Assessing the Impact of Southwestern Ontario’s Community Stroke Rehabilitation Teams: An Economic Analysis

Final Report to the Ontario Stroke Network

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September 12th, 2013
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Executive Summary

Introduction
Over 50,000 Canadians experience a stroke annually, often leading to residual deficits that can take months or even years to recover from. As a result of this debilitating condition, the costs of stroke to the Canadian economy are enormous with an estimated $3.6 billion a year being spent on both direct and indirect costs. Interdisciplinary, specialized stroke rehabilitation services have been demonstrated to be an efficacious means of promoting recovery post stroke. This therapy may be offered in an inpatient and/or outpatient setting, but home-based rehabilitation has also surfaced as a viable alternative to outpatient rehabilitation therapy.

In 2009, the Southwest Local Health Integration Network (LHIN) funded the development of the Community Stroke Rehabilitation Teams (CSRT). These interdisciplinary teams consist of a registered nurse, occupational therapist, physiotherapist, speech language pathologist, social worker, therapeutic recreation therapist, and rehabilitation therapist who work together to provide best-practice based, individualized care to stroke survivors directly in their own homes. These teams aim to provide rehabilitation to individuals for whom traditional outpatient services are unavailable or inaccessible. The primary objective of this study was to report the costs and outcomes experienced by patients in the CSRT program over one year following enrollment. A secondary objective was to perform a prospective economic evaluation of the CSRT program relative to a no therapy alternative.

Chapter 1: CSRT vs. Control Data
Study participants were recruited from the Thames Valley, Huron Perth and Grey Bruce CSRTs as well as select hospital sites across the province that did not have access to CSRT services. Telephone interviews were conducted at baseline, 6 month, and 12 month follow up. The Stroke Impact Scale (SIS) and EQ-5D-5L were administered at each telephone interview, with the Health and Social Services Utilization Survey (HSSUS) conducted at both follow up assessments. A total of 174 (164 CSRT; 10 Controls) baseline, 112 (108 CSRT; 4 Controls) 6 month follow up, and 37 (37 CSRT; 0 Controls) 12 month follow up assessments were completed. Due to insufficient recruitment of control participants, analyses were based on CSRT client data only.

The mean age of CSRT participants was 66.7(SD 12.8) years (57.9% male). The median time since stroke for these individuals was 62 days (IQR 66). The average health utility, as measured by the EQ-5D-5L, was 0.758 (SD 0.17) at baseline and remained relatively stable at 6 and 12 month follow up. CSRT clients experienced statistically significant gains in their perceived level of Participation at both 6 and 12 month follow up assessments (F=9.527; P<0.001). All other domains of the SIS remained stable over the 12 month study period. Based on self-reported HSSUS data, the average total cost of the CSRT program per client was $2983.64(±2959.60), while all other health care costs (direct and indirect) averaged $11,518.17(±24,099.80) per client over 12 months.
CSRT clients experienced gains in, or maintenance of, their perceived quality of life and functioning during the first six months after stroke. These improvements were maintained at 12 month follow up (after the discontinuation of CSRT services) and suggest that CSRT services may alter the trajectory of patient recovery, which typically declines around 9 months post stroke. The statistically significant increase in the perceived level of participation experienced by CSRT clients from baseline to 12 months is also particularly promising. CSRT services, as a proportion of mean costs per client, contributed the greatest percentage (33%) of direct costs.

Chapter 2: CSRT vs. Literature-based Estimates
A cost-utility analysis based on a Markov Model was projected for 35 years to examine the cost-effectiveness of the CSRT program compared to No Further Therapy. Cost and utility information for the CSRT group were derived from administrative data and from data collected via telephone interviews conducted at baseline, 6 month and 12 month follow up. Comparable values for the No Further Therapy group were derived from the literature.

The CSRT program was found to be cost-effective when compared to no further therapy. The CSRT program cost on average $232,533/11 QALYs and No Further Therapy a cost $104,121/6 QALYs, producing an Incremental Cost Effectiveness Ratio (ICER) of $25,692/1QALY. In a probabilistic sensitivity analysis, at a Willingness to Pay (WTP) Threshold of $50,000, CSRT was found to be cost effective in >75% of simulations. The results of all sensitivity analyses indicate that the CSRT program is a cost effective alternative to no therapy.

