32	32	1	258
	49.61	25.19	12.4	12.4	0.39	
Psychiatric Facility	0	2	0	0	0	2
	0	100	0	0	0	
Other	8	4	1	2	0	15
	53.33	26.67	6.67	13.33	0	
Special Rehab	30	22	5	10	2	69
	43.48	31.88	7.25	14.49	2.9	
Home Care	65	21	16	18	2	122
	53.28	17.21	13.11	14.75	1.64	
Home for the Aged	69	21	18	22	1	131
	52.67	16.03	13.74	16.79	0.76	
Total	800	370	189	226	13	1598
	50.06	23.13	11.88	14.13	0.81	100

- Chronic care hospitals (29%) and homes for the aged (17%) have the highest proportion of complexity group 4 patients.
- Approximately 50% of all patients have no complexities; 23% fit into category 2; 12 fit into category 3; and 14 fit into category 4.
- Specialty rehab and home care rehab have a similar proportion of patients in the highest complexity group. General rehab is slightly lower.

**Table 3.4b: Number and proportion of patients in different complexity groupings with both a hip fracture and a hip replacement across different discharge destinations in 2002/2003**

	Complexity Level (1 is low; 4 is high; 9 is unknown)					
	1	2	3	4	9	
General Rehab	243	103	57	58	1	462
	53%	22%	12%	13%	0%	56%
Chronic Care	18	17	11	19	0	65
	28%	26%	17%	29%	0%	8%
Nursing Home	56	27	16	27	3	129
	43%	21%	12%	21%	2%	16%
Psychiatric Facility	3	1	0	0	0	4
	75%	25%	0%	0%	0%	0%
Other	2	0	1	2	0	5
	40%	0%	20%	40%	0%	1%
Special Rehab	9	10	11	3	0	33
	27%	30%	33%	9%	0%	4%
Home Care	22	10	3	15	0	50
	44%	20%	6%	30%	0	6%
Home for the Aged	39	15	7	10	0	71
	55%	21%	10%	14%	0	9%
Total	392	183	106	134	4	819
	48%	22%	13%	16%	0.5%	100%

- The complexity patterns for hip fracture patients with replacement are similar to those for hip fractures alone.

**Table 3.5: Number of inpatient rehabilitation hip fracture cases in 2002/2003**

Fracture	19-65	66-85	86+	TOTAL
Rehabilitation Centres	30	213	182	425
	7%	56%	38%	42%
Toronto Community Hospitals	13	165	78	256
	6%	65%	29%	26%
GTA/905 Hospitals	42	174	116	332
	13%	53%	35%	32%
TOTAL	85	552	376	1,013

- There are 1,013 hip fracture patients who did not have a replacement in the National Rehabilitation Reporting System database. The distribution of patients by age group is similar across all three hospital types.

**Table 3.6: FIM admission, discharge and FIM<sup>59</sup> change scores for hip fracture patients (2002-2003)**

Hospital	FIM	19-65	66-85	86+
Rehabilitation Centres	Admission FIM	90	85	78
"	Discharge FIM	95	101	91
	<i>CHANGE</i>	5	16	13
Toronto Community Hospitals	Admission FIM	90	85	76
	Discharge FIM	88	77	72
	<i>CHANGE<sup>60</sup></i>	-2	-8	-4
GTA/905 Hospitals	Admission FIM	88	81	71
	Discharge FIM	98	92	76
	<i>CHANGE</i>	10	11	5

- FIM scores at admission and discharge range between -4 and 16 points.
- Admission FIM is consistently about 88-90 for 19-65 year olds; 81-85 for 66-85 year olds; and 71-78 for 86+ age group.
- Discharge FIMs vary greatly across hospital groups. This may reflect potential for discussing best practice and the optimal design of a rehabilitation program. It may also reflect differences in lengths of stay which should be discussed.
- Five FIM elements (locomotion, locomotion stairs, dressing lower body, transfer shower, and transfer bed change) change the most.
- We do not know numerically what constitutes a clinically/functionally significant FIM Change

**Table 3.7: Length of stay for hip fracture patients (2002-2003)**

	19-65	66-85	86+
Rehabilitation Centres	27	22	28
Toronto Community Hospitals	13	11	14
GTA/905 Hospitals	10	14	28

- The length of stay (mode) for hip fracture patients is about 28 days for 86+ age group at the rehabilitation centres and GTA/905 hospitals; but closer to 14 days at the Toronto community hospitals.

<sup>59</sup> The FIM tool is an 18-item ordinal scale, used for assessment of progress during inpatient rehabilitation.

<sup>60</sup> The negative FIM change findings could relate to problems with the data collection.

## 6.0 COMMUNITY CARE ACCESS CENTRE UTILIZATION DATA FOR TORONTO

### 6.1 Introduction

This section of the report focuses on utilization data from the community care access centres of Toronto.<sup>61</sup> In this dataset, the number of cases relating to client admission, units of service, number of clients receiving a particular CCAC service and demographic distribution is reviewed. As per the other sections the data is summarized and is followed by a series of specific recommendations.

