SETTING THE STAGE FOR SERVICE PLANNING:

A profile of arthritis and bone and joint conditions

ONTARIO

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Executive Summary

This report provides an overview of Ontario and its Local Health Integration Networks (LHIN) using data available on utilization of health services and availability of health human resources for the population with musculoskeletal conditions (MSK). These findings can be set in the context of the burden of MSK conditions and can be used for further development of care delivery systems for chronic disease management.

Data from numerous sources were used for the report. The Canadian Community Health Survey cycle 3.1 was used to estimate the prevalence of selected MSK conditions. Administrative databases from the Ontario Health Insurance Plan (OHIP) and the Canadian Institute for Health Information (CIHI) were used to calculate indicators of health services utilization by people with MSK conditions. Data from a survey of orthopaedic surgeons and a survey of rheumatologists in Ontario conducted by ACREU were used to estimate full-time equivalents (FTE). The number of primary care physicians was obtained from the Ontario Physicians Human Resources Data Centre (OPHRDC). Additional data on physiotherapists and occupational therapists in the province were obtained from the community Rehabilitation Profiles of Ontario (ACREU Working Paper 07-01). Data on wait times for orthopaedic surgery were obtained from the Ministry of Health and Long-term Care (MOHLTC).

Age and sex standardized prevalence of MSK conditions, rates of persons visiting physicians in ambulatory settings, rates of persons with hospital encounters and visits to emergency department, and of orthopaedic surgery are presented in maps and figures. Maps of the availability of health human resources are also presented.

The following summary table gives an overview for the indicators examined for the LHINs in Ontario. Indicators with a variation between LHINs of at least two-fold are presented. Values for the indicators that are 20% above or 20% below the provincial estimate are shown by ♦ and ♣ respectively:

- Prevalence of MSK conditions
- Rates of persons visiting physicians in ambulatory settings for MSK conditions, by type of physician
- Rates of persons visiting physicians in emergency departments for MSK conditions
- Rates of orthopaedic surgery
- Proportion of patients having orthopaedic surgery in residential LHIN
- Proportion of orthopaedic surgeries provided by LHIN hospitals to LHIN residents
- Wait times for orthopaedic surgery
- Utilization of rehabilitation services
- Availability of health human resources (primary care physicians, orthopaedic surgeons, rheumatologists, physiotherapists, and occupational therapists)

A summary table with estimates of the indicators examined for each LHIN and Ontario, as well as extremal quotients is provided in the appendix. This report is a comprehensive profile of Ontario and its LHINs and is intended to be used for planning purposes. Therefore, geographic variation should be interpreted with caution.
### Local Health Integration Networks

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<th>Burden (self-reported prevalence of selected types of MSK conditions)</th>
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<td>Arthritis</td>
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<td>Repetitive strain injury</td>
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<td>Injury</td>
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### Encounters in ambulatory setting (Person-visit rates)

#### All physicians

### Encounters in hospital setting (Person-visit rates)

#### Emergency Department Visits

### Hospitalizations

* Includes ill-defined conditions


* 20% above the Ontario estimate. ↓: 20% below the Ontario estimate

Only indicators that showed at least a two-fold variation between LHINs are presented
### Local Health Integration Networks

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† October – December 2008


↑: 20% above the Ontario estimate. ↓: 20% below the Ontario estimate

Only indicators that showed at least a two-fold variation between LHINs are presented.
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Overview

This profile provides an overview of the burden of MSK conditions, health care utilization as well as availability of health human resources for individuals with MSK conditions in Ontario. It integrates existing data sources for health services in Ontario to provide a comprehensive overview of current service need, utilization and availability of health human resources for MSK care within Ontario and each Local Health Integration Network (LHIN). The profile is intended to assist health planners make informed decisions about health services for individuals with MSK conditions and can be used for further development of care delivery systems for chronic disease management.

For the purposes of this profile, the term ‘musculoskeletal conditions’ will refer to a broad group of numerous conditions including arthritis and related conditions, bone and joint conditions and trauma (fractures, dislocations, strains and sprains). The information presented in this document is meant to assist in decision making and health services planning and is not intended to be used in isolation of other data sources. The specific data sources used are described throughout the profile and a glossary of all terminology is provided at the end of the report.

The profile is divided into three sections according to the following aspects:

1. **Burden**: The burden of MSK conditions was measured by the self-reported prevalence of arthritis or rheumatism, back problems, repetitive strain injury, injuries and activity limitation.

2. **Health care utilization**: Rates and proportions of individuals with visits to physicians for various musculoskeletal conditions are reported by age, gender, service setting and physician type. Wait time for orthopaedic surgery was also examined. The number of days between when the surgery was ordered and when it was performed. The indicator used was the point at which 9 out of 10 patients have completed the surgery.

