

Rehabilitative Care
Alliance Outpatient
Ambulatory
Provincial Proof of
Concept - Phase I
Report

Rehabilitative Care Alliance
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1.0 EXECUTIVE SUMMARY

The Rehabilitative Care Alliance (RCA), funded by the LHINs, has made standardized data reporting for outpatient/ambulatory-based rehabilitative care a priority since its inception in 2013. As part of the RCA's first mandate (2013-2015), the RCA developed an outpatient/ambulatory minimum dataset to support standardized data collection, the development of comparable performance metrics, and to inform capacity planning at organizational, regional and provincial levels. This dataset was also developed to enhance understanding of the role of outpatient/ambulatory-based rehabilitative care in supporting other aspects of hospital and community-based services. This document outlines the methodology and results from the 2016 provincial proof of concept (PoC) of that outpatient/ambulatory minimum dataset. The full set of data elements was captured across 3 tools – National Ambulatory Care Reporting System (NACRS) Clinic Lite, the Community Rehab Assessment and the WatLX™. Each of the three tools were piloted concurrently in the PoC. Clinicians who participated in the PoC were also asked to give feedback which was collected and is included in this report.

This marks the first time that comparable, standardized data has been collected across outpatient / ambulatory rehabilitative care programs. The proof of concept demonstrated that outpatient rehab data can be captured effectively using the tools available, though there is room to make the data collection and submission processes more efficient. Principally, the data burden for both NACRS Clinic Lite and the Community Rehab Assessment was high.

KEY LEARNINGS

Data obtained from this Rehabilitative Care Alliance Outpatient Ambulatory provincial proof of concept demonstrated that patients who receive services in outpatient rehab are referred primarily (>70%) from an inpatient service and wait an average of 19.8 days from referral to their first outpatient visit. During their episode of care, patients in this PoC predominantly received care from physiotherapists, particularly those patients with orthopedic conditions like total joint replacement (TJR), hip fracture or other orthopedic conditions. Patients who received rehab related to their stroke often received services from occupational therapists and speech language pathologists in addition to physiotherapy.

- The highest service utilization was seen among the 'other-non-orthopedic group' with a mean service utilization of 1504 minutes, which included patients with spinal cord injury, acquired brain injury, pulmonary conditions, and others.
- The population with the second highest mean service duration minutes were stroke patients (1206 minutes, mean service duration). Hip fracture (497 minutes), total joint replacement (344 minutes), and other orthopedic (303 minutes) had significantly lower service duration minutes.
- All patients in this PoC who attended outpatient rehab for orthopedic conditions had at least one attendance with a physiotherapist. The mean number of physiotherapy minutes per attendance ranged from 18.86 to 50.68 minutes. 65.7% of stroke patients and 98.0% of other non-orthopedic patients also had at least one attendance with a physiotherapist, making physiotherapy services the most commonly accessed service and the service with fairly high utilization.

- More than half (59%) of patients received at least one concurrent family physician visit, with the median number of family physician visits concurrent with the rehab episode of care equal to two. Specialists were more commonly visited, concurrent with outpatient rehab, with 70% of patients having at least one specialist visit during their outpatient rehab episode of care and the median number of specialist visits equal to three.
- With respect to functional improvement over the course of the episode of care:
 - 83% of individuals in the Orthopedic Conditions sub-group were independent in meal preparation at discharge compared to only 31% at admission.
 - Statistically significant improvement was observed in bathing, personal hygiene, dressing upper body, dressing lower body, toilet transfer, toilet use, bed mobility, eating, walking and stairs
 - At discharge, 61% of patients reported walking without an aide indoors compared to 46% of patients at admission
 - At discharge, 53% of patients in the Orthopedic sub-group were able to move indoors without an aide compared to only 9% of patients at admission
 - In the Orthopedic Conditions sub-group the mean time to complete the 4 metre/13 foot walk test improved from 10.8 seconds to 5.7 seconds
 - At admission, nearly one-third of patients in the overall sample reported that fatigue prevented them from starting or finishing normal day-to-day activities. This percentage decreased to only 9% at discharge
 - At discharge, more than one-third of the overall sample spent more than 8 hours a week involved in social activities compared to only 16% at admission.
- Throughout their outpatient rehab episode of care, patients reported very high satisfaction with the team, facilities and overall experience:
 - Of the 1059 WatLX™ surveys distributed, 46 were returned completely blank indicating 3.7% non-response rate or a 96.3% response rate.
 - Overall, 87% of those who responded to the survey agreed or strongly agreed that collecting and reporting outpatient/ambulatory rehab data using standardized tools will inform patient care and support quality improvement.

Throughout their outpatient rehab episode of care, patients reported very high satisfaction with the team, facilities and overall experience.

Based on the results from this PoC, the next steps for this outpatient rehab minimum data set were identified as follows:

- Develop a strategy to enable all ambulatory/outpatient rehab programs to report utilization data to CIHI through NACRS Clinic Lite, that includes considerations for implementing changes to NACRS Clinic Lite and, where appropriate, liaising with provincial stakeholders and their vendors to address the need for customized solutions in order to reduce data entry time for outpatient/ambulatory data.
- Working with InterRAI researchers and provincial stakeholders, and in alignment with the results from this PoC, make modifications to streamline the Community Rehab Assessment

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tool and pilot the next version with sites on a voluntary basis. Develop recommendations from this second PoC for broader roll out of the CRA as part of the outpatient/ambulatory minimum data set.

- Work with the developers of the WatLX™ tool to explore integration of this patient experience tool across outpatient/ambulatory rehab programs as feasible.

A [summary of the Provincial Data from this Proof of Concept](#) is available on the [RCA Website](#).

2.0 BACKGROUND

Standardized data collection for outpatient/ambulatory-based (OP/AMB) rehabilitative care has been identified as a priority to support funding and planning decisions and to ensure patient access to services^{1,2}. The need for standardized data collection has been linked to a renewed focus on understanding the role of outpatient rehabilitation within an integrated and efficient healthcare system³.

This need has also been highlighted by Health Quality Ontario (HQO). Five of HQO's Quality Based Procedure Handbooks have specific reference to the absence of, and need for, standardized data collection within outpatient rehab: Stroke, Chronic Obstructive Pulmonary Disease (COPD), Congestive Heart Failure (CHF), Hip Fracture, and Total Joint Replacement (TJR). For example, the Clinical Handbook for Primary Hip and Knee Replacement indicates that since hospitals are not required to report on outpatient rehabilitation clinic activity, there is "a significant gap in provincial information systems"⁴. HQO's Clinical Handbook for Hip Fracture also indicates that the "absence of standardized provincial reporting of outpatient rehabilitation clinic activity creates a void in understanding the pathway of hip fracture patients"⁵.

Further, in 2013, the Auditor General of Ontario released a report stating that in order to ensure that patients have timely access to required outpatient services, hospitals should collect information regarding the efficiency and effectiveness of outpatient resources, such as "information on the number of appointment cancellations and patient no-shows, and on the change in patient functionality between when outpatients start and when they complete outpatient rehabilitation"⁶. The Auditor General went on to recommend that, "in order to have good information for current and future decision-making, the Ministry should establish, in conjunction with its stakeholders, what information should be collected on restorative inpatient and outpatient services and how best to collect the data"⁵.

As LHINs and health service providers implement best practices and quality-based procedures, the focus on outpatient rehabilitative care continues to grow. In the RCA's first mandate, (2013-2015), a standardized Outpatient/Ambulatory Rehabilitative Care Minimum Data Set was developed to support standardized data collection, the development of comparable performance metrics, and capacity planning at the organizational, regional and provincial levels. This data also enhances understanding of

¹ Office of the Auditor General of Ontario, "Reports on Value-for-Money Audits: Rehabilitation Services at Hospitals," 2013 Annual Report (2013). Retrieved May 11, 2018.

² Ontario Physiotherapy Association, Ontario Society of Occupational Therapists, Ontario Bone and Joint Health Network and the Ontario Orthopaedic Expert Panel, Current State Review of Outpatient Rehabilitation Services Available at Ontario Acute and Rehabilitation Hospitals and Recommendations to Optimize the System (October, 2011)

³ GTA Rehab Network. Developing a Performance Framework for Out-Patient Rehabilitation: Discussion Document (February 2013). <http://www.gtarehabnetwork.ca/uploads/File/reports/Developing-a-Performance-Framework-for-Outpatient-Rehabilitation---February-2013.pdf>. Retrieved May 11, 2018.

⁴ Quality-Based Procedures: Clinical Handbook for Primary Hip and Knee Replacement. Health Quality Ontario & Ministry of Health and Long-Term Care (November 2013). http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/qbp_prihipknee.pdf Retrieved May 11, 2018.