### 6.2 Facts and Figures about Utilization of CCAC Services in Toronto (2003-2004)

- There were approximately 251 new clients admitted in 2003-2004 for CCAC services. Nearly 70% of these were hip fracture patients.
- Over 50% of total clients receive physiotherapy, 26% of patients receive nursing care and 20% of patients receive occupational therapy.
- Homemaking, nursing and physiotherapy make up a large proportion of the units of service offered by the CCAC.
- It appears that a much larger proportion of female to males are receiving home care services. This could be for a variety of reasons including male access to inpatient care or partners or family members providing an informal caregiver role for men.
- The 86+ population group accounts for 22% of clients admitted, while the 66-85 year old population accounts for 65% of clients. This is consistent with the overall distribution of acute care hip fracture patients.

### 6.3 Recommendations

- Given the change in the total joint replacement landscape to send more patients home with support after acute care, studies should be undertaken to determine the resource requirements of the community care access centres for accommodating this new patient group.
- Given disparities between the quantity of services received by men and women, a study should be undertaken to ensure equitable access to home care services and to ensure that there is not an undue informal caregiver burden.
- Given that only 50% of clients appear to receive nursing or physiotherapy, exploration should be conducted to determine what the service offering should be for hip fracture and joint replacement patients in order to ensure that rehabilitation outcomes are being achieved.
- Given that the nature of the data collected for the CCAC description differs in both coding and availability from data for rehab and acute care, consideration should be given to a cross continuum dataset.

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<sup>61</sup> The GTA Rehab Network acknowledges the Etobicoke-York CCAC for its leadership in obtaining this data.

## 6.4 Data and Analysis

**Table 4.1: The number of clients admitted per fiscal year and diagnosis group**

	2003-2004	2004-2005
Knee Replacements	29	35
Hip Replacements	48	52
Hip Fractures	177	167
<i>Total</i>	<i>251</i>	<i>254</i>

- There were approximately 251 new clients admitted in 2003-2004 for CCAC services. Nearly 70% of these were hip fracture patients.

**Table 4.2: Services admitted to clients per fiscal year for all hip fracture and joint replacement clients**

		2003-2004	2004-2005
Without services	Units (percent of units)	-	-
	Clients (percent of clients)	27	24
Homemaking	Units (percent of units)	3,448 (59%)	3,300 (53%)
	Clients (percent of clients)	132 (53%)	135 (53%)
Laboratory	Units (percent of units)	178 (3%)	95 (2%)
	Clients (percent of clients)	25 (10%)	21 (8%)
Nursing	Units (percent of units)	1,164 (20%)	1,522 (25%)
	Clients (percent of clients)	66 (26%)	81(32%)
Nutrition	Units (percent of units)	5	27 (0.5%)
	Clients (percent of clients)	2	5 (2%)
Occupational Therapy	Units (percent of units)	163 (3%)	203 (3%)
	Clients (percent of clients)	50 (20%)	51 (2%)
Physiotherapy	Units (percent of units)	930 (16%)	1,027 (17%)
	Clients (percent of clients)	149 (59%)	162 (64%)
Speech Pathology	Units (percent of units)	-	1
	Clients (percent of clients)	-	1
Social Work	Units (percent of units)	-	12
	Clients (percent of clients)	-	4
Total	Units (percent of units)	5,888 (100%)	6,187
	Clients (percent of clients)	251	254

- Over 50% of clients receive physiotherapy; 26% of patients receive nursing care; and 20% of patients receive occupational therapy.
- Homemaking, nursing and physiotherapy make up a large proportion of the units of service offered by the CCAC.

*Table 4.3: CCAC clients admitted by fiscal year, distribution by sex*

	FY 2003-2004			FY 2004-2005		
	Female	Male	Total	Female	Male	Total
22-65	59%	15%	29	55%	45%	33
66-85	73%	27%	164	76%	24%	176
86 +	75%	25%	57	78%	22%	45
Total	180	71	251	187	67	254

- It appears that a much larger proportion of female to males are receiving home care services. This could be for a variety of reasons including male access to inpatient care or partners or family members providing an informal caregiver role for men.

*Table 4.4: CCAC clients admitted by fiscal year, distribution by age group*

	FY 2003-2004			FY 2004-2005		
	Female	Male	Total	Female	Male	Total
22-65	9%	17%	12%	10%	22%	13%
66-85	67%	62%	65%	72%	63%	69%
86+	24%	20%	22%	19%	15%	18%
Total	180	71	251	187	67	254

- The 86+ population group accounts for 22% of clients admitted, while the 66-85 year old population accounts for 65% of clients. This is consistent with the overall distribution of acute care hip fracture patients.

## 7.0 SUPPLY OF INSTITUTIONAL MUSCULOSKELETAL SERVICES IN THE GTA

### 7.1 Introduction

An analysis of musculoskeletal rehabilitation supply information for 2004/2005 was conducted using *Rehab Finder*, a product of the GTA Rehab Network. *Rehab Finder* is a publicly available database which contains information on all of the publicly funded rehabilitation programs at Network member organizations.