3. **Health human resources availability**: Data are presented on the availability of health human resources for musculoskeletal conditions, focusing on primary care physicians, rheumatologists, orthopaedic surgeons, physiotherapists and occupational therapists. Reported indicators include the number of health care providers per population, a detailed description of their working hours and details regarding public versus privately funded occupational therapy and physiotherapy clinics.

This is a population-based analysis for the most part. In most of the cases services are attributed to individuals based on where they live rather than where they received services. The only exception is for the examination of cross-boundary flow of individuals having orthopaedic surgery. Age and sex standardized rates to the Ontario population are presented in this profile to allow for direct comparison across LHINs. However, crude rates and proportions for each LHIN are presented in the individual LHIN profiles (Working Report 09-01). The degree of geographic variation was examined by calculating the extremal quotient. The extremal quotient is defined as the ratio of the largest to the smallest value for each particular indicator examined.

The data is presented in maps and figures. Choropleth maps (a map that uses color to visualize the variation of an indicator within a region by using ordered classes) were used to display indicators by LHIN. Classes were created by using comparative ratios. Comparative ratios were calculated by dividing the LHIN indicator to the provincial estimate. Comparative ratios were classified into 5 categories: more than 20% below the Ontario estimate, 10%-20% below the Ontario estimate, within 10% the Ontario estimate, 10%-20% above the Ontario estimate and more than 20% above the Ontario estimate. A summary table with the estimates for each of the indicators examined is presented in the appendix.
Burden of Musculoskeletal Conditions

This section uses data from the 2005 Canadian Community Health Survey (CCHS) cycle 3.1 to estimate the prevalence of selected types of MSK conditions in the population.

The CCHS has information on three types of musculoskeletal disorders: arthritis, back problems and repetitive strain injuries. It also captures data on injuries that could potentially require the services of rehabilitation professionals; these injuries may be undiagnosed or unreported musculoskeletal conditions.

Data Source

The Canadian Community Health Survey (CCHS) is a cross-sectional general population health survey that collects information related to health status, health care utilization and health determinants for the Canadian population. Statistics Canada performs the survey every two years. The CCHS has a large sample and was designed to provide reliable estimates at the health region level. The target population of the CCHS was persons aged 12 years or older who were living in private dwellings in the ten provinces and the three territories. Persons living on Indian Reserves or Crown lands, clientele of institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded. The overall response rate was 84.7%, and 130,827 individuals participated. All analyses performed on the CCHS data were weighted in order to ensure that derived estimates were meaningful or representative of the entire targeted Canadian population 15 years of age and older.
The prevalence of self-reported arthritis among those 15 years or older was 17.2% in Ontario. There was little variation in the age and sex standardized prevalence across LHINs (extremal quotient = 1.9). The prevalence ranged from 12.3% (Toronto Central LHIN) to 21.7% (Hamilton Niagara Haldimand Brant LHIN).
There was little variation in the prevalence of back problems across LHINs (extremal quotient=1.5). The prevalence ranged from 14.6% (Toronto Central) to 21.5% (North Simcoe Muskoka).

There was a two-fold variation in the prevalence of repetitive strain injuries and injury across LHINs.

The prevalence of repetitive strain injuries ranged from 7.2% in Central West LHIN to 16.1% in North West LHIN, whereas the prevalence of injury ranged from 6.9% in Central West LHIN to 13.3% in North Simcoe Muskoka LHIN.

Data Sources: CCHS
Health Care Utilization by Individuals with Musculoskeletal Conditions

This section uses data from several databases on health care utilization for the 2006/07 fiscal year (April 1st, 2006 to March 31st, 2007). The databases are described in the table below (for more detailed methodology, please see ACREU Working Paper 08-05).

Individuals who had encounters with all physicians for musculoskeletal conditions in ambulatory as well as hospital settings (inpatient, emergency department visits and day surgery) during the 2006/07 fiscal year (April 1st, 2006 to March 31st, 2007) were used for the analysis presented here. It must be noted that not everyone with a musculoskeletal condition will visit a physician every year.

**Data Sources**

**OHIP Databases**

- **Ontario Health Insurance Plan (OHIP).** Physicians bill OHIP for each patient they treat. This database captures information on every claim, including date of service, type of services or procedures provided, associated diagnosis, patient and physician identification numbers, and physician specialty type. This was used to identify service encounters (visits).
- **Corporate Provider Database.** Contains data about health care providers and organizations in Ontario.
- **Registered Persons Database (RPDB).** Used to collect and maintain information about individuals who are registered with OHIP. Contains demographic information such as age, sex and residential postal code.