⁵ Quality-Based Procedures: clinical Handbook for Hip Fracture. Health Quality Ontario & Ministry of Health and Long-Term Care (May 2013). http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/qbp_hipfracture.pdf. Retrieved August 9, 2018.

⁶ 2013 Annual Report – Office of the Auditor General of Ontario. <http://www.auditor.on.ca/en/content/annualreports/arreports/en13/308en13.pdf> Retrieved May 11, 2018.

the role of outpatient/ambulatory-based rehabilitative care in supporting other aspects of hospital and community-based services.

3.0 METHODOLOGY

The Rehabilitative Care Alliance secretariat, with the Outpatient/Ambulatory Task and Advisory Groups, worked with a number of stakeholders to implement a proof of concept for outpatient rehabilitation and community-based physiotherapy clinics to report on a prescribed minimum data set. The purpose of this proof of concept was to test a basic, generic and affordable data reporting system for outpatient and ambulatory clinics. This project was a first step in enabling organizations to answer questions about the contribution of outpatient/ambulatory rehabilitative services provided to patients in Ontario.

The following guiding principles supported the implementation of the proof of concept:

- The relative ease of collection and reporting of data elements will be considered.
- Recommended data elements will align with data elements currently collected within other sectors (e.g., community clinics, home & community care and inpatient rehab) to support cross continuum data collection and reporting where possible.
- Elements included in the data set will demonstrate evidence of the benefits of outpatient/ambulatory rehabilitative care in achieving health system goals (e.g., patient outcomes, implementation of best practices and costs).
- The interests of all levels of stakeholders (provincial, regional, health service providers and patients/caregivers) will be considered in the development of the minimum dataset where possible/appropriate.

In order to collect the minimum data to meet the requirements of health care planners in Ontario, the RCA endorsed the 4 quadrants of the GTA Rehab Network's 'Evaluation Framework and Indicators for Performance Measurement of Outpatient Rehabilitation'⁷: Access and Transition; Utilization; Functional Outcome;

- Access and Transition and Utilization quadrants (using National Ambulatory Care Reporting System [NACRS] Clinic Lite [NCL], reported to Canadian Institute for Health Information [CIHI])
- Functional Impact quadrant (using the Community Rehab Assessment [CRA], a measure of functional outcome developed by international InterRAI researchers, in collaboration with the RCA)
- Patient Experience quadrant (using the WatLX™, a measure of patient experience developed by researchers from the University of Waterloo and Wilfred Laurier University)

Each of the three tools were piloted concurrently in the Provincial Proof of Concept with the RCA in the role of project lead and coordinator. Participation was voluntary and no additional funding was provided to participating sites. During the expression of interest, sites were able to opt in or opt out of each part of the PoC as suited the patient population and available resources. Sites were encouraged to

⁷ <http://www.gtarehabnetwork.ca/uploads/File/reports/Developing-a-Performance-Framework-for-Outpatient-Rehabilitation--February-2013.pdf>, retrieved August 1, 2018

implement all three tools to improve the expected data yield and have comparable data for the full minimum dataset.

The RCA worked with the ethics and privacy offices of University Health Network, RCA's host organization, to draft data-sharing agreements for all participating sites. The sites coordinated with their own ethics and privacy offices as required.

3.1 NACRS Clinic Lite

During the PoC, NACRS Clinic Lite was used to collect data from the Access and Transition and Utilization quadrants of the RCA's standardized Outpatient/Ambulatory Rehabilitative Care Minimum Data Set using a standardized set of data elements. The project was a collaboration between the Ministry of Health and Long-Term Care (MOHLTC), CIHI and the RCA.

During the expression of interest and onboarding process for sites piloting NACRS Clinic Lite, it became apparent that most of the participating sites were large academic hospitals. In an attempt to achieve better provincial representation on this project, the RCA actively sought to involve small, rural and northern hospitals. Through this process, one additional site—a small, rural hospital—agreed to participate. Generally, smaller organizations found the start-up costs (i.e., time and human resources) to be a barrier to participate.

The RCA supported sites with their data collection, working with partners to address logistical requirements during the kick-off phase. The RCA liaised with the MOHLTC to obtain and confirm ambulatory care numbers for those sites that did not have them and worked with financial reporting contacts from sites to select and confirm an appropriate MIS reporting code.

3.1.1 Institute of Clinical Evaluative Sciences Cross-database Methodology

Through application of an Applied Health Research Question (AHRQ), a process that is funded by the Ontario Ministry of Health and Long-Term Care, the RCA was able to obtain the services of a team at the Institute for Clinical Evaluative Sciences (ICES) for further analysis of the Provincial Proof of Concept Data. The analytics team at ICES was asked to use the data collected during the NACRS Clinic Lite PoC to describe health service utilization patterns among patients who received outpatient rehab, stratified by rehabilitation population. The rehab population cohorts were defined in the discharge abstract database (DAD) as follows:

- a) stroke patients, as described by subarachnoid hemorrhage, intracerebral hemorrhage, cerebral infarction, stroke with no specified as hemorrhage or infarction, sequelae of cerebrovascular disease, central retinal artery occlusion
- b) hip fracture patients, including traumatic hip fracture and pathological/non-traumatic hip fracture, pelvis fracture
- c) total joint replacement (TJR) patients, as described by all hip replacement and knee replacement.
- d) Other orthopedic patients, any NACRS Clinic Lite patients identified as having an orthopedic issue that was neither a hip fracture or TJR

- e) Other non-ortho, any NACRS Clinic Lite patients identified as having a rehabilitative care need that was not an orthopedic issue (i.e., hip fracture, TJR, or other orthopedic as described above) and was also not a stroke.

For stroke patients, alphaFIM® values were used to stratify the analysis to determine if patients were accessing the appropriate (inpatient vs. outpatient) types of rehab based on best practice guidelines.

The time period which these patients were followed began at 365 days prior to the index event for which the patient was receiving outpatient rehabilitative care and followed until discharge from outpatient rehab. For stroke or hip fracture patients, the index event was identified as the emergency department or acute care admission for stroke or hip fracture, from NACRS or DAD, accordingly. For TJR patients the index event was identified as the surgery date for the joint replacement. For all other cohorts, finding the event that led to the outpatient rehabilitation was not feasible. For these cohorts, health services utilization was reported in the 365 days prior to their NACRS Clinic Lite admission date.

3.2 Community Rehab Assessment

The Community Rehabilitation Assessment (CRA) is a new tool that is based on validated items from the interRAI suite of assessment instruments that are used internationally in a multitude of care settings including home and community care, long-term care, and inpatient rehabilitation. The CRA consists of an In-Clinic Assessment and a Patient Self-Report Tool, and it is used to assess patients on a wide number of functional domains including capacity to ADLs and IADLs, gait speed, cognition, memory, communication, vision, attention, and pain. In addition, through the Patient Self-Report Tool, several additional domains of health and well-being are assessed including fatigue, sleep, mood, and participation in social activities. The In-Clinic Assessment uses adaptive questioning based on the need for further assessment in areas identified using the Patient Self-Report Tool. This adaptive questioning strategy means that the depth of the assessment varies depending on the findings from the Patient Self-Report Tool. For example, if there were no issues with IADLs, cognition or communication, the respondent completing the In-Clinic Assessment is directed to skip several sections of the assessment.

The RCA acquired the services of a software development company to create an online data entry site and accompanying database for the Community Rehab Assessment. Sites that participated in this part of the provincial proof of concept could opt to use the online entry system or collect data on paper, which was de-identified and sent to the RCA for manual entry into the database.

Data cleaning, data analysis, and report creation was performed by Luke Turcotte and supported by Canadian interRAI researchers Dr. Katherine Berg and Dr. John Hirdes. A series of Wilcoxon signed-rank tests was used compare item response differences between the admission and discharge assessments. In addition, the Cohen's d effect size statistic was computed for each assessment item to provide a standardized measure of the mean difference in response between admission and discharge. Larger effect sizes indicate that the magnitude of the change between admission and discharge is greater.

3.3 WatLX™

The WatLX™ is a patient experience tool that was developed by researchers from the University of Waterloo and Wilfred Laurier University for the outpatient/ambulatory setting. The tool measures patient experience of the care received using 10 questions, each with a five-point Likert scale for response. Patient demographic questions were also included but with no patient identifiers. Patients returned the experience surveys in sealed envelopes to a centralized location at their site. The surveys were then mailed to the RCA for data entry and analysis. Data manipulation, report creation, and data analysis were conducted by Dr. Heather McNeil and Dr. Josephine McMurray at Wilfrid Laurier University.

Earlier psychometric testing was completed to evaluate the internal consistency and test-retest reliability, construct validity, and feasibility of the WatLX™⁸. Data and analysis from this project were used for early validation of the tool. Levene's test, a measurement of the equality of variances over the data set, was used to measure internal validity of the WatLX™.