The data in this report has been grouped according to three hospital groupings:

- 1) **Rehabilitation Centres:** Free-standing hospitals with rehabilitation and some with complex continuing care beds.
- 2) **Toronto Community Hospitals:** Community hospitals in the City of Toronto that have rehab and acute care beds within their own facilities.
- 3) **GTA/905 Community Hospitals:** Community hospitals in the GTA/905 area that have rehab and acute care beds within their own facilities.

The types of information contained in this section include:

- Availability of services for musculoskeletal rehab
- Geographic distribution of beds, LOS, and capacity
- Distribution of beds relative to the number of acute care cases
- Beds available for internal and external referrals
- MSK program goals
- Weight bearing status, rehab potential, medical stability, tolerance
- Special needs

It is important to recognize that in addition to the rehabilitation care occurring in musculoskeletal programs, much musculoskeletal rehabilitation is occurring in complex continuing care and geriatric beds which is not included here. In addition, this supply inventory does not include services provided by the Community Care Access Centres.

### 7.2 Facts and Figures about Supply of MSK Services in the GTA

- **Program nomenclature and system planning:** *Rehab Finder* allowed us to quantify and describe general and musculoskeletal specific inpatient beds. However, due to the organization of programs serving musculoskeletal patients in the Greater Toronto Area, it was not possible to differentiate programs for joint replacement and hip fracture programs from general musculoskeletal rehab programs.
- **Conceptualization of programs serving the MSK population:** At the Toronto community hospitals and GTA/905 hospitals, most organizations have general rehab beds and take MSK patients within those beds. Within their admission criteria they may or may not refer to joints and fractures. At the rehabilitation centres, more hospitals specify that their programs take hip fractures and joint replacements specifically. Two of the six GTA/905 community hospitals indicate that their program takes complex patients.
- **Number of beds used for MSK rehabilitation and implied capacity:** At the GTA/905 hospitals, up to 206 general beds are used for MSK rehab. This represents space for a maximum of nearly 3,000 patients using a high median length of stay. At the Toronto community hospitals, up to 88 general beds are used for musculoskeletal rehabilitation and an additional 54 beds are used only for MSK. This represents space for a maximum of approximately 2,600 patients using the maximum length of

stay, in one year. At the rehabilitation centres, 271 beds are used for musculoskeletal rehabilitation. This represents space for approximately 3,000 patients using a maximum length of stay.

- **Length of stay:** Length of stay is longest at the rehabilitation centres, followed by the GTA/905 hospitals and the Toronto community hospitals.
- **Open and closed models of care (referral sources):** The rehabilitation centres and the GTA/905 hospitals take external referrals. For the most part, the Toronto community hospitals only accept internal referrals. This is to say that only acute care patients within the organization are admitted to the organizations designated inpatient rehabilitation beds.
- **Description of program goals:** Different organizations describe their rehabilitation program goals differently. There is no standard for describing goals or measuring their achievement.
- **Definition of medical stability:** Most hospitals require patients to be medically stable before being admitted to a rehabilitation program. The definition of medical stability in *Rehab Finder* is that a clear diagnosis has been established; at the time of discharge from acute care, acute medical issues have been addressed; disease processes and or impairments do not preclude participation; patient's vital signs are stable; there are no undetermined medical issues; and medication needs have been determined.
- **Weight bearing requirements:** Weight bearing admission requirements differ across organizations. Both weight bearing and non-weight bearing exercises have been shown to equally improve mobility, gait, and functional performance in the elderly with hip fracture. Tolerance also varies across programs and organizations.
- **Special needs available for musculoskeletal rehabilitation programs:** The special needs that were considered most relevant for MSK included: peripheral IV, PICC, tracheostomies, oxygen continuous and intermittent, indwelling catheters, non weight bearing, traction, wandering and behaviour issues, specialized wound care, CPM machines, and changing pressure beds.

### 7.3 Recommendations

- **Establish common descriptors and conceptualizations of programs for MSK rehab:** Given the non-standardized manner in which MSK rehab programs are described in the Greater Toronto Area, standard language and streaming of programs is necessary to differentiate complex MSK patients and programs from those MSK programs and services for elective hips and knees.
- **Naming of MSK programs:** Given that the organization of programs serving musculoskeletal patients in the Greater Toronto Area are not differentiated by joint replacement and hip fracture programs from general musculoskeletal rehab programs, it is recommended that a common nomenclature be developed to conceptualize MSK programs in a manner that can be matched to major population groups.
- **Goals in rehabilitation:** Given that a number of goals for rehabilitation are expressed using *Rehab Finder*, the group recommended an initiative to develop standards for describing MSK program goals.
- **Review capacity and use of available designated rehab beds in the system:** Given the number of musculoskeletal beds in the system, and the work of the Total Joint Network, many beds for simple joint replacements would need to be transitioned to other populations or ultimately; we will change the sizing of the system. On the one hand, specialization may have risks of creating silos that patients would not fit into properly. A more general model enables accommodation of individuals that don't

fit. On the other hand, a more specialized model may enable more focused, evidence based care that can be measured and managed more effectively.