**Canadian Institute for Health Information (CIHI) Databases**

- **Discharge Abstract Database (DAD).** Contains clinical, demographic and administrative data for any patient discharged from a hospital. The information recorded includes: physician specialty, procedures received, diagnostic codes, residential postal code, age and sex.
- **National Ambulatory Care Reporting System (NACRS).** Contains demographic characteristics, diagnostic and procedure codes for patients visiting emergency departments or having day surgery in Ontario hospitals.
Physician visits

Map 2: Age and sex standardized rate per 1,000 population of persons with ambulatory visits to all physicians for musculoskeletal conditions by Local Health Integration Networks, Ontario 2006/07

In Ontario the rate of persons visiting physicians for MSK conditions was 261.3 per 1,000 population. There was little variation in the standardized rate across LHINs (extremal quotient=1.6). The rate ranged from 198.0 per 1,000 population (Erie St. Clair LHIN) to 307.5 per 1,000 population (Central West LHIN).
There was little variation in the rate of persons with ambulatory visits for arthritis and related conditions and trauma and related conditions (extremal quotients=1.5). However, there was a 2.5 fold variation in the rate for bone and joint conditions.

Erie St. Clair LHIN had rates more than 20% below the Ontario rate for arthritis and bone and joint conditions.

Central West LHIN had rates more than 20% above the Ontario rate for bone and joint and trauma and related conditions.

* Includes ill-defined conditions

Data Sources: OHIP
In Ontario the rate of persons visiting primary care physicians for MSK conditions was 226.5 per 1,000 population. There was little variation in the standardized rate (extremal quotient=1.6) across LHINs. The rate ranged from 173.8 per 1,000 population (Erie St. Clair LHIN) to 280.1 per 1,000 population (Central West LHIN).
Figure 3: Age and sex standardized rate per 1,000 population of persons with ambulatory visits to primary care physicians for arthritis and related conditions, bone and joint conditions and trauma and related conditions by Local Health Integration Networks, Ontario, 2006/07

- There was little variation in the rate of persons visiting primary care physicians for arthritis and related conditions (extremal quotient=1.5) and for bone and joint conditions (extremal quotients=1.8). There was a two-fold variation in the rate for trauma and related conditions.

- Erie St. Clair LHIN had the lowest rate of persons visiting for arthritis and related conditions and bone and joint conditions.

- Central West LHIN had the highest rate of persons visiting for bone and joint conditions and trauma and related conditions.

* Includes ill-defined conditions

Data Sources: OHIP
In Ontario the rate of persons visiting specialists for musculoskeletal conditions was 80.0 per 1,000 population. There was little variation in the standardized rate (extremal quotient=1.6) across LHINs. The rate ranged from 54.8 per 1,000 population (Erie St. Clair LHIN) to 88.4 per 1,000 population (Hamilton Niagara Haldimand Brant LHIN).
There was almost a three-fold variation in the rate of ambulatory visits to specialists for arthritis and related conditions and a two-fold variation for bone and joint conditions and trauma and related conditions.

Erie St. Clair LHIN had the lowest rate in every condition group examined. South East LHIN had the highest rate for arthritis and related conditions and trauma and related conditions.

* Includes ill-defined conditions

Data Sources: OHIP
In Ontario the rate of persons visiting physicians for MSK conditions in emergency departments was 32.0 per 1,000 population. There was a three-fold variation in the standardized rate across LHINs. The rate ranged from 21.6 per 1,000 population (Central West LHIN) to 62.1 per 1,000 population (North East LHIN).
There was almost a four-fold variation in the rate of persons with visits to emergency departments for arthritis and related conditions and bone and joint conditions and a two-fold variation in the rate of persons with visits from trauma and related conditions.

Northern LHINs as well as South West and South East LHINs had rates more than 20% above the provincial rate for every condition group examined.

LHINs surrounding the Greater Toronto Area (GTA) had lower rates for every condition group examined.

* Includes ill-defined conditions

Data Source: NACRS
In Ontario, the rate of hospitalizations for MSK conditions was 10.1 per 1,000 population. There was a two-fold variation in the standardized rate across LHINs. Toronto Central LHIN (7.3 per 1,000 population) had the lowest rate and North West and North East LHINs had higher rates (13.6 and 13.1 per 1,000 population, respectively).
There was variation in the rate of individuals with hospitalizations for trauma and related conditions (extremal quotient=2.4), arthritis and related conditions (extremal quotient=2.0) and bone and joint conditions (extremal quotient=1.9).

Generally, northern LHINs had rates of hospitalizations above the provincial rate for every condition group. Hamilton Niagara Haldimand Brant LHIN also had higher rates.

Generally, LHINs surrounding the GTA had lower rates of hospitalizations for every condition group.

