

**High Tolerance Long Duration Stroke Demonstration Project**

**February – December 2007**

**A Summary of Findings**

**July 2009**

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## High Tolerance Long Duration Stroke Demonstration Project: A Summary of Findings

### 1.0 Executive Summary

The GTA Rehab Network conducted a demonstration project from February to December 2007 to explore the feasibility of a High Tolerance Long Duration (HTLD) stroke rehab program. Research indicates that recovery from stroke is optimized when patients have early access to intensive stroke rehab;<sup>1</sup> however, not all stroke patients have such access. Frequently, patients with a severe stroke, who may require a longer length of stay than typically offered in a high tolerance program, are referred to a low tolerance long duration program. At present, high tolerance stroke rehab programs are constrained in their ability to extend their length of stay because of the implications for their length of stay efficiency scores, a standard indicator used to measure hospital performance.

The High Tolerance Long Duration (HTLD) stroke demonstration project was conducted at Bridgepoint Health and Toronto Rehab. A total of 8 beds were allocated across the two organizations to provide high tolerance stroke rehab to survivors of a severe stroke for a longer duration<sup>2</sup> than the current High Tolerance Short Duration (HTSD) benchmark of 45 days. The patients admitted to the HTLD beds were patients who had suffered their first moderate to severe stroke (as measured by a rehab ready FIM<sup>TM3</sup> Instrument score of 36-60) and who were able to tolerate 15 – 30 minutes of activity per day, 5 days per week.

A total of 18 patients, on average 64 years old, were included in the project. The majority of these patients had suffered an ischemic stroke and required maximum assistance with activities of daily living on admission to inpatient rehab (average rehab admission FIM<sup>TM</sup> Instrument score = 49). The average length of stay was 100 days and by discharge, most had improved functionally, requiring partial or no assistance, allowing more than half (65%) to go home or to a retirement home with a spouse or family member. The average discharge FIM<sup>TM</sup> Instrument score was 84.

The results of the demonstration project suggested that it may be feasible to offer a higher intensity but longer duration stroke rehab program on HTSD units to patients with a more severe stroke than those typically admitted. The demonstration project found that:

1. The wait time to access HTLD, although longer than the wait for HTSD rehab, was half the time required for LTLD rehab. From a cost perspective, the per diem rate in rehab is significantly lower than in acute care. As a result, a shorter length of stay in acute care, translates to savings in healthcare dollars through a reduction in ALC days and better utilization of healthcare resources. Shorter wait times in acute care also means earlier access to an intensive inpatient rehab program, which results in better outcomes for stroke survivors<sup>4</sup> and a lower risk of iatrogenic illness occurring among acute care patients while they wait for inpatient rehab.
2. Although the HTLD patients required more nursing care relative to the HTSD patients, these patients were medically stable and the clinical team was able to manage their care needs on the unit.
3. The HTLD patients actively participated in the high intensity rehab program and were able to tolerate comparable amounts of therapy as the HTSD patients.
4. The majority of HTLD patients made enough gains in their abilities to participate in activities of daily living to reduce their burden of care and enable their return to home.

The findings of this demonstration project, while informative, cannot be interpreted as providing definitive results on HTLD stroke rehab given its small sample size and other limitations of the project. However, these initial findings, which suggest that HTLD stroke rehab is of benefit to stroke survivors and may result in healthcare savings, indicate that a more formal investigation using a rigorous research approach is warranted.

<sup>1</sup> Teasell, Robert W., Foley, Norine C., Salter, Katherine L., Jutai, Jeffrey W. A Blueprint for Transforming Stroke Rehabilitation Care in Canada: The Case for Change. Arch Phys Med Rehabil Vol 89, March 2008: 575-578.

<sup>2</sup> Length of stay in the HTLD beds was determined using the following discharge criteria: Achievement of goals as defined with patient upon admission to rehab program; the patient's inability to participate in the rehab program; the patient's readiness for discharge to home or long-term care; or the onset of an acute complicated/catastrophic medical illness/event requiring admission to acute care.

<sup>3</sup> FIM<sup>TM</sup> is a trademark of the Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc. The Functional Independence Measure (FIM<sup>TM</sup>) assesses physical and cognitive disability in terms of burden of care. It includes an 18-item ordinal scale that measures independence in self-care, sphincter control, mobility, locomotion, communication and social cognition. The maximum total FIM<sup>TM</sup> Instrument score is 126. The maximum total motor FIM<sup>TM</sup> Instrument score is 91. FIM<sup>TM</sup> data is captured as part of the National Rehabilitation Reporting System developed by the Canadian Institute for Health Information.

<sup>4</sup> Teasell, Robert W., Foley, Norine C., Salter, Katherine L., Jutai, Jeffrey W. A Blueprint for Transforming Stroke Rehabilitation Care in Canada: The Case for Change. Arch Phys Med Rehabil Vol 89, March 2008: 575-578.