- **Location of services:** Given the distribution of programs and services, consideration needs to be given to the tension between proximity and quality of care.
- **Explore the delivery of hip fracture rehabilitation in settings other than rehabilitation:** Given that hip fracture patients may be treated in specialized geriatric programs, the GTA Rehab Network should connect with the Regional Geriatric Program concerning the types of rehabilitation services being offered to geriatric hip fracture patients. Work is required in the area of improving quality of life for hip fracture patients.
- **Guidelines for length of stay:** Given disparities in length of stay across different organizations, guidelines for length of stay should be developed to reflect clinical practice as well as to guide funding. To do this, there would need to be clarity around the nature of each of the client groups for which guidelines were developed. Benchmarks for length of stay from the Toronto Joint Network should be adapted for all joint replacement patients and similar work should be done in the area of hip fracture care. Benchmarks for length of stay need to be determined based on best available evidence if it is available.
- **Distribution of beds relative to number of cases:** Given the number of acute care patients and the number of designated rehabilitation beds being used for MSK rehab, further exploration should be given to the number of beds dedicated to MSK rehab relative to the number of cases.
- **Beds available to internal and external referrals:** Given that *Rehab Finder* enabled the differentiation of beds that are available for external referrals from those that are restricted for use by acute care patients from within the facility, the service delivery model as it refers to open access vs. closed access system should be reviewed.
- **Centres of excellence and best practices:** Given the current distribution of MSK services, a recommendation was made that further exploration should be given to the development of clusters of care or centres of excellence; similar to what occurs in a regional model. This may include consolidating different types of care in certain centres. Such consideration should include the Community Care Access Centres.
- **Weight bearing orders:** A literature review was recommended on the development of weight bearing orders so that these may be standardized across the system.
- **Rehabilitation potential for patients with hip fracture:** Given the broad use of the term rehab potential, rehabilitation potential needs to be clearly defined since anyone that can learn often is considered a candidate. The problem is that there is a large percentage of hip fracture patients who may have issues with dementia or cognition that may preclude them given this definition. They may however benefit from rehabilitation.
- **Explore the meaning and availability of complex rehabilitation programs:** Given that very few programs indicate that they admit complex patients, a study should be conducted to identify the scope and sizing and components of complex MSK programs. This study showed that the specialty rehab had the greatest proportion of highly complex patients when compared to general rehab, complex continuing care, or homes for the aged. As such, an initiative should be undertaken to describe a complex rehab infrastructure so that programming may be developed to address the needs of complex patients and so that we have a better understanding of specialty rehab. It was felt that in order to

identify the extent to which special needs are addressed within programs we need to have some mechanism to track and count the number of patients that present with these requirements.

- **Medical stability, weight bearing orders, and tolerance in rehabilitation programs:** Given that most hospitals require patients to be medically stable before being admitted to a rehabilitation program, the use of medically stable as it applies to MSK rehabilitation is required. A definition has been developed by the GTA Rehab Network's ALC Task Group and should be adapted. Weight bearing requirements also differ across organizations and that both weight bearing and non-weight bearing exercises have been shown to equally improve mobility, gait, and functional performance in the elderly with hip fracture, weight bearing descriptions and requirements need to be reassessed for various programs. Finally, given that tolerance also varies across programs and organizations further discussion need to ensure on the appropriate level of tolerance for hip fracture and joint replacement patients as it will impact the complexity and length of stay in rehabilitation.

#### 7.4 Data and Analysis

**Table 5.1: Number of hospitals using various descriptors of MSK programs by population subgroup in their program descriptions on Rehab Finder (some programs use more than one descriptor)**

Type of Hospital	General	Geriatric	MSK	Joints	Fractures	Complex
Rehabilitation Centres n=6	0	1	5	4	3	2
Toronto Community Hospitals n=8	3	0	4	3	3	0
GTA/905 Hospitals n=6	5	0	1	0	0	2

- Hip fracture, knee replacement and hip replacement rehabilitation population groups make up the three largest inpatient rehabilitation groups both in MSK and across all rehab.<sup>62</sup>
- Due to the organization of programs serving musculoskeletal patients in the GTA, it was not possible to differentiate programs for joint replacement and hip fracture programs from general musculoskeletal rehab programs. Most organizations have general rehab beds and take MSK patients within those beds. Within their admission criteria they may or may not refer to joints and fractures.
- Two of the six GTA/905 community hospitals indicate that their program takes complex patients.
- At the rehabilitation centres, more hospitals specify that their programs take hip fractures and joint replacements specifically.

**Table 5.2: Summary of bed numbers, length of stay and estimated bed capacity (Rehab Finder, 2005)**

Organization	General Beds for MSK	MSK Specific beds	LOS low Median (days)	LOS high Median (days)	Crude estimate of capacity (# of cases per year) <sup>63</sup>
Rehabilitation Centres	10	261	26	84	2,066 <sup>64</sup>
Toronto Community Hospitals	48	40	7	21	1,711 <sup>65</sup>
GTA-905 Hospitals	206	0	14	42	1,632 <sup>66</sup>
<i>Total</i>	<i>264</i>	<i>301</i>	<i>16</i>	<i>49</i>	<i>5,409</i>

<sup>62</sup> Walker, Jaglal et al. *Epidemiological and Utilization Variables in Rehabilitation in Ontario* (2001)

<sup>63</sup> This calculation is based on Total Number of Beds for MSK x 261 days/year (assumption of 5-day operation)/minimum listed length of stay and assuming 85% occupancy.