* Includes ill-defined conditions

Data Sources: NACRS, DAD
In Ontario the rate of orthopaedic surgeries was 10.7 per 1,000 population. There was a two-fold variation in the standardized rate across LHINs. The rate ranged from 7.5 per 1,000 population in Toronto Central LHIN to 14.8 per 1,000 population in South East LHIN.
There was a two-fold variation in the rate of inpatient and day surgery across LHINs in Ontario.

South East LHIN had the highest rate of inpatient surgeries and Erie St. Clair LHIN the lowest.

North West LHIN had the highest rate of day surgery and Toronto Central LHIN the lowest.

Data Sources: NACRS, DAD
There was almost a three-fold variation in the rate of joint replacements across LHINs and a two-fold variation in the rate of closed repair and reduction with or without fixation.

North West LHIN had the highest rate of joint replacement and Toronto Central LHIN had the lowest.

Erie St. Clair and Hamilton Niagara Haldimand Brant LHINs had rates of closed repair above the provincial rate whereas; Toronto Central and Champlain LHINs had rates below the provincial rate.
In Ontario 72.4% of patients had orthopaedic surgery within their residential LHIN. There was a two-fold variation in the proportion. The proportion ranged from 42.1% in Central West LHIN to 94.4% in North West LHIN. LHINs surrounding the GTA tended to have lower proportions.
The proportion of surgeries provided to LHIN residents varied substantially across LHINs (extremal quotient=2.9). The proportion ranged from 34.1% (Toronto Central LHIN) to 98.5% (North West LHIN). More than 60% of surgeries provided by Toronto Central LHIN hospitals were to residents of other LHINs.
Wait times for orthopaedic surgery

This section uses currently available information about wait times for orthopaedic surgery in Ontario from MOHTLC. Wait times are presented for total hip replacement (THR), total knee replacement (TKR) and other orthopaedic surgery.

Data Source

The data for this section was obtained from the MOHTLC website (Accessed on April 2009). Wait times are for the period October – December 2008. The wait times reported are the 90th-percentile that is the point at which 9 out 10 patients had surgery.
There was a three-fold variation in the number of days that patients waited for orthopaedic surgery in the province. Wait times ranged from 89 days (Waterloo Wellington LHIN) to 279 days (North East LHIN). Champlain LHIN also had wait times above the provincial estimate.
There was a four-fold variation across LHINs in the number of days waited by patients for THR and TKR and almost a three-fold variation for other orthopaedic surgeries.

Waterloo Wellington LHIN had the lowest wait times for THR and TKR.

Central West LHIN had wait times above the provincial estimate for THR and TKR but below the provincial estimate for other orthopaedic surgery.

Toronto Central LHIN had lower wait times for THR and TKR but higher for other orthopaedic surgeries.

North East LHIN had the highest wait times for THR and TKR.

Data Sources: Ontario Ministry of Health and Long-term Care
Proportion of LHIN residents who receive surgery after consulting with an orthopaedic surgeon

Ambulatory and hospital discharge databases were linked to examine the proportion of a cohort of individuals consulting orthopaedic surgeons in ambulatory settings (presumed eligible for orthopaedic surgery) who have subsequent orthopaedic surgery. The cohort excluded individuals with previous surgery to the index ambulatory visits since subsequent ambulatory visits were presumed to be follow-up visits. Further individuals with surgery within 4 days of the index ambulatory visit or with non-elective surgery were also excluded.

Data Source

The study cohort was drawn from the 521,156 Ontarians who visited orthopaedic surgeons from October 1st, 2004 to September 30th, 2005. Individuals who had surgery without a prior ambulatory visit, and those who had orthopaedic surgery within six months prior to their initial ambulatory visit (where this was likely to be a post-surgical follow-up visit) were excluded. Methodological details are available in ACREU’s Working Paper 08-04.
Over 20% of individuals, presumed to be eligible for surgery, had orthopaedic surgery following ambulatory visits to orthopaedic surgeons in Ontario. There was little variation across LHINS (extremal quotient = 1.6). Toronto Central LHIN had the lowest proportion (16.1%) and North Simcoe Muskoka LHIN had the highest proportion (26.3%).
Utilization of physiotherapy and occupational therapy

Map 12: Proportion of individuals 15 years or older reporting visits to physiotherapists by Local Health Integration Networks, Ontario 2005

There was little variation in the proportion of individuals 15 years or older reporting visits to physiotherapists in Ontario (extremal quotient=1.5). The proportion ranged from 5.8% in Central East LHIN to 8.5% in Waterloo Wellington and Champlain LHINs.
There was variation in the proportion of individuals 15 years or older reporting visits to occupational therapists in Ontario (extremal quotient=2.6). Northern, South West and Champlain LHINs had proportions above the provincial estimate. Mississauga Halton and Central LHINs had the lowest proportions.
Health Human Resources Availability for Musculoskeletal Conditions

This section provides information related to the availability of health human resources for musculoskeletal conditions. Details relating to the provision of rheumatology, orthopaedic, physiotherapy and occupational therapy services are provided.