3.4 Clinician Evaluation

Feedback from participating sites was collected throughout the project during Task Group meetings and through a set of evaluative questions for the project that were distributed one month after the project start date and at the completion of the project. How sites implemented the PoC, integrated the tools into practice, and the perceived value of the tools and data collected were documented in the clinician evaluation. These findings informed key learnings and next steps for the tools.

4.0 RESULTS AND ANALYSIS

A total of 21 hospital and community-based programs participated in the proof of concept. Participation was voluntary and no additional funding was provided to participating sites. Sites were able to opt in or opt out of each part of the PoC as suited the time available for participation, patient population, and site interest.

Each clinic collected data from April to December 2016 using one or more of the parts of the standardized minimum data set. For sites that participated in the NACRS Clinic Lite proof of concept, historical data from 2015 was also submitted. It should be noted that sites participated on a voluntary basis and provided data for patient populations using a convenience sampling approach. As such, the analysis in this report should not be construed as representing the incidence or prevalence of any specific population.

4.1 NACRS Clinic Lite—Access/Transition and Utilization

⁸ McMurray, J., McNeil, H. Gordon, A., Elliot, J., and Stolee, P. "Psychometric Testing of a Rehabilitative Care Patient Experience Instrument". *Archives of Physical Medicine and Rehabilitation*, 2018;99:1840-7.

The nine sites that submitted patient data using NACRS Clinic Lite for the PoC submitted 5,560 records, representing 426 patients over the data collection period. Most sites used CIHI's web-based data entry system; one site used a customized electronic file submission system. Table 1.1, outlines a breakdown of the demographics of the patient population whose data was captured in NACRS Clinic Lite during the PoC.

The majority of patients, for whom data was submitted in this proof-of-concept, were identified as needing rehab post total joint replacement (39%), including both hip replacement and knee replacement patients. The next most common reasons patients sought rehab in the participating OP/AMB rehabilitation clinics were: stroke (22%); orthopedic other (20%), which includes fractures or injuries of the shoulder, elbow, forearm, hand, hip, knee, ankle, foot and back; hip fracture (6%); spinal cord dysfunction (4%); acquired brain injury (4%); and amputation (3%). Patients classified as having arthritis, burns and neurological diagnoses represented 1% each of the proof of concept population.

Twenty-two patients were classified as having more than one reason for seeking treatment in an OP/AMB rehabilitation clinic; for the purpose of this analysis, each diagnosis was counted for these cases.

The age group breakdown of patients, for whom data was submitted to NACRS clinic lite, is included in Table 1.1 "Description of patient population whose outpatient rehabilitation data was collected during the NACRS Clinic Lite PoC, stratified by age, gender, and rehabilitation need", in the Appendix. The largest age group of patients were 20-64 year olds (37%), followed by 65-74 years olds (33%), 75-84 year olds (21%), 84+ (7%), and 1-19 years olds (3%). Slightly more females (53%) than males (47%) were represented.

Referrals and access

Most patients in this proof of concept were referred to OP/AMB rehabilitation by an inpatient service (78%). Other referral sources included: unknown/unavailable (14%); ambulatory care service (3%); private practice (2%); and self/family/caregiver (2%). A small number of patients (7 in total) were referred by a drug dependency service, education agency, residential care facility, home care, mental health facility, community health service, or legal service (Table 1.2).

For the purpose of this analysis, patients with more than one diagnosis and more than one referral source were counted separately for each additional diagnosis and referral source provided.

Most of the clinics participating in this proof of concept (both outpatient rehab and community physiotherapy) reported physiotherapists as the first clinician patients typically see when starting an episode of care.

The average number of days that patients waited for outpatient rehab services (time of referral until the time of first treatment) varied across facilities (data not shown) and was dependent on the clinician of first visit as well as the reason for seeking rehab. ***The average wait time for outpatient rehab across all patients in this PoC was 19.8 days.*** There was variability in mean wait time depending on which clinician patients saw first (range 14.8 to 21.3 days) with the wait time for nursing and social work being less than for physiotherapy or speech-language pathology services. In general, the mean wait times for

specialized outpatient programs for complex patients were longer; for example, patients with spinal cord dysfunction or ABI waited 40.6 days and 28.3 days, respectively. For orthopedic TJR patients – the most highly represented condition in this proof of concept – the average wait time across all facilities and all clinician types varied from 7 days to 46 days with a mean of 17.1 days. See Table 1.3 for more details.

Utilization

A further analysis was completed to determine the distribution of patient types that each clinician was seeing. For the purpose of this analysis, the following groupings of clinicians were created: speech language pathologist and communication disorders assistant (SLP/CDA); occupational therapist and occupational therapist assistant (OT/OTA); physiotherapist and physiotherapist assistant (PT/PTA); and other, which included registered nurse, registered practical nurse, social worker and other.

Findings from this analysis showed that SLP/CDA spent 93% of visits with stroke patients (a total of 113 patients had a stroke diagnosis in this proof of concept), 6% with patients acquired brain injury patients (a total of 18 patients had an acquired brain injury diagnosis in this proof of concept) and 1% with patients with spinal cord dysfunction (a total of 18 patients had a spinal cord dysfunction in this proof of concept).

OT/OTA saw a wider variety of patients, spending: 71% of visits with stroke patients (total of 113 patients), 11% with acquired brain injury patients (total of 18 patients), 4% with amputation patients (total of 13 patients), 3% with orthopedic other patients (total of 103 patients), and the remainder with pulmonary, spinal cord dysfunction, cardiac, neoplasm, neurological, and hip fracture patients.

PT/PTA teams predominantly saw orthopedic patients: spending 47% of visits with TJR patients (total of 198 patients), 17% with orthopedic other (total of 103 patients) and 8% with hip fracture patients (total of 29 patients). This clinician group also saw spinal cord dysfunction patients (10% of visits); stroke patients (10% of visits); amputation patients (3% of visits); acquired brain injury patients (2% of visits); and arthritis patients (1% of visits). Table 1.4a in the appendix outlines this data in more detail.

Additionally, an analysis was completed to determine whether 1, 2, 3 or greater than 3 clinician types were being used for each patient type. Across all facilities, 50% of orthopedic TJR patients were seen by one clinician type, 44% by two clinician types, 5% by three clinician types and 1% by more than 3 clinician types. 29% of stroke patients across all facilities were seen by one clinician type, 39% for two clinician types, 18% by three clinician types and 14% by three or more clinician types. Table 1.4b in the appendix outlines this data in more detail.

Utilization is summarized in Table 1.7. ***The highest service utilization was seen among the Other-non-orthopedic group (mean 1504 minutes)*** which included patients with spinal cord injury, acquired brain injury, pulmonary conditions, for example. This group, being diverse as it is, also had a very broad range of service duration minutes. ***The population with the second highest mean service duration minutes were stroke patients (1206 minutes, mean service duration). Hip fracture (497 minutes), total joint replacement (344 minutes), and other orthopedic (303 minutes) had significantly lower service duration minutes.***

All patients in this PoC who attended outpatient rehab for orthopedic conditions had at least one attendance with a physiotherapist. The mean number of physiotherapy minutes per visit ranged from 18.86 to 50.68 minutes. 65.7% of stroke patients and 98.0% of other non-orthopedic patients also had at least one attendance with a physiotherapist, making physiotherapy services the most commonly accessed service and the service with fairly high utilization. Looking at which patient groups utilized occupational therapy services, 90.5% of stroke patients and 44.9% non-orthopedic patients had at least one attendance with an occupational therapist. The mean service duration minutes for occupational therapy minutes in the stroke group, were 50.7 minutes.

Just over half of patients (55.4%) had at least one visit with a therapy assistants, either PTA or OTA, though it varied by patient group and ranged from 28.6% of stroke patients to 80% of total joint replacement patients. The mean number of therapy assistant service duration minutes across the full PoC patient sample was 26.0 minutes.

Discharge and Completion

As part of this proof of concept, participating clinics were required to indicate whether patients had completed their episode of care or were discharged prior to completion (indicated as ‘incomplete’). At the end of the proof of concept period, 67% of TJR patients had completed their episode of care and 71.7% of hip fracture patients were indicated as having completed their episode of care. However, only 37.9% of hip fracture and 19.5% of stroke patients were reported as having completed their episode of care (Table 1.6). The proportion of patients whose treatment was indicated as incomplete at the time of discharge ranged from 3 to 14%. Unfortunately, treatment completion was not a mandatory field and the remaining proportion of patient discharge records had this field left blank. As such, it cannot be confirmed whether these patients did or did not complete their episode of care.

As expected, almost all patients were discharged home at the end of their visits (Table 1.6). Discharge disposition is a mandatory field and is reported for every visit. In Table 1.6, the discharge disposition on the final record was documented – 99.7% of patients were discharged home.