<sup>64</sup> Assumes 28 day LOS.

<sup>65</sup> This does not include capacity which is available by virtue of the 88 beds which are also available for MSK but shared with other populations so the calculation is based on only 54 beds while an additional 88 are actually available but not dedicated to MSK. We also assume 5-day/week operation, 85% occupancy and 7-day LOS.

<sup>66</sup> Because the GTA/905 hospitals have no designated MSK beds (general rehab beds only), we estimated 50% of general rehab beds dedicated to hip fracture and joint replacement patients, based on the work by Jaglal, Walker, et al. We also assumed a 5-day/week operation, 85% occupancy and 14-day LOS. It is acknowledged that these assumptions may be problematic.

**Table 5.3: Beds available for use by MSK populations at the GTA/905 Hospitals (2005)**

Organization	Program	General Beds that can be used for MSK	Beds designated for MSK use by organization	LOS Low	LOS High/Ave.
Markham Stouffville	General	16	0	14	42
Southlake Health Centre	MSK Rehab	--	13	7	14
Lakeridge Health	General	49	0	--	35
Rouge Valley: Ajax/Pickering	General	20	0	--	14
Credit Valley Hospital	General	40	0	--	35
Trillium Health*	General	68	0	14	56
<i>Total MSK Beds</i>	---	206	0	14	56

\*Takes internal referrals only

**Table 5.4: Beds available for use by MSK populations at the Rehabilitation Centres (2005)**

Organization	Program	General Beds - MSK included	MSK specific beds designated by organization	LOS Low (days)	LOS High or Average (days)
Baycrest	MSK Inpatient	10	0	28	84
Bridgepoint	MSK Inpatient	NA	75	28	84
Providence	MSK Inpatient	NA	35	--	--
St. John's	MSK Inpatient	NA	63	--	--
Toronto Rehab	MSK Inpatient	NA	63	21	35
West Park	MSK Inpatient	NA	25	--	--
<i>Total MSK Beds</i>	---	10	261	28	84

**Table 5.5: Beds available for use by MSK populations at the Toronto Community Hospitals (2005)**

Organization	Program	General Beds available to MSK	MSK Specific	LOS Low (days)	LOS High/Ave. (days)
Humber River	General	NA	12	--	--
North York	General	15	0	14	21
Rouge Valley - Centenary*	General	20	0	14	42
Scarborough General	MSK Rehab	15	10	7	14
Scarborough Grace	MSK Rehab	15	10	7	14
Sunnybrook & Women's	MSK Rehab	NA	8	7	14
Toronto East General	MSK Rehab	13	0	--	14
St. Joseph's Healthcare	General	10	0	5	14
<i>Total MSK Beds</i>	---	88	54	7	42

\*Takes external referrals

**Table 5.6: Number of beds available for internal and external referrals, based on Rehab Finder, July 2005**

	Internal Referral Only		External Referrals Accepted	
	Beds	Organizations	Beds	Organizations
Rehabilitation Centres	0	0	271	6
Toronto Community Hospitals	142	7	20	1
GTA/905 Hospitals	68	1	138	5

- The rehabilitation centres and the GTA/905 hospitals take external referrals.
- The Toronto community hospitals for the most part maintain internal referrals only.

**Table 5.7: Descriptors used to articulate inpatient rehab program goals**

Goals (abstracted from qualitative descriptions on <i>Rehab Finder</i> ).	Rehabilitation Centres (n=6)	Toronto Community Hospitals (n=8) <sup>67</sup>	GTA/905 Community Hospitals (n=6)
Individually Set	6	6	6
Diagnose and Assess	2	0	1
Maximize Function	2	0	0
Regain Mobility	2	3	0
Minimize Risk	1	0	0
Return Home	1	4	1
Consultation	1	0	1
Reactivation	1	0	0
Strength and ROM	0	4	0
Low Intensity Rehab	1	0	1

- Different organizations describe their rehabilitation program goals differently.
- The NRS data tells us that nearly all patients achieve their rehabilitation goals. It does not specify what the goals are since these are patients specific. However, when we look at the NRS in terms of outcomes, we find that only five FIM elements change between admission and discharge (transfers-bed, transfers-shower, locomotion, locomotion stairs, and dressing lower body).

<sup>67</sup> Not all organizations in this group completed the special needs section in *Rehab Finder*. Therefore there is some missing data.