Data Sources

- The ACREU survey of rheumatologists in Ontario (Working Paper 08-03). A total of 164 practicing rheumatologists were identified in Ontario in 2007: 152 responded to a two-part questionnaire (response rate 93%).
- The ACREU survey of orthopaedic surgeons in Ontario (Working Paper 07-03). A total of 396 practicing orthopaedic surgeons were identified in Ontario in 2006: 359 responded to a two-part survey relating to location and nature of practice (91% response rate).
- The ACREU working paper Community Rehabilitation Profiles in Ontario (Working Paper 07-01) conducted in 2006.
The provincial per capita provision of primary care physicians was 86.6 per 100,000 population. There was considerable variation across LHINs (extremal quotient=11.0). Erie St. Clair LHIN had the lowest provision (24.9 per 100,000 population) and Central East LHIN had the highest (274.9 per 100,000 population). Northern LHINs had availability of primary care physicians more than 40% below the provincial estimate.
The provincial per capita provision of orthopaedic surgeons FTE's was 2.5 per 100,000 population. There was variation on the number of FTE's per population across LHINs (extremal quotient=3.0). North Simcoe Muskoka and Central West LHINs had the lowest availability of orthopaedic surgeons FTE’s (1.3 per 100,000 population) and Toronto Central LHIN had the highest (3.9 per 100,000 population).
The provincial per capita provision of rheumatologist FTE’s was 1.2 per 100,000 population. There was considerably variation on the rheumatology provision across LHINs (extremal quotient=13.0). South East LHIN (0.3 per 100,000 population) had the lowest and Toronto Central LHIN (3.7 per 100,000 population) had the highest.
Map 17: Number of physiotherapists per 100,000 population by Local Health Integration Networks, Ontario 2006

The overall per capita provision of physiotherapists in the province was 43.4 per 100,000 population. There was considerable variation across LHINs (extremal quotient = 3.4). Central West LHIN (22.4 per 100,000 population) had the lowest provision and Toronto Central LHIN (77.2 per 100,000 population) had the highest.
The overall per capita provision of occupational therapists in the province was 31.5 per 100,000 population. There was a four-fold variation in the number of occupational therapists across LHINs. Central West LHIN (14.4 per 100,000 population) had the lowest provision and Toronto Central LHIN (57.3 per 100,000 population) had the highest.
Appendix - Summary of results

### Local Health Integration Networks

<table>
<thead>
<tr>
<th>Burden (% of self-reported prevalence of MSK conditions)</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<th>9</th>
<th>10</th>
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<th>13</th>
<th>14</th>
<th>ON (EQ)*</th>
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</thead>
<tbody>
<tr>
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<td>19.1</td>
<td>16.0</td>
<td>12.5</td>
<td>21.7</td>
<td>11.4</td>
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<td>19.9</td>
<td>18.4</td>
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<td>12.3</td>
<td>10.9</td>
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<td>10.1 (2.3)</td>
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### Encounters in ambulatory setting (Age and sex standardized rates per 1,000 population)

#### All physicians

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<td>254.3</td>
<td>244.1</td>
<td>228.1</td>
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<td>99.9</td>
<td>92.5</td>
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<td>103.9</td>
<td>113.6</td>
<td>108.4</td>
<td>102.1</td>
<td>100.6</td>
<td>108.3 (1.5)</td>
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<tr>
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<td>85.5</td>
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<td>86.7</td>
<td>76.8</td>
<td>74.8</td>
<td>89.2 (1.5)</td>
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<td>111.1</td>
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#### Primary Care

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#### Specialists

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* EQ= Extremal Quotient (max/min)


- >20% Below Ontario average
- within Ontario average
- >20% Above Ontario average
### Local Health Integration Networks

#### Encounters in hospital setting (Age and sex standardized rates per 1,000 population)

<table>
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<tr>
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<tr>
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<td>12.8</td>
<td>18.6</td>
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<td>12.1 (2.2)</td>
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<td>12.6</td>
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<td>13.4</td>
<td>16.6</td>
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|                      |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| **Hospitalizations** |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| MSK                  | 9.7          | 11.4         | 9.3          | 12.4         | 8.4          | 8.9          | 7.3          | 8.5          | 9.8          | 11.2         | 9.6          | 12.2         | 13.1         | 13.6         | 10.1 (1.9)   |
| Arthritis            | 6.4          | 7.6          | 6.3          | 8.0          | 5.9          | 6.2          | 4.8          | 5.8          | 6.8          | 7.1          | 6.6          | 7.7          | 8.6          | 9.4          | 6.8 (2.0)    |
| Trauma               | 0.9          | 1.4          | 0.9          | 1.3          | 0.7          | 0.8          | 0.9          | 0.8          | 1.0          | 1.2          | 1.0          | 1.7          | 1.5          | 1.6          | 1.1 (2.4)    |
| Bone and Joint       | 2.6          | 2.6          | 2.2          | 3.2          | 1.9          | 1.9          | 1.7          | 2.1          | 2.0          | 3.0          | 2.2          | 2.8          | 3.1          | 2.7          | 2.4 (1.9)    |