4.1.1 ICES Analysis

As noted in the methodology section, the RCA, through application of an Applied Health Research Question (AHRQ), was able to obtain the services of a team at the Institute for Clinical Evaluative Sciences for further analysis of the provincial proof of concept data. Specifically, healthcare utilization before and during outpatient rehabilitation were investigated by reviewing service utilization in NACRS, DAD, and OHIP databases.

Prior to entering outpatient rehabilitative care, 66% of patients who were part of this PoC had at least one emergency department (ED) visit compared to 33% of patients with at least one acute care admission, within the year prior to their outpatient rehab first visit (Table 1.7: Description of therapist and nursing visits during outpatient rehabilitation, stratified by condition).

The cohort of TJR patients were less likely to have been admitted to acute care (21%) or have had an ED visit (34%) within the year prior their outpatient rehab episode of care whereas those patients attending

rehab for a stroke were most likely to have had at least one ED visit (98%) and hip fracture patients were most likely to have had an acute care admission(100%) in the prior year. This is not surprising given that total joint replacements are elective procedures whereas hip fractures are traumatic events. The hip fracture patient cohort had a similarly high likelihood of having an ED visit in the year prior to the outpatient rehab episode of care (96%) as the stroke patient cohort but the stroke patient cohort had a significantly higher number of ED visits. Of the 91 stroke rehab patients who had at least one ED visit in the year prior to their stroke event, a total of 190 visits occurred in that year versus only 42 ED visits among the 24 hip fracture patients. For those patients in the other-orthopedic and other-non-orthopedic cohorts who were admitted to the ED (75%), multiple ED visits over the year were observed – a total of 289 visits for 101 patients.

Concurrent with their outpatient rehab episode of care, many patients were utilizing additional healthcare services. Concurrent service use was primarily identified through the OHIP database and as physician visits, specialist, family practice, or other, as well as diagnostic radiology, were the utilized services, were likely as a follow-up from their event that necessitated rehab. ***More than half (59%) of patients received at least one concurrent family physician visit, with the median number of family physician visits concurrent with the rehab episode of care equal to two. Specialists were more commonly visited, concurrent with outpatient rehab, with 70% of patients having at least one specialist visit during their outpatient rehab episode of care and the median number of specialist visits equal to three.*** Diagnostic radiology, physical medicine, orthopedic surgery and internal medicine (stroke cohort) were the most common specialist physician visits.

ICES was unable to access the Client Health and Related Information System (CHRIS) database to determine whether patients attending outpatient rehab were receiving any in-home services prior to, concurrently with, or post their outpatient rehab episode of care.

4.2 Community Rehab Assessment (CRA)—Functional Outcomes

Over the course of the project, 212 admission assessments and 101 discharge assessments were completed for the Self-report Tool and 201 admission assessments and 133 discharge assessments were completed for the in-clinic assessment. This data was submitted from 11 sites across Ontario. Data manipulation and analysis was conducted by Luke Turcotte and supported by Dr. Katherine Berg and Dr. John Hirdes.

Among those patients whose data was submitted as part of the CRA PoC, the most frequently reported rehab groups were “Other Orthopedic Conditions”, “Stroke” and “Neurological Conditions” (Table 2.1). The “Other Orthopedic Conditions” group included individuals with fractures, strains, sprains, or tears of various joints such as the knee, shoulder, and hand. The “Neurological Conditions” group included primarily individuals with Parkinson’s Disease and other unspecified disorders of the central nervous system. Due to missing date information on 58% of the admission assessments and 27% of discharge assessments, the episode of care length could only be calculated for 56 patients. Among these 56 patients, the mean episode of care length was 42 days with a standard deviation of 29 days.

Due to the low sample size, CRA results and analysis could not be compared by rehab groups. Rather, the data results and analysis are presented in three categories throughout this report:

- Overall Sample: data and analysis representing the full sample of completed patient data in the PoC
- Neurological Conditions: includes patient data for those patients that indicated a primary reason for rehab as stroke, neurological condition (Parkinson's Disease, for example), and acquired brain injury
- Orthopedic Conditions: includes patient data for those patients that indicated the primary reason for rehab as total joint replacement, hip fracture, and other orthopedic conditions.

Instrumental Activities of Daily Living

In the overall sample, significant change between admission and discharge was observed for all IADLs (Table 2.2). The greatest improvement was observed in the ability to complete meal preparation, ordinary housework, shopping, stairs, and transportation. Similarly, for patients in the Neurological Conditions sub-group, statistically significant change was detected for all IADLs except shopping and transportation (Table 2.3). In the Neurological Condition sub-group, the greatest improvement was observed in the ability to negotiate stairs.

However, for patients in the Orthopedic Conditions sub-group, significant change was detected for all IADLs except for phone use where nearly all patients were already independent at admission (Table 2.2). The greatest improvement in the Orthopedic Condition group was in the capacity to complete meal preparation and ordinary housework (Table 2.4). This improvement was a notably larger effect than in the Neurological sub-group or in the overall sample. For example, in the case of meal preparation, **83% of individuals in the Orthopedic Conditions sub-group were independent in meal preparation at discharge compared to only 31% at admission**. Perhaps not surprisingly, outpatient rehab had the largest effect on the ADLs and IADLs that involved or required mobility, such as stairs for the Orthopedic Condition subgroup.

Activities of Daily Living

Among patients with both an admission and a discharge assessment, **statistically significant improvement was observed in bathing, personal hygiene, dressing upper body, dressing lower body, toilet transfer, toilet use, bed mobility, eating, walking and stairs** (Table 2.5).

For patients in the Neurological Conditions sub-group, statistically significant change was observed for dressing lower body, toilet transfer, toilet use, eating, walking and stairs ADLs (Table 2.6). In the Orthopedic Conditions sub-group, statistically significant change was observed for the bathing, dressing lower body, toilet transfer, toilet use, walking and stairs (Table 2.7).

Not surprisingly, a larger effect of the outpatient rehab episode of care was observed in the orthopedic group around those activities that required mobility, (i.e., toilet transfer, walking and stairs), over the neurological sub-group, where a smaller effect was detected. However, it is important to note that due to a limited number of individuals in the Neurological Conditions and Orthopedic Conditions sub-groups, many of the tests were under-powered to determine whether the observed changes were statistically significant when compared across the sub-groups.

Communication

Very few patients indicated any difficulty with communication at admission and as such, change in items related to communication for the entire sample was not detected.

Unfortunately, due to low sample size, patients who received one or more visits from a Speech Language Pathologist during the episode of care resulted in under-powered tests for detecting change between admission and discharge. **Overall, 60% of program participants that were seen by a Speech Language Pathologist were able to make themselves understood to others at discharge compared to only 36% at admission** (Table 2.8).

Pain

Following outpatient rehabilitation, patients reported a statistically significant decrease in the frequency and severity of pain (Table 2.9). Compared to 67% of patients at admission, 42% of patients experienced pain every day, all or most of the time at discharge. Similarly, there was a decrease in the severity of pain experienced by patients at rest and during moderate or vigorous activity.

For patients in the Neurological Conditions sub-group, there was no statistically significant change detected for the frequency of pain reported by patients, however there was a significant decrease in the severity of pain experienced by patients at rest (Table 2.10). For the Orthopedic Conditions sub-group, there was significant decrease in the frequency of pain experienced by patients (Table 2.11). Although there was improvement in the severity of pain experienced by patients in this sub-sample while at rest, during routine tasks, and while engaging in moderate or vigorous activity, due to limited power from low sample size, none of these changes were statistically significant.

Movement

At discharge, significant improvements were observed in the ways in which patients in the program move indoors (Table 2.12). **At discharge, 61% of patients reported walking without an aide indoors compared to 46% of patients at admission.** Following program participation, patients left the house significantly more often and were able to walk further distances compared to admission. In the case of walking distance, this difference yielded a moderate effect size. Though patients in the Neurological Conditions sub-sample did not achieve clinically significant change in this domain (Table 2.13), patients in the Orthopedic Conditions sub-sample made strong improvements in their ability to ambulate (Table 2.14). For example, **at discharge, 53% of patients in the Orthopedic sub-sample were able to move indoors without an aide compared to only 9% of patients at admission**, a change that resulted in a strong effect size. Similarly, patients in this group left the house significantly more often and walked significantly further at discharge.

Significant improvements in walking speed were detected following participation in the program. Mean time to complete the 4 metre/13 foot walk test improved from 7.8 seconds to 5.3 seconds for patients in the overall sample. This improvement was most pronounced among patients **in the Orthopedic**

Conditions sub-sample where the mean time to complete the 4 metre/13 foot walk test improved from 10.8 seconds to 5.7 seconds. This large improvement indicates that patients in the Orthopedic Conditions sub-group improved walking speed by more than one standard deviation during their episode of care.