*Table 5.8: Weight bearing orders, rehab potential, medical stability (2005)*

	Rehabilitation Centres		Toronto Community Hospitals		GTA/905 Hospitals	
	<i>Hospitals</i>	<i>Beds</i>	<i>Hospitals</i>	<i>Beds</i>	<i>Hospitals</i>	<i>Beds</i>
Requirement - medically stable	6	236	5	25	6	206
Not required - medically stable	1	25	1	22	0	0
Requirement - rehab potential	6	261	6	104	6	206
Requirement - weight bearing	1	35	1	18	0	0
Can be non weight bearing	1	75	0	0	0	0
Unstated/unspecified	1	10	1	15	3	127
Can be partially weight bearing	2	88	2	42	3	85
Can tolerate minimum of 20 min	2	35	0	0	1	16
Can tolerate minimum of 30 min	1	63	2	30	1	13
Can tolerate minimum of 45 min	1	35	0	0	0	0
Can tolerate minimum of 60 min	0	0	3	40	1	20
Can tolerate minimum of 90 min	1	75	0	0	0	0
Unspecified	1	63	3	49	3	157

- The NRS data showed that the GTA/905 hospitals have a higher proportion of patients with 5+ co-morbidities. The DAD data showed that the proportion of patients in the highest Plx group is higher for specialty rehab as compared to general rehab, but not as compared to complex continuing care or nursing homes.
- Most hospitals require the patients to be medically stable before being admitted to a rehabilitation program.
- Weight bearing requirements differ across organizations. Both weight bearing and non-weight bearing exercises have been shown to improve mobility, gait, and functional performance in the elderly with hip fracture.
- Tolerance also varies across programs and organizations.

**Table 5.9: Most prevalent special needs addressed at inpatient programs in the GTA (2005)**

	Rehabilitation Centres		Toronto Community Hospitals <sup>68</sup>		GTA/905 Hospitals	
	<i>Hospitals</i>	<i>Beds</i>	<i>Hospitals</i>	<i>Beds</i>	<i>Hospitals</i>	<i>Beds</i>
Intravenous - Peripheral	3	211	3	63	6	206
Intravenous - PICC	5	236	3	43	5	138
Other	3	163	1	43	1	49
Tracheostomies	2	100	1	20	4	125
Oxygen - Continuous	4	145	2	20	6	206
Oxygen - Intermittent	6	271	2	28	6	207
NG Tubes	1	63	1	28	4	173
TPN	1	35	1	8	0	0
Catheter - Indwelling	6	271	4	15	6	206
Catheter - Intermittent	6	271	4	5	6	206
NWB	5	224	6	40	3	224
Traction	5	224	1	15	1	249
Psychiatric	5	249	2	28	5	63
Wandering	1	63	0	0	2	63
Other Behavioural	1	63	1	20	3	0
Peritoneal	0	0	0	0	2	25
Hemodialysis	1	25	1	12	2	
Ostomies	6	259	3	40	5	259
Ventilators	0	0	0	0	0	0
Specialized Wound Care	5	214	4	55	4	214
CPM machine	4	214	3	40	4	214
Changing Pressure Beds	5	249	3	35	2	249

<sup>68</sup> Organizations focused on internal referrals only were not required to complete this section of *Rehab Finder*, so there may be missing data within this section.

*Table 6.0: Summary of special needs from Table 5.9 (2005)*

	<b>Special needs nearly always accommodated</b>	<b>Special needs that are rarely accommodated</b>	<b>Special needs not accommodated</b>
Rehabilitation Centres	IV - Indwelling/ Intermittent, non weight bearing, traction, ostomies, CPM; changing pressure beds	TPN, wandering patients, patients with psychiatric disorders or hemodialysis	vents, peritoneal dialysis.
Toronto Community Hospitals	Catheters- Indwelling/Intermittent, specialized wound care	Nearly all special needs are sometimes accommodated	Vents, peritoneal dialysis, wandering patients
GTA/905 Community Hospitals	IV-Peripheral, PICC, Tracheostomies, Oxygen-Continuous/Intermittent, NG tubes, Psychiatric disorders, ostomies, wandering patients, changing pressure beds	Non weight bearing, traction, behavioural, wandering, hemodialysis, changing pressure beds,	vents or TPN

## 8.0 SYNTHESIS AND RECOMMENDATIONS

When we combine the data on supply and demand provided in this report and consider the tenets of a coordinated model, both according to the principles developed through this initiative and through other population initiatives, we can abstract some system level considerations that need to be implemented. For recommendations specific to joint replacements, hip fractures, CCAC services and overall supply of inpatient MSK services, please see the relevant sections within the report.

### Recommendations, Actions and Implications:

The analysis of the data presented in this initiative as well as discussions with individuals from across the system has led to seven major recommendations and eighteen actions that are required in order to achieve them. The recommendations are listed briefly here (not in priority order) and then are explained and *operationalized* in the paragraphs that follow.

- 1: Invest in real time mechanisms for matching patient need to musculoskeletal rehabilitation programs
- 2: Optimize existing inpatient rehabilitation bed capacity to better serve vulnerable or underserved populations
- 3: Differentiate simple from complex rehabilitation and general from specialized rehabilitation beds
- 4: Discuss with CIHI, unusual findings<sup>69</sup> and the possibility of a reduced FIM dataset since many of the FIM elements are not relevant to joint replacements or hip fractures.
- 5: Develop, in collaboration with CIHI, a cross continuum dataset for MSK rehab that provides organizations with the demographics and outcomes for the patient experience across the continuum.
- 6: Standardize the service delivery approach in order to achieve consistency in utilization of resources/outcomes.
- 7: Consolidate services to achieve critical mass, optimize outcomes and ensure access for all patients.