|                      |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| **Orthopaedic surgery** |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| Age and sex standardized rates per 1,000 population |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| All                  | 10.1         | 13.2         | 10.4         | 13.0         | 8.3          | 8.7          | 7.5          | 8.5          | 10.4         | 14.8         | 10.1         | 12.9         | 12.6         | 13.2         | 10.7 (2.0)   |
| Inpatient            | 4.1          | 6.5          | 4.6          | 6.5          | 4.2          | 4.2          | 4.5          | 4.5          | 5.4          | 8.4          | 4.9          | 6.0          | 6.9          | 6.3          | 5.4 (2.0)    |
| Day surgery          | 6.0          | 6.7          | 5.8          | 6.5          | 4.0          | 4.5          | 3.0          | 4.0          | 5.0          | 6.4          | 5.2          | 6.9          | 5.7          | 7.0          | 5.2 (2.3)    |
| Joint replacement    | 2.8          | 3.2          | 2.6          | 3.0          | 2.4          | 2.3          | 1.9          | 2.2          | 2.6          | 2.6          | 2.7          | 2.6          | 5.3          | 7.0          | 2.6 (2.8)    |
| Closed repairs       | 3.1          | 2.6          | 2.3          | 3.1          | 2.3          | 2.5          | 1.5          | 1.8          | 2.4          | 2.1          | 1.8          | 2.5          | 2.7          | 2.7          | 2.3 (2.1)    |
| Reduction            | 1.0          | 1.1          | 0.9          | 1.3          | 0.6          | 0.7          | 0.8          | 0.6          | 1.0          | 1.2          | 0.9          | 1.2          | 1.3          | 1.2          | 0.9 (2.1)    |
| % of patients with surgery in residential LHIN |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| All                  | 68.7         | 80.1         | 77.5         | 88.7         | 42.1         | 64.2         | 71.7         | 53.0         | 66.7         | 85.3         | 83.6         | 65.2         | 63.4         | 94.4         | 72.4 (2.2)   |
| % of surgeries provided to LHIN residents |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| All                  | 96.4         | 81.3         | 75.6         | 92.3         | 62.4         | 67.4         | 34.1         | 61.1         | 75.6         | 82.1         | 94.0         | 86.3         | 98.3         | 98.5         | 72.4 (2.9)   |

* EQ= Extremal Quotient (max/min)
### Local Health Integration Networks

#### Orthopaedic surgery (cont’d)

**Wait times for orthopaedic surgery (days)**

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<th>12</th>
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<td>196</td>
<td>89</td>
<td>187</td>
<td>160</td>
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<td>Hip</td>
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<td>201</td>
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<td>% with surgery following ambulatory visits to orthopaedic surgeons</td>
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<td>18.5</td>
<td>16.1</td>
<td>18.2</td>
<td>20.6</td>
<td>20.9</td>
<td>19.0</td>
<td>26.3</td>
<td>23.3</td>
<td>16.8</td>
<td>20.5 (1.6)</td>
</tr>
</tbody>
</table>

#### Utilization of rehabilitation services

| % with visits to physiotherapist | 6.1 | 8.4 | 8.5 | 7.2 | 7.3 | 8.0 | 7.1 | 7.6 | 5.8 | 6.0 | 8.5 | 7.5 | 6.7 | 6.7 | 7.8 (1.5) |
| % with visits to occupational therapists | 1.2 | 1.5 | 1.2 | 1.2 | 1.3 | 0.9 | 1.5 | 1.0 | 1.1 | 2.2 | 1.8 | 1.7 | 1.9 | 2.2 | 1.3 (2.6) |