Fatigue

Compared to admission, a significantly greater percentage of patients in the overall sample reported at discharge that they experienced no fatigue or that the level of fatigue that they experienced did not prevent them from completing normal day-to-day activities (Table 2.15). **At admission, nearly one-third of patients in the overall sample reported that fatigue prevented them from starting or finishing normal day-to-day activities. This percentage decreased to only 9% at discharge.** These results were mirrored in the Neurological Conditions and Orthopedic Conditions sub-samples.

Physical and Social Activity

At discharge from the program, program participants spent significantly more time involved in social activities and in community or volunteer activities. For example, **at discharge, more than one-third of the overall sample spent more than 8 hours a week involved in social activities compared to only 16% at admission.**

4.3 WatLX™—Patient Experience

Data from 1013 completed patient surveys from 19 organizations at 22 sites were gathered using the WatLX™ measure. Hospital-based outpatient rehab programs and community-based physiotherapy clinics participated and submitted data. Table 3.1 describes the patient sex and age distribution for those patients who completed WatLX™ surveys.

Of the 1059 surveys distributed, 46 were returned completely blank indicating 3.7% non-response rate or a 96.3% response rate. The frequency of missing item responses on completed surveys was 1.2% and frequency of “N/A” responses was 4.7%, demonstrating overall feasibility of the tool.

The results from the survey are summarized in Table 3.2, in the Appendix which provides an overall mean and standard deviation across all questions. A question by question summary of mean response and standard deviation is provided in Table 3.3. Reliability and internal validity of the tool, which was previously tested and reported by the team that developed the WatLX™⁹ was replicated and confirmed with the data from this project. Internal consistency was measured using Cronbach’s alpha (0.86). Convergent validity was confirmed comparing the responses to Q10 (a “Net Promoter” question that asks whether patients would recommend the care provider to family or friends) with a question that

⁹ McMurry, J., McNeil, H. Gordon, A., Elliot, J., and Stolee, P. “Psychometric Testing of a Rehabilitative Care Patient Experience Instrument”. *Archives of Physical Medicine and Rehabilitation*, 2018;99:1840-7.

asks the patient to rate their overall experience (Spearman's $\rho = 0.5$, $p = 0.006$, 95% CI 0.19 to 0.75).

There was no statistically significant difference between the total WatLX™ score by age or sex. When checking for potential survey bias across sex and age groups on a question by question basis, there did appear to be a statistically significant difference between age groups in the question "Would you recommend to family and friends?" which is rated between 1 and 5. There was a difference between age groups on whether or not they would recommend the practice – the older patients were, the less likely they were to recommend the clinic to friends and family.

In addition to the quantitative analysis, the responses provided in the open comment box were analyzed. Of those WatLX™ surveys submitted, 623 (61.5%) participants used the open comment box to provide general comments about their experience in outpatient rehab. Qualitative analysis of the open text box comments were generally very positive and were focused on themes around staff, the overall experience, results in therapy, experience with the facility, quality of the session, barriers to treatment, and cost. There were some but few negative comments in the open text comment box; however, these were sufficiently few that they were grouped together and could not be themed.

Of the responses, 62.4% specifically mentioned the quality of staff (often by name) whereas only 8.7% described some negative comment. The most common comments were expressed about staff (62.4%), overall experience (34.5%), the results obtained (27.8%), and quality of the facility (15.5%) in outpatient rehab.

In the staffing theme, there were again, many comments that could be summarized more generally. Among comments about the staff, helpful, supportive, and attentive were the most commonly mentioned attributes, even if it meant for the patient that they were going out of their comfort zone. An example of this kind of comment is "The staff was very caring and went beyond with my care, felt safe and looked forward to coming"

Kindness and consideration was appreciated by patients and was specifically noted in the comment box. Summarizing these comments, consideration and kindness was demonstrated when staff helped patients progress at a pace where they felt safe, addressed their concerns and fears, and listened to their wishes and perspective – not just treatment-related but other issues as well i.e. social, mental health.

Patients identified excellence and quality of care among their rehab team and included volunteers, and support staff in their comments. Patients associated excellence and quality care with staff who demonstrated respect and courtesy, were experienced and knowledgeable, dependable, thorough, professional, and helped patients attain their therapy goals. In the comment text, patients also highlighted that trust in staff was critically important to them. Also noted was that undesirable events (pain during therapy) did not affect patients' overall experience with the program, particularly if positive outcomes were achieved as setting realistic and stretch goals was an overall important part of the experience in outpatient rehab.

When negative experiences were identified, patients indicated that these were most likely a result of inconsistent or disorganized programs or instruction, prescribed treatments that were unavailable i.e. ultrasound, being shown exercises rather than working together with therapist, faulty, unavailable or

unreliable equipment, waiting, lack of accessibility i.e. mobility buttons on washroom doors, and highly aggressive or unnecessarily painful treatment regimes.

Finally, patients identified a series of attributes for their outpatient rehab staff and facilities that had the greatest positive impact on their experience in their episode of care:

- Friendliness and positivity was appreciated and instilled confidence and acceptance
- Well-lit, clean, calm and modern facilities with windows were motivational
- Social interaction and sense of family is a motivator
- Parking was occasionally an issue – cost and availability
- Being in a room or group classes with others with similar issues was “therapeutic”
- Appointments starting on time
- Facilities such as whirlpools and pools positively impacts perceptions of “state of the art”
- Proximity to residence – especially if rural
- Front desk staff are the start of care – courtesy, helpful, positive

4.4 Clinician Evaluation

Feedback from participating sites was collected throughout the project during task group meetings and through a set of evaluative questions for the project that were distributed one month after the project start date and at the completion of the project.

Of the 27 sites that participated in the Outpatient/Ambulatory proof of concept, 17 completed Part 1 of the evaluative questions (1 month after the project start date) and 9 completed Part 2 (at the completion of the project). Among respondents were sites that had participated in each aspect of the PoC such that users of all three data collection tools were represented. Also, among the respondents were sites that had included data from patients post TJR, hip fracture, stroke, with an ABI, with a neurological disorder and geriatric rehab patients.

Regarding training and start-up processes, sites generally agreed that the education provided was adequate, that the processes for obtaining all of the necessary documents were simple and easy to understand, and acquisition of the appropriate access to the various entry tools went smoothly.

About the tools themselves, the WatLX™ received the most positive feedback. Seven of the 8 sites who used the WatLX™ and responded to the evaluation agreed or strongly agreed that the WatLX™ was easy to complete and implement. Sites noted that most patients were able to complete the tool easily though sites that worked with a higher proportion of patients post stroke or with neurological conditions found completion challenging. Some sites indicated literacy or language as a barrier, as the tool was only offered in English.

For NACRS Clinic Lite and the Community Rehab Assessment the overwhelming response was that all steps that required manual work – paper or other manual data collection or data entry, manual submission of data, were an onerous burden that was difficult to overcome.

For NACRS Clinic Lite, while the data that was obtained from the tool was seen as useful for assessing the value of outpatient rehab and that this data would be helpful in planning Is, the manual data entry

was very time consuming. NACRS Clinic Lite required manual data entry of patient and site information that amounted to 17 standard elements for every patient visit. Over a typical course of rehab that could amount to 13 visits and a significant use of resources, given that it was estimated by participating sites that it would take approximately 5 to 20 minutes to complete the data entry of one record (dependent on the learning curve and patient or health data system complexity). Approximately three to five internal data systems were required in order to complete the set of data elements in NACRS Clinic Lite. Start-up processes were slow for this tool as well, as obtaining the necessary facility numbers and approvals for data submission were lengthy.

For the Community Rehab Assessment, results in evaluative questions varied and only 4 participating sites responded, so it was challenging to quantify the results. Through interviews and open comment boxes, a consistent observation was the tool was too long. Depending on the facility and the patient populations served at those sites, respondents' opinions varied in the necessity of some questions. For example, sites that worked with a predominantly noncomplex orthopedic population expressed that many of the questions on cognition, mood, communication, etc. were excessive but would have preferred more domains on gait, balance, and management of stairs. Conversely, sites that treated complex patients with cognitive or language impairment identified these sections not only as necessary but would have preferred more questions in these domains. Sites indicated that it often took about 10 to 30 minutes of additional time at admission and discharge for patients to complete the patient self-report and clinical another 15 minutes at admission and discharge for clinician assessment.

Overall, 87% of those who responded to the survey agreed or strongly agreed that collecting and reporting outpatient/ambulatory rehab data using standardized tools will inform patient care and support quality improvement. This work was strongly supported for implementation, with the noted improvements, for the advancement of outpatient rehab in Ontario.