This cost effectiveness analysis uses a payer perspective as indirect costs were largely excluded. Cost estimates for the CSRT group were likely conservative as it was difficult to mirror literature based costs. Clients accessing the CSRT program appear to use fewer health care resources during the first 12 months of service provision and report a better quality of life in all health states. Furthermore, we were able to demonstrate this cost effectiveness while maintaining a conservative estimate of costs, utilities, and transition probabilities for the majority of the model. Results suggest that the Community Stroke Rehabilitation Team model of care is a feasible and effective method of rehabilitation service delivery post stroke.

Conclusions
Based on two analyses conducted using data generated from this study, it is suggested that the community stroke rehabilitation team model is a cost-effective way to provide community rehabilitation services. This model should be explored for incorporation elsewhere in Ontario and Canada.
Introduction

Over 50,000 Canadians experience a stroke each year, often leading to residual deficits that can take months or even years to recover from. As such, stroke is the second major cause of long-term disability in North America and an estimated 300,000 Canadians are living with the effects of stroke at any time. It is estimated that over 50% of individuals who have experienced a stroke will experience moderate to severe impairments and these deficits often require intense rehabilitation throughout the acute, sub-acute, and chronic phases of recovery.

There are often a wide range of clinical impairments and disabilities after stroke that lead to patients requiring assistance with activities of daily living such as hygiene, general household tasks, and management of medical comorbidities. Up to 60% of stroke survivors are left with varying degrees of physical deficits requiring some degree of rehabilitation therapy that may include problems with gait and mobility, upper limb functionality, and other medical complications secondary to the stroke. In addition, deficits in cognition have been estimated to affect 7.4–40% of stroke patients and can range from slight memory and processing deficits, to much more severe dementias and executive functioning deficiencies. These cognitive issues may also be accompanied by perceptual disorders, such as neglect, which may manifest as an inability to process and interpret visual, tactile, and kinesthetic information.

On top of the commonly experienced physical and cognitive deficits resulting from stroke, many individuals also experience varying degrees of depression and anxiety, which may further impair their recovery process. An estimated 14% of community dwelling stroke survivors experience major depression, and between 24 and 30% suffer from anxiety. The combined effect of these physical, cognitive and psychosocial issues often have an impact on physical rehabilitation and can lead to more severe functional impairments than would be anticipated based on physical deficits alone.

The Costs of Stroke

The costs of stroke to the Canadian economy are enormous. One estimate suggested that $3.6 billion per year are spent on both the direct and indirect costs of stroke in Canada. Although the majority of direct costs are spent on acute and inpatient care, a large sum is also attributed to post-acute rehabilitation, stroke prevention, and physician visits for routine follow up and management of medical comorbidities such as depression, urinary tract infections, and pain. A recent systematic review found an estimated 30–62.2% of individuals will be readmitted to hospital following post-acute care for all cause morbidity, and an additional 20% of stroke survivors will experience a recurrent stroke, resulting in considerable added cost to the health care system. An estimated 80% of costs during the first six months following stroke are direct costs to the health care system.

The stroke patient and their families have also been demonstrated to experience a negative economic impact after stroke. Lost productivity in the form of lost wages, for both the survivor and their caregiver, represent an immense burden as an estimated 27–81% of individuals of working age are unable to return to work after stroke. Travel costs to doctors’ visits and government-funded outpatient rehabilitation may also accumulate to a large degree, not to mention out-of-pocket expenses for private
therapies. The majority of these indirect costs have been shown to accumulate during the post-acute phase, following discharge from inpatient stroke care.

**Efficacy of Rehabilitation Post Stroke**

Current Canadian guidelines have been developed to help ensure that stroke survivors receive the best stroke care possible. The Canadian Best Practice Recommendations for Stroke Care encompass guidelines specific to acute, inpatient, outpatient, and community based rehabilitation and are updated periodically with recommendations supported by the literature. They embrace a view of rehabilitation as a multidimensional approach, incorporating medical, social, emotional, and vocational resources to optimize recovery. It has been postulated that this organized, multifaceted approach to stroke rehabilitation could save the Canadian health care system $8 billion over the next 20 years through both stroke prevention and reduction in disability.