## 2.0 Introduction

In 2007, the GTA Rehab Network conducted a demonstration project to explore the feasibility of a High Tolerance Long Duration (HTLD) stroke rehab program. Research indicates that recovery from stroke is optimized when patients have early access to intensive stroke rehab;<sup>5</sup> however, not all stroke patients have such access. In the current rehab landscape, there are two types of stroke rehab programs most commonly available to patients – high tolerance short duration (HTSD) stroke rehab (provided in designated rehab beds) and low tolerance long duration (LTLD) stroke rehab (provided in complex continuing care beds). Patients with moderate to severe strokes are most frequently referred to HTSD stroke rehab programs where the typical length of stay is 45 days. Patients with severe to very severe strokes are typically referred to LTLD rehab programs where the length of the stay is considerably longer (3 or more months) and the intensity of rehab provided is lower. Given current research findings, it is believed that survivors of severe stroke could benefit from high intensity rehab if the length of stay was extended beyond the 45 day benchmark. At present, organizations that offer HTSD stroke rehab programs are constrained in their ability to extend their length of stay because of the implications for their length of stay efficiency scores, a standard indicator used to measure hospital performance.

## 3.0 Project Description

The High Tolerance Long Duration (HTLD) stroke demonstration project was conducted at Bridgepoint Health and Toronto Rehab in 2007. A total of 8 beds were allocated across the two participating organizations (i.e. 3 beds at Toronto Rehab; 5 beds at Bridgepoint Health) to provide high tolerance stroke rehab for a longer duration<sup>6</sup> than the current HTSD benchmark of 45 days to survivors of a severe stroke.

The project began in February 2007. The data collection period for the project was originally planned to be 6 months; however, due to the low number of patients that were admitted to the allocated HTLD beds during the initial 6 months of the project, the collection of data was extended to December 2007.

Determination of which patients from acute care would be admitted to the designated HTLD beds was based on application of the following admission criteria<sup>7</sup>:

- i. Patient required first inpatient rehabilitation admission following 1<sup>st</sup> stroke episode
- ii. Rehab Ready FIM<sup>8</sup> = 35-60 (FIM score at time of referral)
- iii. Physical Activity Tolerance = minimum of 15 - 30 minutes per day, 5 days per week
- iv. Only referrals through the E-Stroke Rehab Referral were considered for the project.
- v. Only patients who were directly admitted from acute care to the HTLD beds were included.

Acute care referrers were informed of the availability of the high tolerance long duration beds by way of a one-page project summary, which included the admission criteria.

The objectives of the project included the following:

- To determine whether inpatient stroke programs offered in designated rehab beds are able to accommodate the medical complexities often associated with patients who have suffered a severe stroke
- To identify potential challenges encountered by nursing/allied health staff in providing care to patients who are referred for high tolerance long duration rehab
- To describe the patient profile and determine costs associated with the program relative to wait times, workload and length of stay

## 4.0 Approach

Workload measurement data was collected on patients admitted to the allocated HTLD stroke rehab beds at Toronto Rehab and Bridgepoint Health from February – December 2007. The data collected included direct,

<sup>5</sup> Teasell, Robert W., Foley, Norine C., Salter, Katherine L., Jutai, Jeffrey W. A Blueprint for Transforming Stroke Rehabilitation Care in Canada: The Case for Change. Arch Phys Med Rehabil Vol 89, March 2008: 575-578.

<sup>6</sup> Length of stay in the HTLD beds was determined using the following discharge criteria: Achievement of goals as defined with patient upon admission to rehab program or; the patient's inability to participate in rehab program or; the patient's readiness for discharge to home or long-term care or; the onset of acute complicated/catastrophic medical illness/event requiring admission to acute care.

<sup>7</sup> Admission Criteria for inpatient stroke rehab as per the e-Stroke Rehab Referral System. Admission Criteria for HTSD: FIM = 45-90; Tolerance > 60 minutes; Orpington =1-3. Admission Criteria for LTLD: FIM<35 or FIM = 40-60 if patient is >85 years of age; Tolerance< 30 minutes; Orpington <0

<sup>8</sup> FIM™ is a trademark of the Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

indirect and total therapy time provided by nursing (i.e. RN and RPN) and allied health (i.e. OT, PT, SLP, SW, OTA/PTA, Dietician and Pharmacy).

Each team completed a checklist to track challenges encountered by allied health and nursing staff on a weekly basis related to the medical complexities of the patients (e.g. assistance required for transfers, bathing and dressing; incontinence; wound care; depression; agitation; behaviour issues) and their impact on participation in therapy sessions.

Information regarding functional levels on admission and discharge, comorbidities, wait time and length of stay was collected using the E-Stroke Rehab Referral System database.

The data was provided without any patient identifiers to the GTA Rehab Network for analysis and reporting of findings in an aggregated format.

## 5.0 Results

### 5.1 *The HTLD Patient Profile* (Figure 1)

The following information is based on the aggregated findings from the nursing and allied health checklists and referral information extracted from the E-Stroke Rehab Referral System database describing 18 patients.<sup>9</sup>

#### *Age*

The average age of patients admitted to the HTLD beds was 64 years old (Range: 22 – 89; median 64). More than half of the patients were male.