### Recommendation 1: Invest in real time mechanisms for matching supply and demand

In the Greater Toronto Area and possibly across Ontario, we need to develop better mechanisms for tracking the characteristics of both patients and programs. Our study has shown it to be very difficult to match, either qualitatively or quantitatively, supply and demand for orthopaedic rehabilitation. This issue can be addressed by developing program descriptors that are designed deliberately to match the most important patient characteristics. In this manner, confidence can be developed in the calculations that are required to ascertain whether there is an appropriate match between system capacity and patient need and to clearly identify where surplus/gaps exist.

- **Action 1.1:** Develop standard patient grouping language, programs, and service descriptions that acknowledge the heterogeneity of the musculoskeletal rehabilitation group and enables better matching of supply and demand.
- **Action 1.2:** Develop an electronic referral and wait list system that would enable the tracking of referrals in order to understand access issues and gaps.
- **Action 1.3:** Clarify and differentiate the use of general and specialized beds.

### Recommendation 2: Optimize existing inpatient rehabilitation bed capacity

The crude calculations presented in this report show an estimated capacity of the current musculoskeletal inpatient rehabilitation system (which includes all MSK diagnoses in addition to hip fracture and joint replacements) to be approximately 6,000 patients a year.<sup>70</sup> Since many of the joint replacement patients

<sup>69</sup> For example, in some hospital groups, FIM change decreases from admission to discharge.

<sup>70</sup> This calculation is very crude and based on the total number of beds for MSK x 261 days/year (assumption of 5-day/week operation)/minimum listed length of stay and assuming 85% occupancy. It should be noted that

are now being transferred to home care rehabilitation, opportunity exists to relieve alternate level of care and patient flow pressures by converting the use of some of these rehabilitation beds for more complex patients. A possible example of a population that could benefit from such a transition is the hip fracture population since approximately 26% of patients are discharged to a long-term care facility and nearly 15% of ALC cases<sup>71</sup> are hip fracture cases.

- **Action 2.1:** Explore service delivery requirements for underserved and vulnerable populations or populations that are awaiting rehabilitation with a view to converting usage of inpatient rehabilitation beds from joint replacement care to other types of more complex rehabilitation care.

### **Recommendation 3: Differentiate simple and complex musculoskeletal patients/programs and general from specialized rehabilitation beds.**

Hip fracture and joint replacement care are currently consolidated in general musculoskeletal programs. This report has shown important differences in the functional and demographic characteristics of these patients. As more joint replacements are sent home as a result of the Total Joint Network protocol, opportunity exists to shift the rehabilitation program focus to accommodate more complex musculoskeletal patients. Our study showed that very few programs in the GTA are available for complex musculoskeletal cases and that those that are available differ in terms of their service offerings. Similarly in the community setting, professional rehabilitation services and personal support services are differentiated. According to discussions with CCAC representatives, many home care patients have multiple co-morbidities and are complex from a medical perspective. Differentiating where and when complex services are required, what they entail and how many patients need them, in both the community and hospital settings is required.

- **Action 3.1:** Conduct a study to describe the program components of complex musculoskeletal rehabilitation both in the hospital and in the home care setting. This study would then provide the key elements of a complex MSK program, which could facilitate funding and service planning and utilization of MSK beds for other purposes.
- **Action 3.2:** Explore the complex rehabilitation or medical needs of patients who are sent for home care rehabilitation and the use of each of the professional and homemaking services offered to hip fracture and joint replacement patients.

### **Recommendation 4: Discuss the potential of a reduced FIM set with CIHI since not all indicators are relevant to hip fracture and joint replacement rehabilitation.**

Use of the FIM tool to assess rehabilitation performance for hip fracture and joint replacement patients, based on the 2002-2003 data appears problematic from this report for two reasons. First, for nearly 5,000 rehabilitation patients, only 4-6 of the FIM elements exhibit a change upon discharge. While this could reflect the inability of rehabilitation to have a measurable impact on hip fracture and joint replacement patients, it is more likely to reflect a lack of suitability of the tool for measuring rehabilitation outcomes for these populations.<sup>72</sup> Given the size of these populations and the findings of this report, using the FIM data to determine funding could also result in adverse consequences for these populations. In addition, for

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comparing this calculation to the number of joint replacements and hip fractures is problematic because there are other MSK populations using the MSK beds in addition to the joint replacement and hip fracture population. It should also be noted that some of the assumptions, i.e. 5-day operation, are considered problematic.

<sup>71</sup> GTA Rehab Network, *Analysis of Alternate Level of Care (ALC) Snapshots: Patients Awaiting Rehabilitation in ALC and Inpatient Rehabilitation Capacity* (May 2004).

<sup>72</sup> At the Veterans Health Administration (VHA) in the United States, medical centres are mandated to use the FIM tool to measure and track rehabilitation outcomes for new stroke, lower-extremity amputees and traumatic brain injury (TBI) patients only.

many organizations, we see a small decrease in FIM scores between admission and discharge. This could be due to measurement error, but should be investigated.

- **Action 4.1:** Hold an outcome measurement session to determine specific outcome measures for MSK rehabilitation. These should include outcome measures suitable for tracking the patients' progress from acute to rehabilitation and to the home.
- **Action 4.2:** Discuss with CIHI and JPPC the FIM findings from this report and explore the possibility of a reduced dataset for hip fracture and joint replacement patients.
- **Action 4.3:** Conduct further exploration to determine why the FIM scores from some hospitals appear to decrease from admission to discharge.