5.0 SUMMARY AND RECOMMENDATIONS

The provincial proof of concept and the data obtained from the project marks the first time that comparable, standardized data has been collected and reported across outpatient/ambulatory rehabilitative care programs in Ontario. Development and piloting of this outpatient minimum data set provides the first step toward addressing the data gap identified in the 2013 Auditor General's Report. The work also aligns with the directions of the Ministry of Health and Long-Term Care toward bundled funding and the need to better understand the return on investment in outpatient/ambulatory rehabilitative services (e.g., improved patient function and quality of the patient experience). As expected, valuable information was gained from this first provincial proof of concept that will set the next steps for a broader implementation of the performance reporting in the outpatient/ambulatory rehab sector.

5.1 Recommendations from the 2016 Proof of Concept

- Modifications to NACRS Clinic Lite are needed to reduce time for data entry.

NACRS Clinic Lite is designed to capture a minimal data set with each visit record. As a result,

some data elements need to be re-entered for every patient visit. Sites submitting data manually through the NCL web-entry tool indicated that in order to make this data collection ongoing, the time for web-based data entry would need to be reduced. Some proposed options include: 1) modifications of the NCL web-entry tool to either auto-populate or require a one-time entry for demographics or other data that is repeated across visits and 2) a provincial mandate to use NCL to collect outpatient/ambulatory data in order to encourage sites to invest in vendors that can provide automated solutions.

Recommendation: That the RCA work with CIHI and provincial stakeholders to implement recommended changes to NACRS Clinic Lite in order to reduce data entry time for outpatient/ambulatory data for those sites who do manual entry. Further, and where relevant and possible, that the RCA liaise with provincial stakeholders and their vendors to address the need for customized solutions to support reporting of outpatient/ambulatory data.

- The data burden of the current Community Rehab Assessment needs to be reduced.

Preliminary analysis of the CRA data indicates that functional improvement can be measured in many rehab populations. Approximately 80 per cent of patients had an identified functional deficit at admission and demonstrated substantial improvement by discharge from the rehab program. Patients demonstrated substantial improvement in instrumental activities of daily living, mobility, increase in social activities and improvement symptoms such as pain and fatigue.

Unfortunately, in the opinion of most of the clinicians who worked on the project, the burden of data collection was high and a few clinicians were still undecided as to whether the CRA measures clinically significant change for their specialized client populations. Sites have identified specific suggestions on elements that could be added to, removed from or modified in the CRA.

Recommendation: That the RCA review the feedback on the Community Rehab Assessment measure with proof-of-concept pilot sites and provincial stakeholders to determine how to move toward implementation of a provincial measure of patient outcome in the outpatient rehabilitation setting.

- WatLX™ was easy to implement and demonstrated positive patient experience.

Sites that submitted data using WatLX™ noted that the process for collecting patient experience data was easy to implement and did not require significant staff training. Data collected from the tool indicate that out of a possible score of 50, most sites scored a mean between 46 and 50, i.e., patients expressed that they had a positive experience of rehabilitative care.

Recommendation: The WatLX™ is ready for provincial implementation in outpatient rehab clinics. In the future, any possible “ceiling effect” of this version of the WatLX™ could be tested

and, if appropriate, a similar tool that uses a 7-point Likert scale could be tested and implemented.

This marks the first time that comparable, standardized outcome and resource utilization data has been collected across outpatient/ambulatory rehabilitative care programs. Continued reporting in this sector will address a long-standing information gap, will illustrate the contribution of outpatient/ambulatory rehabilitative care to an efficient and effective healthcare system and enable informed planning for community based services. All sites participating in the provincial proof of concept and the RCA Outpatient/Ambulatory Task and Advisory Groups have been provided with a high level data summary from the provincial proof of concept. Each participating site also received a summary of their site-specific data.

A [summary of the Provincial Data from this Proof of Concept](#) is available on the [RCA Website](#).

ADDENDUM - Status Update and tools for Implementation

Since the conclusion of the Provincial Proof of Concept and during the writing phase for this report, some of the noted recommendations have been implemented.

- [NACRS Clinic Lite Data Elements](#) used for this Provincial Proof of Concept.
Since April 1 2018, NACRS Clinic Lite has been used to collect data on outpatient rehabilitation services used in the MOHLTC Hip and Knee Bundled funding pilot. For this bundled funding pilot, data is reported in summary record format.
- [Community Rehab Assessment Tool](#)
Since the completion of the 2016 PoC of the Community Rehab Assessment, a second phase of the PoC, using a shorter version of the tool has begun. Results from that PoC are expected to be released in 2019.
- [WatLX™ Tool](#)
Since July 1, 2018, NRC Health has offered the WatLX™ through the OHA contract to hospital-based outpatient ambulatory clinics for the collection of patient experience data. To use the survey under the OHA's PRPM contract, and discuss your surveying needs, please contact your hospital's designated primary NRC Health contact person: Nick Fontana (nfontana@nrchealth.ca) or Pamela Luciano (pluciano@nrchealth.ca). Non-hospital-based clinics interested in using the WatLX™ can contact Josephine McMurray (jmcmurray@wlu.ca).

6.0 DATA TABLES

NACRS Clinic Lite Data Tables and Figures

Table 1.1: Description of patient population whose outpatient rehabilitation data was collected during the NACRS Clinic Lite PoC, stratified by age, gender, and rehabilitation need.

		Total Patients N=426	Hip fracture N=25	Total joint replacement N=160	Other Ortho N=87	Stroke N=105	Other Non-ortho N=49
Age (mean, SD)		65.80 ± 15.68	74.64 ± 10.30	67.18 ± 11.79	61.08 ± 22.46	67.97 ± 13.09	60.55 ± 16.16
Age Group	<55	69 (16.2%)	< 6*	16 (10.0%)	22 (25.3%)	10-14* (S)	17 (34.7%)
	55-64	92 (21.6%)	< 6*	38 (23.8%)	12 (13.8%)	28 (26.7%)	8-12* (S)
	65-74	141 (33.1%)	< 6*	67 (41.9%)	27 (31.0%)	31 (29.5%)	8-12* (S)
	75-84	95 (22.3%)	10 (40.0%)	34 (21.3%)	20 (23.0%)	20 (19.0%)	11 (22.4%)
	85+	29 (6.8%)	< 6*	< 6*	6 (6.9%)	13 (12.4%)	< 6*
Gender	Female	225 (52.8%)	18 (72.0%)	101 (63.1%)	54 (62.1%)	32 (30.5%)	20 (40.8%)
	Male	201 (47.2%)	7 (28.0%)	59 (36.9%)	33 (37.9%)	73 (69.5%)	29 (59.2%)

*denotes value suppressed in line with privacy policies

Table 1.2: Referral Source for patients attending outpatient rehab

Referral Source	Sum of # Patients
Inpatient service	78%
Unknown/unavailable	14%
Ambulatory care service	3.4%
Private Practice	2%
Self/family/caretaker	2%
Other†	2%

†Other includes mental health facility, home care, residential care facility, drug dependency service, education agency, community health service, legal service

Table 1.3: Wait time for outpatient rehabilitative care by clinician of first visit (a) and condition (b)

a)

Clinician	Number of Patients	Total Wait (days)	Mean Wait (days)
PT	348	7415	21.3
OT	69	1048	15.2
RN	28	414	14.8
SLP	7	116	16.6
SW	<6*	77	15.4
RPN	<6*	NV	NV
Total	458	9087	19.8

*denotes value suppressed in line with privacy policies

b)

Condition	Number of Patients	Total Wait (days)	Mean Wait (days)
Ortho-TJR	186	3183	17.1
Ortho-Other	104	2692	25.9
Stroke	93	1255	13.5
Ortho-Hip Fracture	26	367	14.1
Acquired Brain Injury	13	368	28.3
Spinal Cord Dysfunction	11	447	40.6
Arthritis	<6*	NV	NV
Neoplasm(s)	<6*	NV	NV
Neurological	<6*	NV	NV
Other	<6*	NV	NV
Pulmonary	<6*	NV	NV

*denotes value suppressed in line with privacy policies

Table 1.4a: Clinician case load: proportion of total patients seen by each clinician group, by condition. Data is only shown for those conditions where the number of patients is >5 to comply with privacy reporting guidelines.

Condition	OT+OTA	PT+PTA	SLP+CDA	RN+RPN+SW+Other
Ortho-TJR	2%	50%	0%	28%
Ortho-Other	2%	18%	0%	3%
Stroke	67%	12%	91%	36%
Ortho-Hip Fracture	4%	8%	0%	6%
Acquired Brain Injury	7%	3%	7%	8%
Spinal Cord Dysfunction	5%	5%	2%	0%
Amputation	5%	2%	0%	14%

Table 1.4b: Interdisciplinary teams: Number of clinicians seen in outpatient rehab episode of care, by condition. Data is only shown for those conditions where the number of patients is >5 to comply with privacy reporting guidelines.