#### *Type/Severity of Stroke*

Almost all of the patients (89%) had a diagnosis of ischemic stroke<sup>10</sup>. One patient was admitted following a hemorrhagic stroke. The majority of patients were admitted with a moderate stroke as determined by the Orpington Prognostic Scale scores provided at the time of referral. This scale provides a measure of stroke severity based on function and cognition. The breakdown of stroke severity among patients is as follows: (scores not available for 3 patients)

- Severe stroke: 3 patients
- Moderate stroke: 10 patients
- Mild stroke: 2 patients

**Figure 1: (N=18)**

Age	Sex	Type of Stroke	Stroke Severity
<ul style="list-style-type: none"> <li>• Average: 64</li> <li>• Range: 22-89</li> <li>• Median: 64</li> </ul>	<ul style="list-style-type: none"> <li>• Male: 61% (N=11)</li> <li>• Female: 39 % (N=7)</li> </ul>	<ul style="list-style-type: none"> <li>• Ischemic: 89% (N=16)</li> <li>• Hemorrhagic: 6% (N=1)</li> </ul> <p>(Data N/A for one patient)</p>	<ul style="list-style-type: none"> <li>• Severe stroke: 3 patients</li> <li>• Moderate stroke: 10 patients</li> <li>• Mild stroke: 2 patients</li> </ul>

#### *Level of Assistance Required:*

Most patients, on admission, required maximum assistance<sup>11</sup> with activities of daily living. That is, 77% of patients required maximum assistance for dressing, 65% for transfers and 82% for bathing. All patients made progress over the course of the admission and required less assistance by the 8 week mark, although most required partial assistance with these activities. Most patients were incontinent of bowel and bladder on admission; however, of these, most improved to full continence by the 6 week mark (i.e. 87% continent of bladder; 75% continent of bowel). The reduced level of assistance required for bathing, transfers, dressing and toileting by the end of the inpatient rehab admission likely played a key role in enabling more than half of the HTLD patients to return home.

#### *Functional Status on Admission*

In acute care and upon admission to inpatient rehab, the level of functioning, on average, was in the moderate “middle band” range, based on AphaFIM® Instrument scores on referral and FIM™ Instrument rating upon admission to inpatient rehab (Figure 2).

<sup>9</sup> Qualitative data was unavailable for 1 patient in the project.

<sup>10</sup> Data is unavailable for 1 patient.

<sup>11</sup> The patient requires assistance with 75% or more of the task

Figure 2: (N=18)

Acute care AlphaFIM® Instrument Rating			
	Average	Median	Range
AlphaFIM® Instrument Projected Motor score	35	34	14 – 79
AlphaFIM® Instrument Projected Cognitive score	26	24	15 – 47
Total AlphaFIM® Instrument Projected score	61	58	35 – 95

Inpatient Admit FIM™ Instrument Rating			
	Average	Median	Range
Admit FIM™ Instrument score	49	47	25 – 82

In acute care, the average total projected AlphaFIM® Instrument score was 61; with an average projected AlphaFIM® Instrument motor score of 35 and an average projected AlphaFIM® Instrument cognitive score of 26. Seven patients had an AlphaFIM® Instrument score higher than stipulated in the admission criteria. However, for four of these patients, the admission FIM™ scores in rehab were lower and within the range of the project's admission criteria. The average admission FIM™ Instrument score in inpatient rehab was 49 (Range: 25 – 82; Median = 47).

Upon admission to inpatient rehab, with the exception of one patient, all admission FIM™ Instrument scores were lower than AlphaFIM® scores reported by acute care. However, it should be noted that the AlphaFIM® instrument was not intended to be as accurate a measure of function as provided by the full FIM™ instrument. The AlphaFIM® is primarily to be used as a guide regarding the functional/burden of care needs of patients and to assist in the triage of patients to the appropriate rehab program. Differences in AlphaFIM® and FIM™ Instrument scores for some patients may also be due to such factors as medical complications arising between the time of referral and admission to inpatient rehab as well as differences among testers and the timing of assessment in acute care.

## 5.2 Management of Care/Rehab Needs

To obtain an understanding of the medical complexity of these patients and their ability to participate in a higher intensity rehab program, information about comorbid conditions, nursing and allied health challenges as well as the amount of direct nursing time required for these patients was examined.

### a) Comorbidities:

At referral, each patient was assessed using the Charlson Comorbidity Index. Surprisingly, the average Charlson Comorbidity Index score was low (0.5) with most patients having a score of 0, suggesting an absence of comorbid conditions among these patients. However, 5 patients had specific co-morbidities identified elsewhere on their referrals (i.e. cardiovascular: N=4; musculoskeletal: N=1)) and further scrutiny of the medical and rehab notes accompanying the referrals for the HTLD patients certainly indicated that these patients had functional limitations associated with the common sequelae of stroke (i.e. dysphagia (N=11), visuospatial deficits (N=9); aphasia (N=6); dysarthria (N=4); sensory neglect (N=3) and parietal symptoms (N=2)).

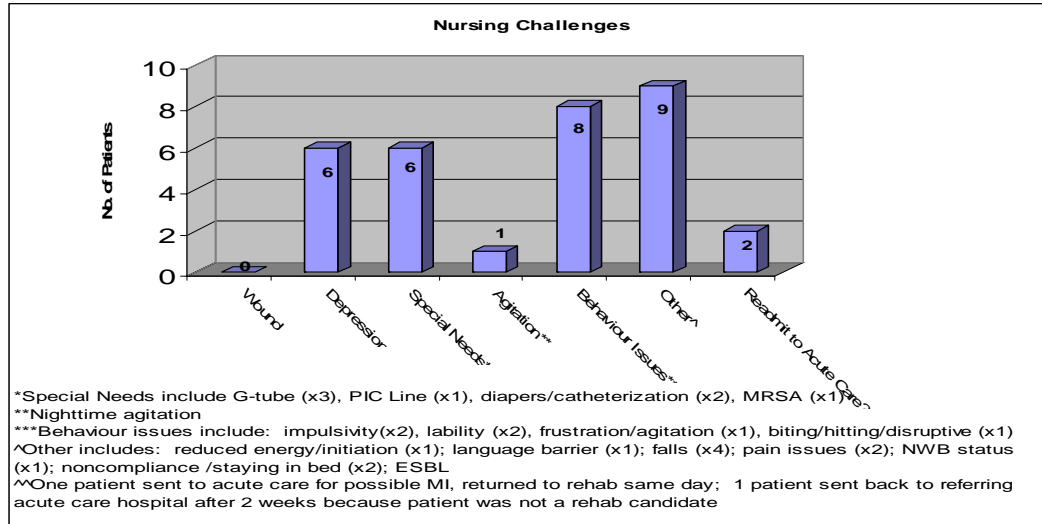
### b) Nursing Challenges:

The clinical team tracked on a weekly basis the care needs of the HTLD patients using the Nursing/Allied Health Challenges checklist (Appendix A & B). A review of the checklists found that stroke patients in the HTLD program exhibited behavioural issues, depression, special needs and other medical issues as follows: (Figure 3)

- i) Behavioural Issues: 53% (N=9) of patients were identified as having a behavioural issue. These included impulsivity, lability, frustration, biting, hitting and disruptive behaviour. One patient was identified as experiencing night-time agitation.
- ii) Depression: 35% (N=6) of patients were diagnosed with depression (as measured by treatment with medication). Of these, depression affected the ability of 24% of patients (N=4) to participate in therapy over several sessions or weeks.

- iii) Special Needs: 35% (N=6) of patients had more than 2 special needs adding to the level of nursing care required by these patients. These included intravenous therapy, continuous/intermittent oxygen, feeding tubes (naso-gastric (NG) and gastrojejunostomy (GJ), total parenteral nutrition (TPN), incontinence, peritoneal dialysis, ostomy, wound care/pressure beds, infection control issues (VRE/MRSA), continuous passive motion (CPM), non-weight bearing status, and tracheostomy.
- iv) Falls: 24% of patients (N=4) experienced one or more falls during the course of their admission.
- v) Medical instability: 1 patient was sent to acute care for investigation of a possible myocardial infarction but was readmitted to rehab on the same day.

Figure 3:



c) Allied Health Challenges:

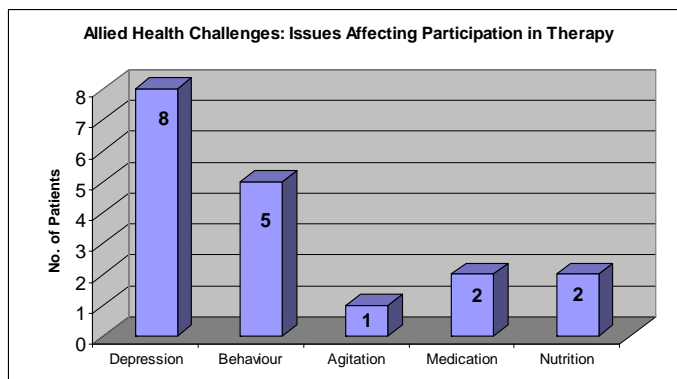
In total, 80 therapy sessions were cancelled for various medical reasons (e.g. illness, removal of G-tube or other medical appointment, pain, nausea and vomiting). On average, 5 sessions were cancelled per patient due to medical reasons; median number of sessions cancelled = 2.

Fatigue also contributed to the cancellation of therapy. In total, 43 sessions were cancelled due to fatigue (average number of sessions cancelled per patient = 3 sessions; median number of sessions cancelled due to fatigue = 0)

In absence of comparable data from the HTSD programs, it is difficult to determine if the patients in HTSD rehab presented similar challenges to the allied health team.

Other issues affecting participation in therapy as reported by allied health are noted in Figure 4 below.

Figure 4:



d) **Direct Nursing Time:**

In absence of similar comparative data from HTSD rehab, it is difficult to determine if the medical complexity of the HTLD patients was any different from patients in the other stroke rehab programs. However, differences in medical/nursing complexity can be inferred from comparative workload data for direct nursing time in the other programs. The average time spent on direct nursing care for the HTLD patients was higher than the time spent for patients in HTSD by approximately 30 minutes per patient per day, suggesting that the HTLD patients had greater care needs and were more medically complex than the HTSD patients. (Further information describing the amount of therapy time across disciplines is discussed in Section 5.4.)

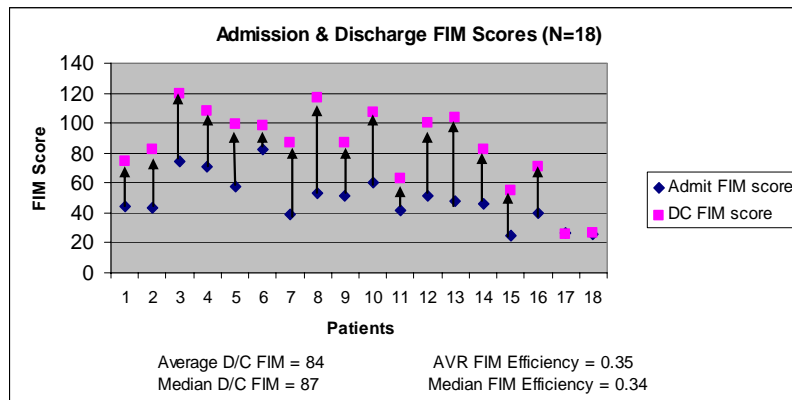
**5.3 Patient Outcomes**

*Functional Status on Discharge*

With the exception of 2 patients who were admitted with very severe strokes, the functional level of all other patients improved by the time of discharge, as measured by the change in FIM™ Instrument scores from admission to discharge. (Figure 5) As noted earlier, these patients required less assistance for activities of daily living by the time of discharge to the extent that more than half were able to return home. (See *Discharge Destination* below)