#### Availability of health human resources (Number per 100,000 population)

| Primary Care | 24.9 | 51.3 | 71.2 | 88.3 | 76.9 | 59.1 | 145.0 | 234.5 | 246.4 | 200.0 | 274.9 | 41.7 | 44.9 | 37.4 | 86.6 (11.0) |
| Orthopaedic Surgeons (FTE's) | 1.8 | 2.7 | 1.4 | 2.6 | 1.3 | 1.5 | 3.9 | 1.7 | 2.0 | 3.4 | 3.1 | 1.3 | 1.6 | 2.2 | 2.5 (3.0) |
| Rheumatologists (FTE's) | 0.5 | 1.0 | 0.5 | 1.4 | 0.9 | 0.9 | 3.7 | 1.2 | 1.0 | 0.3 | 1.2 | 0.8 | 0.5 | 0.5 | 1.2 (13.0) |
| Physiotherapists | 29.7 | 52.0 | 41.0 | 45.6 | 22.4 | 35.6 | 77.2 | 58.2 | 26.5 | 44.7 | 45.2 | 38.5 | 36.0 | 42.6 | 43.4 (3.4) |
| Occupational Therapists | 18.8 | 38.2 | 29.4 | 36.6 | 14.4 | 20.7 | 57.3 | 38.2 | 17.9 | 33.0 | 33.8 | 28.9 | 24.7 | 31.6 | 31.5 (4.0) |

* EQ= Extremal Quotient (max/min)


| >20% Below Ontario average | within Ontario average | >20% Above Ontario average |
Glossary of Terms

Burden of musculoskeletal care

Self-reported arthritis: The presence of arthritis and other chronic conditions was determined using the lead-in statement: “We are interested in long-term conditions that have lasted or are expected to last six months or longer and that have been diagnosed by a health professional. Do you have...”.

Back problems: The presence of back problems was determined using the lead-in statement: “We are interested in long-term conditions that have lasted or are expected to last six months or longer and that have been diagnosed by a health professional. Do you have...”.

Repetitive strain injury: Respondents were told that a repetitive strain injury refers to “injuries caused by overuse or by repeating the same movement frequently”, and were then asked “In the past 12 months, that is, from [date one year ago] to yesterday, did you have any injuries due to repetitive strain which were serious enough to limit your normal activities?”

Injury: Respondents were asked about the type of injury they had, if any. Those respondents with broken or fractured bones, dislocation, sprain or strain, or concussion/other brain injury were classified as having an injury that may be attended to by a rehabilitation professional.

Self-reported activity limitation: Respondents were asked whether they had any difficulty with activities including walking, climbing stairs, bending or similar activities or had reduced their activities at home, work or school or other activities, such as leisure or transportation due to disease or illness. Each response is measured as an ordinal outcome: sometimes, often or never. Respondents were categorized as having an activity limitation if they responded positively (sometimes/often) to any of the above.

Care for musculoskeletal conditions

Service setting: Ambulatory or hospital (inpatient, day surgery or emergency department).

Encounter: An encounter is a visit to an orthopaedic surgeon where medical care was provided.

Hospital encounter: A hospital encounter is a visit to an Emergency Department, an admission as inpatient (one hospital stay was considered one encounter) or a same day surgery.

Ambulatory encounter: An ambulatory encounter is a visit to a physician in his/her office.

Condition groups: Using OHIP and CIHI databases, the following condition groups were used:

Arthritis and related conditions: Includes osteoarthritis, rheumatoid arthritis, synovitis, ankylosing spondylitis, unspecified soft tissue disorders, connective tissue disorders, joint derangements and other arthritis. Disseminated lupus erythematosus, scleroderma, dermatomyositis and polyarteritis were joined to form a single group of connective tissue diseases. The other arthritis and related conditions group comprised a number of relatively infrequent conditions, the majority of which relate to deformity or malfunction of joints: recurrent dislocation, ankylosis, pyogenic arthritis, and traumatic arthritis.
**Bone and joint conditions:** Includes some disorders of the spine (e.g. lumbar strains, sciatica, scoliosis), conditions of the bone (e.g. osteomyelitis, osteoporosis, osteochondritis), conditions of the foot (e.g. corns and calluses, hallux vagus, hammer toe, ingrown nails and onychogryposis), and other musculoskeletal conditions.

**Trauma and related conditions:** Includes fractures and dislocations; strains and sprains.

**Orthopaedic surgery:** All orthopaedic surgical procedures recorded on the same patient, same date and the same body region. An orthopaedic surgeon has to be listed as one of the health care providers.

**Orthopaedic surgical procedure:** A surgical procedure code (Canadian Classification of Health Intervention (CCI)) in the musculoskeletal chapter recorded in the hospital databases. For more detailed information refer to the technical appendix in ACREU Working Paper 07-02.

**Orthopaedic surgery groups:** Based on the admission category variable in the CIHI databases (DAD and NACRS): inpatient surgeries or day surgeries.