Condition	# Patients	1 Clinician	2 Clinicians	3 Clinicians	> 3 Clinicians
Ortho-TJR	193	49.7%	44.0%	5.7%	0.5%
Stroke	113	29.2%	38.9%	17.7%	14.2%
Ortho-Other	97	94.8%	3.1%	1.0%	1.0%
Ortho-Hip Fracture	29	31.0%	44.8%	24.1%	0.0%
Acquired Brain Injury	18	38.9%	27.8%	27.8%	5.6%
Spinal Cord Dysfunction	18	33.3%	38.9%	27.8%	0.0%
Amputation	13	38.5%	15.4%	23.1%	23.1%

Table 1.5: Reason for discharge from outpatient rehab, by condition (data, suppression)

Condition (# of Patients)	Reason for Discharge		
	Blank	Completed	Not Completed
Ortho-TJR (193)	30.05%	66.84%	3.11%
Stroke (113)	66.37%	19.47%	14.16%
Ortho-Hip Fracture (29)	48.28%	37.93%	13.79%
Grand Total	44.05%	48.21%	7.74%

Table 1.6: Discharge destination (Visit Disposition)

Condition	Visit Disposition	
	Discharged Home	Left after registration
Ortho-TJR	100%	
Stroke	99%	1%
Ortho-Hip Fracture	100%	
Grand Total	99.5%	0.5%

Table 1.7: Description of therapist and nursing visits during outpatient rehabilitation, stratified by condition.

	Total Patients	Hip fracture	Total joint replacement	Other Ortho	Stroke	Other Non-ortho
	N=426	N=25	N=160	N=87	N=105	N=49
<i>Total Utilizations</i>						
Mean total number of minutes per patient (mean ± std dev)	690.79 ± 855.70	497.20 ± 304.08	344.35 ± 221.34	303.17 ± 356.82	1,206.25 ± 1,039.11	1,504.43 ± 1,325.98
<i>Nursing</i>						
Percent with nursing visit	9.39%	< 6*	3.75%	< 6*	15.24%	26.53%
Median, number of nursing visits (IQR)	3 (2-10)	3 (3-5)	4 (1-10)	3 (1-4)	2 (2-9)	7 (3-10)
Mean, minutes of nursing per visit (mean ± std dev)	29.72 ± 15.66	32.33 ± 4.62	21.50 ± 20.67	41.50 ± 26.16	34.36 ± 15.75	25.38 ± 11.87
<i>Any Therapy Visit (PT+OT)</i>						
Percent with therapy visit	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Median, number of therapy visits (IQR)	14 (5-24)	12 (6-34)	13 (4-22)	8 (3-18)	19 (6-38)	24 (7-49)
Mean, minutes of therapy per visit (mean ± std dev)	38.35 ± 17.81	38.23 ± 18.75	31.07 ± 16.42	29.98 ± 14.82	52.42 ± 11.66	46.92 ± 15.47
<i>Occupational Therapy (OT)</i>						
Percent with OT visit	30.05%	28.00%	< 6*	< 6*	90.48%	44.90%
Median, number of OT visits (IQR)	9 (3-18)	1 (1-1)	2 (1-2)	23 (18-28)	10 (3-17)	15 (3-28)
Mean, minutes of OT per visit (mean ± std dev)	47.20 ± 14.72	18.86 ± 18.14	30.75 ± 11.67	47.00 ± 18.38	50.68 ± 12.36	42.67 ± 11.84
<i>Physiotherapy (PT)</i>						
Percent with PT visit	91.31%	100.00%	100.00%	100.00%	65.71%	97.96%
Median, number of PT visits (IQR)	12 (4-22)	12 (6-34)	13 (4-22)	6 (2-13)	12 (5-21)	16 (7-37)
Mean, minutes of PT per visit (mean ± std dev)	36.83 ± 17.37	37.87 ± 17.22	31.81 ± 16.09	29.69 ± 14.95	50.16 ± 13.35	46.81 ± 15.93
<i>Therapy Assistant (OTA + PTA)</i>						
Percent with (OTA + PTA) visit	55.40%	80.00%	64.38%	58.62%	28.57%	65.31%
Median, number of assistant visits (IQR)	8 (4-12)	10 (4-16)	10 (5-12)	5 (2-8)	7 (3-16)	16 (7-29)

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Mean, minutes with therapy assistant (mean ± std dev)	26.03 ± 13.31	30.62 ± 15.73	22.37 ± 11.96	20.22 ± 5.45	33.92 ± 10.24	36.81 ± 16.79
<i>Other therapy</i>						
Percent with other therapy visit (SLP + CDA + SW + other)	29.58%	0	3.75%	48.28%	59.05%	32.65%
Median number of other visits (IQR)	5 (2-7)	. (-.)	4 (2-6)	5 (3-7)	2 (1-2)	6 (2-7)
Mean, minutes of other therapy per visit (mean ± std dev)	36.67 ± 19.57	. ± .	22.47 ± 13.95	18.19 ± 1.70	51.18 ± 14.30	33.37 ± 19.15

*denotes value suppressed in line with privacy policies; IQR = interquartile range

Table 1.8: Health care utilization in 365 days prior to event (for stroke and joint replacement cohort) or prior to first outpatient rehabilitation record (for hip fracture, other ortho and other non-ortho cohorts).

	Hip fractures N=25	Total joint replacement N=155	Other ortho N=87	Stroke N=93	Other non- ortho N=49
<i>Acute inpatient care (DAD)</i>					
Total number of acute hospital admissions	29	41	33	11	78
Number of patients with an acute hospital admission	25 (100%)	32 (21%)	26 (30%)	11 (12%)	41 (84%)
<i>Emergency department (NACRS)</i>					
Total number of acute hospital admissions	42	163	136	190	153
Number of patients with an acute hospital admission	24 (96%)	52 (34%)	62 (71%)	91 (98%)	39 (80%)

Table 1.9: Concurrent service utilization with outpatient rehab for patients in the NACRS Clinic Lite PoC

	Total N=426	Hip fractures N=25	Total joint replacement N=160	Other ortho N=87	Stroke N=105	Other non-ortho N=49
<i>Physician visits</i>						
At least 1 concurrent GP/FP visit†	252	19	93	32	75	33
Mean visits	2.71 ± 3.00	2.00 ± 1.41	1.97 ± 1.32	2.03 ± 1.56	3.60 ± 3.98	3.85 ± 4.47
Median visits	2 (1-3)	2 (1-2)	2 (1-2)	1 (1-3)	2 (1-4)	2 (2-4)
<i>At least 1 concurrent specialist visit†</i>	299	18	123	45	77	36
Mean visits	5.46 ± 6.66	4.22 ± 2.94	3.89 ± 3.95	5.42 ± 7.93	6.32 ± 7.14	9.61 ± 10.02
Median visits	3 (2-6)	4 (2-5)	3 (2-4)	2 (1-5)	4 (2-7)	6 (4-13)
<i>OHIP non-physician visits†</i>						
At least 1 concurrent OHIP non-physician visit†	75	0	20	49	< 6*	< 6*
Mean visits	5.40 ± 3.16	. ± .	7.00 ± 3.46	4.82 ± 2.80	1.00 ± 0.00	6.75 ± 2.50
Median visits	6 (3-8)	. ± .	7 (4-10)	6 (2-8)	1 (1-1)	8 (6-8)
<i>At least 1 same day surgery (SDS)</i>						
At least 1 concurrent SDS	14	0	< 6*	< 6*	6	< 6*
Mean visits	1.00 ± 0.00	. ± .	1.00 ± 0.00	1.00 ± 0.00	1.00 ± 0.00	1.00 ± 0.00
Median visits	1 (1-1)	. ± .	1 (1-1)	1 (1-1)	1 (1-1)	1 (1-1)

*denotes value suppressed in line with privacy policies

Community Rehab Assessment Data Tables and Figures

Table 2.1: Rehab group distribution in summary from the Community Rehab Assessment

Rehab Group	n
Acquired Brain Injury	8
Arthritis	19
Neurological	24
Orthopedic - Total Joint Replacement	17
Orthopedic - Other	54
Other†	24
Stroke	34
Not specified	24

†Other includes amputation, debility, ortho-hip fracture, and other non-specified

Table 2.2: IADL changes in the full sample set, the population who received rehab for neurological conditions, including stroke and the population who received rehab for orthopedic conditions