The Average discharge FIM™ Instrument score was 84 (Range: 26 – 120; Median = 87) as compared to the average admission FIM™ Instrument score of 49. The average change in FIM™ Instrument scores from admission to discharge was 35 points (Range: -1– 64; Median = 37). The average FIM™ Instrument efficiency score, a measure of the rate of FIM™ Instrument change over time, was 0.35 (Range: -0.01 – 0.71; Median = 0.34).

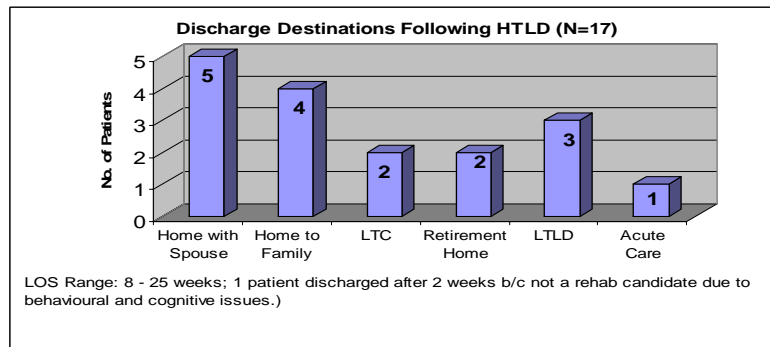
**Figure 5:**



*Discharge Destinations:*<sup>12</sup>

More than half (65%, N=11) of the patients were discharged home either with spouse, with family or to a retirement home. Two patients (12%) were discharged to long-term care (LTC) and three patients (18%) were transferred to an LTLD program, one of which was in a LTC home. One patient was discharged back to acute care after 2 weeks because s/he was not an appropriate rehab candidate. (Figure 6)

**Figure 6:**



<sup>12</sup> Discharge data is unavailable for 1 patient.

#### 5.4 *Estimated Costs Associated with an HTLD Rehab Program*

As part of the HTLD project, wait times to access the HTLD programs, the amount of direct and indirect therapy provided and the length of stay were examined to determine an approximation of costs (and potential cost savings) associated with the HTLD program relative to HTSD and LTLD stroke rehab.

##### *Wait Times*

The average wait time to access inpatient rehab (i.e. time from referral to admission) was 9 days (Range: 1 – 25 days; Median 7 days).

A comparison of HTLD wait times with the wait times for admission to HTSD and LTLD programs (Figure 7) shows that although wait times were shortest for HTSD rehab, patients were able to access HTLD rehab in half the wait time required for admission to LTLD rehab. In absence of these HTLD programs, the HTLD patients would likely have been referred to LTLD rehab and as a result, their access to rehab would have been substantially delayed. Research indicates that such delays might adversely affect the achievement of optimal rehab outcomes.<sup>13</sup> Poorer rehab outcomes could in turn mean that fewer patients would achieve a functional level that would enable them to return home and as a result, a greater number of patients would require a more costly residential care setting.

The impact of such a delay for length of stay in acute care also bears consideration in terms of both increasing acute care ALC days and compromising the health status of the patients waiting. Had the HTLD patients in the demonstration project been required to wait longer for an LTLD rehab program, these additional days would have contributed to an increased number of ALC days in acute care. Moreover, the delays in accessing rehab when these patients were “rehab ready” might have placed them at risk for developing an iatrogenic illness with health complications, which could potentially increase their acute care length of stay even further if they become medically unstable and unable to transfer to inpatient rehab when a bed became available.

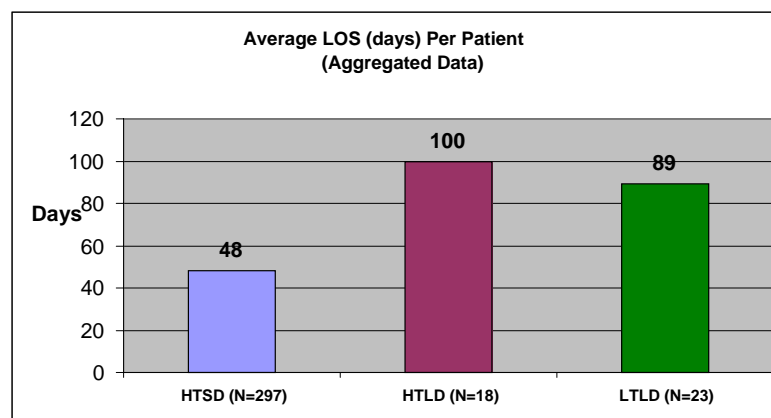
**Figure 7:**

Wait Times from Referral to Inpatient Rehab Admission (days)			
	Average Wait Time	Median Wait Time	Range
HTSD (N=204)	4	3	1-34
HTLD (N=18)	9	7	1-25
LTLD (N=29)	18	13	1-88

##### *Length of Stay (LOS)*

The average length of stay was highest for patients in HTLD as compared to the other programs, with the length of stay in HTLD being twice as long as the average length of stay in the HTSD program. (Figure 8)

**Figure 8:**



<sup>13</sup> Research suggests that the brain may be primed for recovery in the early stages following stroke and as a result early intervention may be an important factor in maximizing patient outcomes. Teasell, R; Bayona, N; Salter K; Hellings, C; Bitensky, J. Progress in Clinical Neurosciences: Stroke Recovery and Rehabilitation. Can. J. Neurol. Sci. 2006; 33: 357-364.