### **Recommendation 5: Develop a cross continuum dataset for musculoskeletal rehabilitation in collaboration with CIHI**

Our learnings from the use of four different databases on the musculoskeletal population indicate significant scope for reducing data collection burdens while improving the quality and coordination of information across the system. Opportunity exists especially between the National Rehabilitation Reporting System and the Discharge Abstract Database to discuss a cross continuum dataset for each patient. This will facilitate record linkage and analysis. It may also reduce data collection requirements.

- **Action 5.1:** Hold a consensus session to determine a meaningful dataset for the continuum of care for population groups within the musculoskeletal rehabilitation.
- **Action 5.2:** Discuss with the Canadian Institute for Health Information, the feasibility of providing Network member organizations with data linked reports that span from acute care to rehabilitation.

### **Recommendation 6: Standardize the service delivery approach in order to achieve consistency in utilization of resources/outcomes**

This study has shown regional and program variations in the length of stay and outcomes for each of the joint replacement and hip fracture populations, raising questions about the extent to which patients across the region receive equitable access to evidence based care. For joint replacement patients this is being addressed through the work of the Total Joint Network for joint replacements; however a similar initiative is needed in the area of hip fracture rehabilitation. In order to demonstrate effective, efficient, and equitable care for hip fracture patients and their families in the Greater Toronto Area, there must be a more deliberate attempt to quantify and compare actual and expected outcomes and to link expected functional outcomes with length of stay and resource needs. In addition, discharge locations should be linked to patient needs in a clear and appropriate manner by exploring differences between discharge destinations. Where patients are sent home with the expectation that an informal caregiver be involved in the convalescence or reintegration period, appropriate supports should be in place for the caregiver.

- **Action 6.1:** Develop standards for what should be achieved in a hip fracture rehabilitation program. Articulate and measure these in common terms.
- **Action 6.2:** Redevelop the service delivery model for hip fracture patients by convening panels of experts to determine and standardize program components. This will provide a better understanding of the infrastructure required to treat this group.
- **Action 6.3:** Develop definitions to clarify the meaning of rehabilitation or the bundle of services offered under the heading of rehabilitation in each of the different service settings in order to establish role clarity and differentiation of discharge settings.
- **Action 6.4:** Develop resources, which support the informal caregiver by offering information, coping strategies, and support groups.

**Recommendation 7: Consolidate services to achieve critical mass, optimize outcomes and ensure access for all patients.**

The number of locations at which musculoskeletal programs and services are offered raised questions about how the system is balancing critical mass with considerations of proximity to the patient's home. While excellent care close to home is ideal, studies have shown that quality improves with critical mass.<sup>73</sup> With a larger number of centres offering care, case volume per facility decreases. In addition, some organizations make their inpatient rehabilitation beds available for referrals from across the region, while others restrict use of their rehab beds to their own acute care patients. Where this is not the case, organizations are often dealing with issues of patient flow and maintain closed access in order to alleviate pressures on alternate level of care beds.

- **Action 7.1:** Explore the establishment of centres of excellence, which would consolidate rehabilitation offerings for different populations within musculoskeletal rehabilitation while considering proximity of care issues. The centres of excellence should include the home care component (Community Care Access Centres). Due consideration should be given to managing patient flow.
- **Action 7.2:** Develop a policy of open access whereby patients from within or from outside the organization can get access to all inpatient rehab and outpatient ambulatory care services. Consideration must be given to the impact of such a policy on patient flow.
- **Action 7.3:** Conduct an outpatient and home care focused study on the MSK population group, which includes both utilization and service availability information.

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<sup>73</sup> Tracy, J. and Zelmer, J., CIHI Survey: *Volumes and Outcomes for Surgical Services in Canada*. Healthcare Quarterly. (2005) V. 8. n.4. (In a systematic review of 331 studies on the relationship between outcomes and volume, it was found that 68% of the studies showed better outcomes with higher volume). It is noted that critical mass vs. proximity considerations for surgery may be different than for rehabilitation.

## 9.0 CONCLUDING REMARKS

This initiative has allowed us to take a bird's-eye view of what is nearly 50% of the inpatient rehabilitation system in the Greater Toronto Area. In addition to better understanding two major population groups from both the supply and demand perspectives, we have also had the opportunity to understand the available data and to synthesize the data into recommendations and next steps. As next steps, the GTA Rehab Network will work towards implementing some of the recommendations that are appropriate to the Network's capacity and mandate. For the other recommendations, the Network will pursue partnerships and an advocacy role. This initiative, and the ones which flow from the recommendations, confirm and reinforce the collective vision for rehabilitation as an integral and essential component of the continuum of care, reinforcing positive health behaviours, rebuilding lives and reintegrating individuals into the community.

## 10.0 COMMITTEE MEMBERSHIP AND ACKNOWLEDGEMENTS

The GTA Rehab Network would like to extend its thanks to the members of the GTA Rehab Network Musculoskeletal Best Practices Steering Committee for the incredible amount of patience, persistence, analytical and system insight that they provided to this initiative.

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