	Full data set		Neurological sub-group		Orthopedic sub-group	
	Mean Change (SD)	Cohen's d Effect Size	Mean Change (SD)	Cohen's d Effect Size	Mean Change (SD)	Cohen's d Effect Size
Meal Preparation	1.31* (1.99)	0.60	0.90* (1.46)	0.39	2.09 (2.18)	1.10
Ordinary Housework	1.56* (1.99)	0.68	0.90* (1.61)	0.37	2.49 (2.22)	1.20
Managing Finances	0.64* (1.8)	0.29	0.95* (1.73)	0.38	0.68 (1.95)	0.38
Managing Medications	0.43* (1.17)	0.25	0.68* (1.25)	0.31	0.51 (1.30)	0.43
Phone Use	0.2 (1.06)	0.18	0.50 (1.45)	0.28	0.04 (0.46)	0.13
Stairs	0.2 (1.06)	0.18	0.88* (1.20)	0.51	0.94 (2.10)	0.50
Shopping	1.05* (2.14)	0.44	0.69 (2.12)	0.29	1.62 (2.16)	0.70
Transportation	1.28* (2.31)	0.50	0.79 (2.34)	0.32	1.83 (2.38)	0.79

Table 2.5: ADL changes in the full sample set, the population who received rehab for neurological conditions, including stroke and the population who received rehab for orthopedic conditions

	Mean Change (SD)	SD	P Value	Cohen's d
Bathing	0.64 (1.50)	1.5	<.0001	0.36
Personal Hygiene	0.17 (0.70)	0.7	0.0073	0.16
Dressing Upper Body	0.26 (0.87)	0.87	0.0020	0.20
Dressing Lower Body	0.62 (1.32)	1.32	<.0001	0.41
Transfer Toilet	0.26 (1.14)	1.14	0.0010	0.18
Toilet Use	0.31 (0.86)	0.86	<.0001	0.23
Bed Mobility	0.16 (0.57)	0.57	0.0046	0.15
Eating	0.30 (0.92)	0.92	0.0004	0.27
Locomotion	0.46 (1.09)	1.09	<.0001	0.53
Walking	0.08 (0.48)	0.48	0.1094	0.12
Change in ADL Status	0.86 (1.14)	1.14	<.0001	0.95

Table 2.6: ADL changes in the population receiving rehab for neurological conditions, including stroke

	Mean Change	SD	P Value	Cohen's d
Bathing	0.08	0.76	0.6172	0.05
Personal Hygiene	0.24	0.95	0.0938	0.20
Dressing Upper Body	0.41	0.93	0.0117	0.25
Dressing Lower Body	0.54	0.96	0.0010	0.31
Transfer Toilet	0.38	0.92	0.0215	0.31
Toilet Use	0.27	0.73	0.0469	0.27
Bed Mobility	0.24	0.68	0.0566	0.24
Eating	0.65	1.25	0.0020	0.60
Locomotion	0.57	1.21	0.0078	0.58
Walking	0.24	0.76	0.0938	0.26
Change in ADL Status	0.33	1.11	0.1292	0.39

Table 2.7: ADL changes in the population receiving rehab for orthopedic conditions

	Mean Change	SD	P Value	Cohen's d
Bathing	1.11	2.00	<.0001	0.65
Personal Hygiene	0.16	0.52	0.0625	0.17
Dressing Upper Body	0.22	0.88	0.1875	0.22
Dressing Lower Body	0.73	1.34	0.0006	0.58
Transfer Toilet	0.41	0.90	0.0049	0.44
Toilet Use	0.44	0.92	0.0020	0.44
Bed Mobility	0.07	0.50	0.7500	0.09
Eating	0.09	0.47	0.5000	0.12
Locomotion	0.42	1.14	0.0234	0.47
Walking	-0.02	0.15	1.0000	-0.04
Change in ADL Status	1.30	0.99	<.0001	1.54

Table 2.8: Communication changes in the population who received services from a Speech Language Pathologist

	Mean Change	SD	P Value	Cohen's d Effect Size
Ability to make self understood	0.29	0.47	0.1250	0.43
Ability to understand others	0.14	0.36	0.5000	0.29
Having a conversation	0.07	0.27	1.0000	0.06
Speech Clarity	0.07	0.27	1.0000	0.14

Table 2.9: Pain changes in the full data set

	Mean Change	SD	P Value	Cohen's d
Pain Frequency, last 3 days	0.41	1.31	0.0035	0.30
Highest Level of Pain, at rest	0.39	1.01	0.0002	0.43
Highest Level of Pain, routine tasks	0.2	0.98	0.0686	0.19
Highest level of Pain, moderate or vigorous activity	0.26	1.03	0.0179	0.22
Adequacy of Pain Control	0.31	1.57	0.0548	0.21

Table 2.10: Pain changes in the population receiving rehab for neurological conditions, including stroke

	Mean Change	SD	P Value	Cohen's d
Pain Frequency, last 3 days	0.13	1.39	0.6563	0.09
Highest Level of Pain, at rest	0.39	0.97	0.0371	0.48
Highest Level of Pain, routine tasks	0.06	0.81	0.7451	0.06
Highest level of Pain, moderate or vigorous activity	0.10	0.90	0.6213	0.09
Adequacy of Pain Control	0.03	1.64	0.8932	0.02

Table 2.11: Pain changes in the in the population receiving rehab for orthopedic conditions

	Mean Change	SD	P Value	Cohen's d
Pain Frequency, last 3 days	0.72	1.25	0.0034	0.59
Highest Level of Pain, at rest	0.30	1.09	0.1202	0.36
Highest Level of Pain, routine tasks	0.42	1.12	0.0631	0.42
Highest level of Pain, moderate or vigorous activity	0.44	1.28	0.0629	0.39
Adequacy of Pain Control	0.67	1.60	0.0296	0.50

Table 2.12: Mobility changes in full data set

	Mean Change	SD	P Value	Cohen's d
Moving around indoors	0.18	0.59	0.0022	0.29
Moving around outdoors	0.08	0.49	0.1036	0.11
Number of days person left the house, over 3 days	-0.33	0.9	0.0003	-0.41
Furthest distance walked, 3 days	-0.71	1.27	<.0001	-0.51
Furthest distance wheeled, 3 days	0.2	2.3	0.4045	0.11
Walking speed, timed 4m walk	2.99	5.82	<.0001	0.62

Table 2.13: Mobility changes in the population receiving rehab for neurological conditions, including stroke

	Mean Change	SD	P Value	Cohen's d
Moving around indoors	0.03	0.46	1.0000	0.05
Moving around outdoors	0.06	0.42	0.6875	0.09
Number of days person left the house, 3 days	0.03	0.59	1.0000	0.05
Furthest distance walked, 3 days	-0.52	1.00	0.0101	-0.40
Furthest distance wheeled, 3 days	0.36	2.47	0.4297	0.20
Walking speed, timed 4m walk	2.99	5.82	<.0001	0.62

Table 2.14: Mobility changes in the population receiving rehab for orthopedic conditions

	Mean Change	SD	P Value	Cohen's d
Moving around indoors	0.50	0.67	0.0007	0.87
Moving around outdoors	0.16	0.51	0.1875	0.23
Number of days person left the house, 3 days	-0.81	1.00	<.0001	-0.86
Furthest distance walked, 3 days	-0.97	1.45	0.0008	-0.68
Furthest distance wheeled, 3 days	0.27	2.25	0.4844	0.13
Walking speed, timed 4m walk	6.14	7.30	<.0001	1.07

Table 2.15: Fatigue changes

	Mean Change	SD	P Value	Cohen's d
Full data set	0.44	0.97	<.0001	0.47
In the population receiving rehab for neurological conditions, including stroke	2.99	5.82	<.0001	0.62
In the population receiving rehab for orthopedic conditions	0.65	0.98	0.0012	0.58

WatLX™ Tables and Figures

Table 3.1: Population Description of Patients who submitted WatLX™ surveys

Characteristics	
Female/Male/Missing	566(56%) / 408(40%) / 39(%4)
Age: Mean (SD)	66.5 (14)
Age: Range (min to max)	18 to 97

Table 3.2: Overall results from the WatLX™ submitted surveys

Mean Total Score on WatLX, out of 50	47.5
Standard Deviation	4.57
WatLX Score Range	10 - 50
Median	49.0
Mode	50

Table 3.3: Overall results from the WatLX™ submitted surveys, question breakdown

Question	Mean Score (Std. Dev.)
Q1 I was always treated with courtesy	4.91 (0.42)
Q2 I participated as much as I wanted in decisions about my care	4.76 (0.62)
Q3 My chosen family/friends were given the information they needed about my care	4.68 (0.74)
Q4 The place where I received rehab had a positive impact on my experience	4.82 (0.53)
Q5 I achieved my treatment goals	4.45 (0.85)
Q6 My physical pain was controlled as well as possible	4.60 (0.74)
Q7 My care providers had the information they needed to treat me without delay	4.79 (0.58)
Q8 I always felt safe when taking part in treatment activities	4.88 (0.48)
Q9 From now on I know what to expect about my care	4.76 (0.59)
Q10 I am likely to recommend this clinic to friends and family if they need the same care	4.88 (0.53)