**Body region:** Using CIHI databases, body region was defined as follows:

- **Ankle and foot:** Includes ankle joint, foot ligaments, tarsal bones, intertarsal joints, foot, tarsometatarsal joints, metatarsal bones, metatarsophalangeal joints, phalanx of foot, interphalangeal joints of toe, tendons of ankle and foot

- **Hand and wrist:** Wrist joint, radioulnar and carpal joints, metacarpal bones, metacarpophalangeal joints, phalanx of hand, interphalangeal joint of hand, joints of finger and hand, tendons of finger and thumb, soft tissue wrist and hand

- **Shoulder and elbow:** Shoulder joint, acromioclavicular and sternoclavicular joints, rotator cuff, arm muscles around shoulder, humerus, elbow joint, muscles of forearm, radius and ulna, clavicle, scapula

- **Hip:** Hip joint, femur, muscles of hip and thigh

- **Knee:** Knee joint, meniscus, cruciate ligaments, collateral ligaments, patella, tibia and fibula, muscles of lower leg, soft tissue of leg

- **Spine:** Spinal vertebrae, intervertebral disc, sacrum and coccyx, atlas and axis, soft tissue of back, back

**Wait times for orthopaedic surgery**

**Wait time:** The time (in days) between when a surgery was ordered and when it was performed. The indicator used was the number of days at which 9 out of 10 patients have completed the surgery. For more details see MOHLTC website.

**Health human resources for musculoskeletal conditions**

**Main practice location:** Respondents of the 2006 ACREU survey of orthopaedic surgeons (Working Paper 07-03) and 2007 survey of rheumatologists (Working Paper 08-03) were asked “Where is your major practice located?” Responses included both the city name and postal code.
Office hours: Orthopaedic surgeons participating in the 2006 ACREU survey (Working Paper 07-03) were asked the “amount of office or clinic time devoted to treating patients”. Rheumatologists participating in the 2007 ACREU survey (Working Paper 08-03) were asked to “indicate the number of hours per week devoted to office time”.

Surgical hours: Orthopaedic surgeons participating in the 2006 ACREU survey (Working Paper 07-03) were asked the “amount of devoted elective OR time”.

Working on call: Orthopaedic surgeons participating in the 2006 ACREU survey (Working Paper 07-03) were asked the “amount of time ‘working’ on call”.

Community-based rehabilitation: Include publicly and privately funded settings where rehabilitation can be accessed by community dwelling individuals. Included are private clinics, Designated Physiotherapy Clinics (formerly known as Schedule 5 Physiotherapy Clinics), Community Care Access Centres, Community Health Centres, Hospital Day Rehabilitation Departments and The Arthritis Society Consultation and Rehabilitation Services.

Community Health Centres (CHC): Community Health Centres are delivered through publicly funded (MOH-LTC), community governed, not for profit organizations that provide primary health care, health promotion and community development services, using multi-disciplinary teams of health providers. These teams sometimes include occupational therapists and physiotherapists. Services are designed to meet the specific needs of the community surrounding the CHC. In many communities, CHCs provide their programs and services for people with difficulties accessing the full range of primary health-care services.

Designated Physiotherapy Clinics (DPC): Formerly known as Schedule 5 Ontario Health Insurance Plan (OHIP) Physiotherapy Clinics, these clinics are funded by the Ontario Ministry of Health and Long-Term Care through OHIP. In order to be eligible for this service, one must meet at least one of the following conditions: 1) be either under the age of 20 or age 65 and over; 2) a resident of a long-term care home at any age; 3) requiring physiotherapy services in home or after being hospitalized at any age, or, 4) a participant of the Ontario Disability Support Program, receiving Family Benefits and Ontario Works at any age.

Hospital Day Rehabilitation Departments: Many hospitals offer day occupational therapy and/or physiotherapy services. These services are usually funded through the hospital’s global budget. However a few clinics throughout Ontario hospitals exist as for-profit business entities or have contracted services to external providers.

Occupational therapy (OT): OTs are health professionals who help people or groups of people of all ages assume or reassume the skills they need for the job of living. OTs work with clients to help identify barriers to meaningful occupations (self care, work and leisure). While enabling clients to change these barriers, occupational therapists fulfill the roles of therapist, educator, counselor, case manager, resource developer, policy analyst and advocate.

Physiotherapy or physical therapy (PT): PTs are first contact, autonomous, client-focused health professionals trained to: improve and maintain functional independence and physical performance; prevent and manage pain, physical impairments, disabilities and limits to participation; and promote fitness, health and wellness.

The Arthritis Society Arthritis Rehabilitation and Education Program (TAS AREP): This is a specialized program of The Arthritis Society where occupational therapists, physical therapists and social workers, who work throughout the province of Ontario and have advanced training in the assessment and management of arthritis. Patients may self-refer or be referred by a physician. Service is provided through clinics or if indicated, home visits can be arranged. This program is covered by the Ontario Health Insurance Plan.