A closer examination of length of stay for HTLD patients across both the acute care and inpatient rehab sectors revealed the following: (Note: comparable data for HTSD and LTLD are unavailable.)

- Average inpatient LOS was 100 days (Range: 16 – 188; median: 91 days)
- Average acute LOS was 28 days (Range: 10 – 113, median: 24 days)
- Average integrated LOS (i.e. acute care and inpatient LOS) was 129 days (Range: 43 – 208; Median: 121 days)

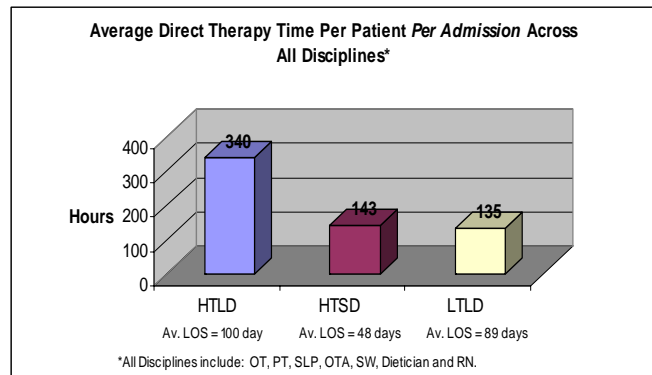
**Direct Therapy Time**

The following information is based on the aggregated workload measurement findings from Bridgepoint Health and Toronto Rehab. The workload data showed that the patients admitted to the HTLD programs received more direct therapy from all disciplines<sup>14</sup>, including nursing, than the HTSD patients<sup>15</sup>. (Figures 9 & 10)

**Figure 9:**

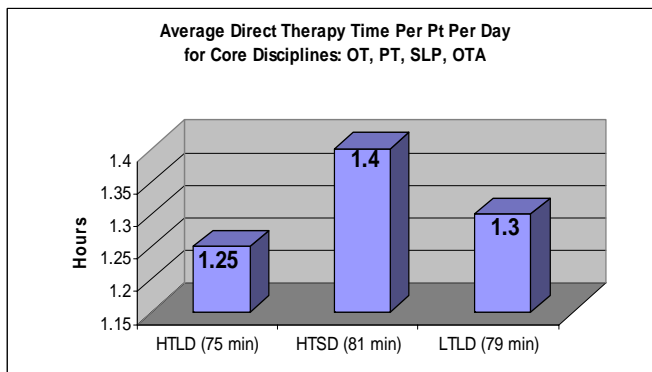


**Figure 10:**

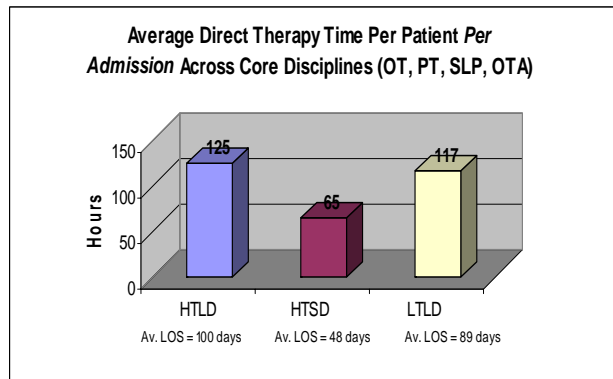


In Figure 11 (below), it is evident that the picture changes somewhat when the time spent by Social Work, Nursing and Dietary is removed to determine the amount of time spent by the core allied health team members alone. In this case, the amount of therapy received across all programs was fairly comparable (i.e. 75 minutes per day in HTLD; 81 minutes per day in HTSD; and 79 minutes per day in LTLD), although the HTSD patients received the most therapy while the HTLD patients received the least. (Figures 11 & 12) The finding that the LTLD patients received more therapy from the core disciplines (and had a shorter length of stay) than the HTLD patients is interesting. It may be that some of the LTLD patients were transferred from an HTSD program and as a result of this first “round” of inpatient rehab, they were able to tolerate a greater amount of therapy and required a shorter length of stay in LTLD relative to the patients admitted directly to HTLD rehab from acute care.

**Figure 11:**



**Figure 12:**



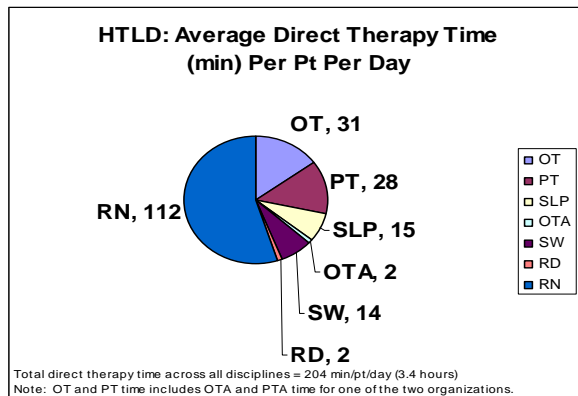
<sup>14</sup> All disciplines include: OT, PT, SLP, OTA, SW, RN and Dietician

<sup>15</sup> LTLD nursing hours are likely underreported.

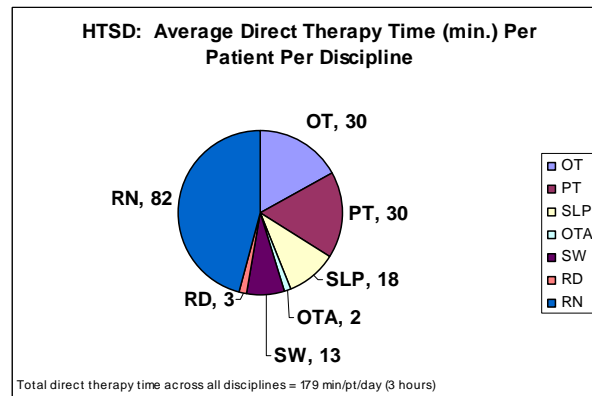
When therapy time was examined for each discipline (Figures 13, 14 and 15), nursing accounted for the highest proportion of direct therapy time and more nursing was provided to patients in the HTLD programs than to patients in the other programs. In the HTLD program, nursing accounted for more than half (55%) of the direct therapy time as compared to nursing time in HTSD (46% of direct therapy time) and LTLD (1% of direct therapy time). (Note: LTLD nursing time is likely underreported as the data indicates that only 1 minute of nursing time was provided on average to patients)

The amount of therapy time provided by the core allied health disciplines (i.e. OT, PT, and SLP) across all programs was comparable. The average amount of Social Work direct therapy time was equivalent in the HTLD and HTSD programs, but somewhat lower in the LTLD rehab program.

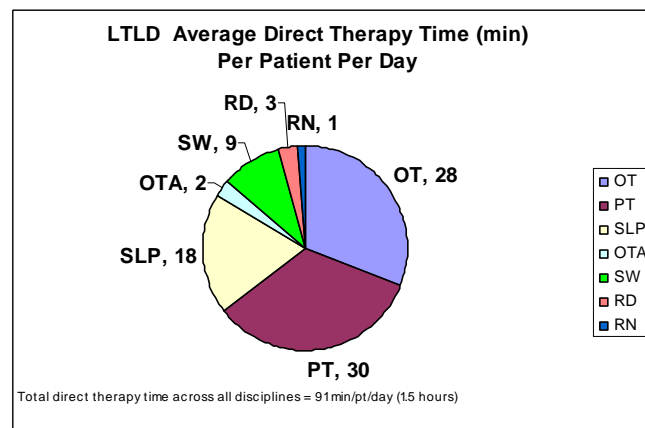
**Figure 13:**



**Figure 14:**



**Figure 15:**



### *Indirect Therapy Time*

Indirect therapy time includes patient-related activities that are conducted away from the patient (e.g. report writing, consultation etc.). With regard to indirect therapy time, more indirect therapy time was accounted for in the HTSD program relative to the other programs, with the HTSD programs reporting almost twice as much indirect therapy time as that spent in the HTLD program (Figures 16 & 17).

The majority of indirect therapy time was accounted for by the core allied health disciplines (OT, PT, SLP, OTA) as follows:

- 69% of all indirect therapy time (HTLD)
- 72% of all indirect therapy time (HTSD)
- 88% of all indirect therapy time (LTLD) (Note: As nursing hours in LTLD may have been underreported, this figure could be lower)

Figure 16:

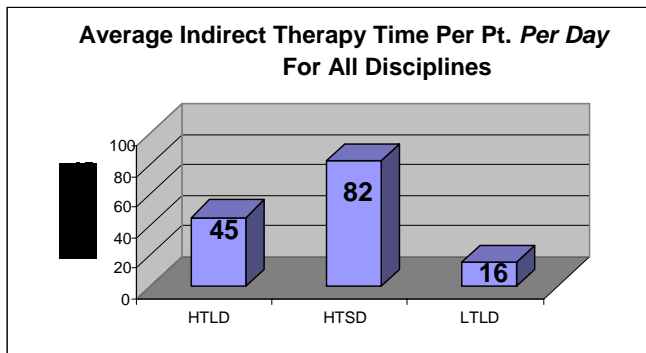
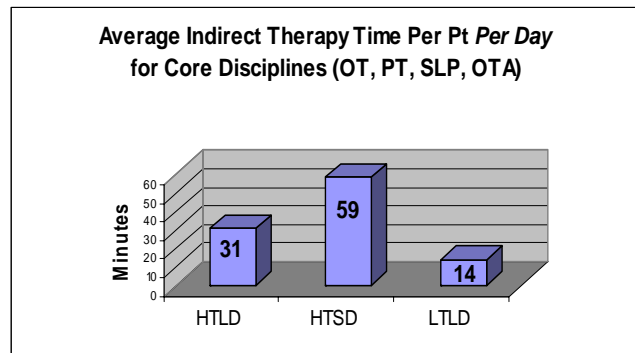


Figure 17:



## 6.0 Limitations of the Demonstration Project

### *Rate of Admission/Sample Size:*

The rate of admission of patients to the HTLD beds was much slower than anticipated. Initially, the rate of admission was slowed because of an outbreak at one of the organizations, closing admissions for one month. However, once the outbreak was over, the admission rate continued to be slow and the project was extended from 6 months to 10 months, at which point even though the anticipated number of patients had not been admitted, data collection ended. Data was collected on 18 patients rather than the 30 that had been anticipated, yielding a much smaller sample size.

### *Direct Therapy Time*

The information gleaned from the data pertaining to therapy time must be viewed with some caution due to limitations in the data reported. Although the average direct therapy time provided to patients by the interprofessional team was highest for patients in the HTLD program, this finding may in part be accounted for by the likely underreporting of nursing hours in the LTLD program. One would have expected at least as many nursing hours if not more to be provided to patients in the LTLD program as that provided to the patients in HTLD.

### *Lack of Comparative Data*

A broader comparison of HTLD findings with the HTSD and LTLD programs pertaining to medical complexity, participation in therapy, patient outcomes and length of stay in acute care could not be made as this information was not available.

### *Demonstration Project*

This investigation of HTLD stroke rehab was undertaken as a demonstration project to provide an initial understanding about the feasibility of providing HTLD rehab on units that traditionally provide HTSD rehab. As a demonstration project, it lacks the rigour of a more formal research design that could address the limitations of this project (e.g. small sample size) and provide more definitive information on HTLD rehab.

## 7.0 Conclusions/Key Messages

The HTLD stroke demonstration project was undertaken to explore if it is feasible to offer a higher intensity but longer duration stroke rehab program on HTSD units to patients with a more severe stroke than those typically admitted. As a result of this project, the following key findings are highlighted:

- Wait times for HTLD stroke rehab were shorter than wait times for LTLD rehab, resulting in earlier access to inpatient rehab and reductions in ALC days in acute care. Earlier access to inpatient rehab supports better patient outcomes<sup>16</sup> and reduces the risk of iatrogenic illness for those acute care patients waiting for inpatient rehab. Shorter HTLD wait times may also translate into potential cost savings through fewer days in acute care.

<sup>16</sup> Teasell, R; Bayona, N; Salter K; Hellings, C; Bitensky, J. Progress in Clinical Neurosciences: Stroke Recovery and Rehabilitation. Can. J. Neurol. Sci. 2006; 33: 357-364

- Although the patients admitted to the HTLD beds required more nursing time, suggestive of increased medical complexity relative to the HTSD patients, almost all patients were medically stable and able to be managed on the rehab unit.
- It was feasible to admit patients with severe to moderate strokes (i.e. FIM score = 35 – 60) to a high tolerance program based on the demonstrated capability of HTLD patients to tolerate comparable levels of therapeutic intervention as the HTSD patients on the unit.
- The majority of HTLD patients made enough gains in their abilities to participate in activities of daily living (e.g. bathing dressing, transferring, toileting) to reduce their care requirements and enable them to return home. One of the key enablers for these functional gains appears to be the extended length of stay in the inpatient rehab setting beyond the current 45 day HTSD benchmark.

The findings of this demonstration project, while informative, cannot be interpreted as providing definitive results on HTLD stroke rehab given its small sample size and other limitations of the project. However, these initial findings, which suggest that HTLD stroke rehab is of benefit to stroke survivors and may result in healthcare savings, indicate that a more formal investigation using a rigorous research approach is warranted.

**APPENDIX A: Nursing Challenges Checklist**

Nursing Challenges																		
For weekly tracking by inpatient team/service coordinator																		
(Please indicate needs with ✓ or Not Applicable (NA) for each week as indicated)																		
	Transfers: # of Persons to Assist			Incontinent of bowel	Incontinent of bladder	Dressing: Note: Partial assist includes verbal cueing and/or supervision			Bathing:			Stage III or IV wound	Acute Depression (as measured by treatment with medication)	>2 special needs*	Day / night / sundown agitation	Behaviour Issues**	Other	Readmit to Acute Care? If yes, specify reason
	2	1	Independent			Total	Partial	Independent	Total	Partial	Independent							
Week 1																		
Week 2																		
Week 3																		
Week 4																		
Week 5																		
Week 6																		
Week 7																		
Week 8																		
Week 9																		
Week 10																		

\*Special needs include: IV, Continuous/Intermittent O2, NG tube, GJ tube, TPN, Incontinence, Peritoneal Dialysis, Ostomy, Wound Care, VRE/MRSA, CPM, NWB, Pressure Beds, Tracheostomy

\*\*Behavioural Issues include: aggressive, disruptive or resistive behaviour.

**APPENDIX B: Allied Health Challenges Checklist**

Allied Health Challenges For weekly tracking Please provide number or ✓ where indicated							
	No. of Therapy Sessions Cancelled: Medical Issues	No. of Therapy Sessions Cancelled: Fatigue	Depression Affecting Participation	Behavioural Issues* Affecting Participation	Daytime Agitation Affecting Participation	Medication Issues Affecting Participation	Nutritional Issues Affecting Participation
Week 1							
Week 2							
Week 3							
Week 4							
Week 5							
Week 6							
Week 7							
Week 8							
Week 9							
Week 10							
Week 11							
Week 12							

\*Behavioural Issues include: aggressive, disruptive or resistive behaviour.