Stroke rehabilitation services are traditionally made up of multidisciplinary teams who provide comprehensive support to their patients. These teams consist of the following specialized services:

- **Physiotherapy**: facilitate the improvement of mobility and physical activity
- **Occupational Therapy**: identification, engagement, and improved function in the occupations of life
- **Speech Language Therapy**: the treatment of language, speech, voice, communication, and swallowing disorders
- **Social Work**: enhance individual and collective well-being of individuals and families using their own resources and those of the community
- **Therapeutic Recreational Therapy**: the incorporation of recreation and leisure as essential components to improved quality of life
- **Registered Nurse**: provision of basic medical support and health education

Five meta-analyses currently exist supporting the effectiveness of specialized stroke rehabilitation services. All of these studies report a reduction in mortality for individuals treated by specialized stroke rehabilitation services compared with control groups (typically traditional care). Specifically, a reduction in the odds of both death and poor consequences (OR 0.79, 95% CI 0.73 to 0.86 and OR 0.87, 95% CI 0.80 to 0.95 respectively), combined death or dependency (OR 0.82, 95% CI 0.73-0.92, p=0.001), and combined death or institutional care (OR 0.82, 95% CI 0.73-0.92, p=0.0006) have been reported in association with specialized care. One meta-analysis also found an increase in the odds of a stroke survivor returning to their own home following discharge from a specialized stroke program (OR 1.42 95% CI 1.05, 1.92).

Similar to specialized stroke rehabilitation, substantial research has been performed on in-home rehabilitation programs after stroke. A meta-analysis of studies comparing home-based and centre-based stroke rehabilitation facilities found that home-based services were associated with greater client satisfaction, reduced caregiver strain, lower readmission rates, and increased function and ADLs.
Pooled analysis also demonstrated a significant increase in functional independence in the form of improved scores on the Barthel Index. Reviewers noted that home-based rehabilitation may be superior, in part, because individuals have the opportunity to immediately transfer skills they have learned in their own living environment. In 2003, the Cochrane Collaborative also conducted a review of RCTs exploring the effectiveness of domiciliary or home-based rehabilitation compared to traditional care and found that home-based care reduced the odds of a poor outcome (OR 0.72, 95% CI 0.57 to 0.92, p=0.009). Furthermore, personal activity of daily living scores were significantly increased in home-based programs (95% CI 0.02 to 0.25; P = 0.02).

To date, few economic reviews have been completed examining the costs of home-based rehabilitation programs. Most of these analyses performed compared the costs of home-based programs to hospital-based outpatient programs and found that domiciliary services were usually cost-effective or no more costly than hospital-based programs; particularly in the context of early discharge from hospital. A systematic review of costs for home-based rehabilitation programs found that, overall, domiciliary rehabilitation reduced hospital stay by 13 days (95% CI: -19 to -7 days) and, in combination with early discharge from hospital, resulted in an overall mean cost reduction of 15% compared to in-hospital rehabilitation without any compromise to patient outcomes. However, in general, there are mixed results when examining the effectiveness of community-based programs in terms of patient outcomes and cost, likely due to the marked heterogeneity in the studies performed to date. This heterogeneity is largely due to variation of the programs themselves, the actual structure of the interdisciplinary teams, as well as differences in the health care systems in which they operate. Consequently, extrapolation of results to a Canadian setting is difficult.

A recent randomized controlled trial was conducted in Ontario, Canada examining enhanced home-based stroke rehabilitation provided by Community Care Access Centres (CCAC) to traditional levels of CCAC combined with hospital-based outpatient rehabilitation. The ‘Enhanced CCAC’ program offered an interdisciplinary approach to in-home stroke rehabilitation. Assessments were completed at baseline and 12 month follow-up and the primary outcome measure, the SF-36, revealed a clinically meaningful difference on two domains (physical and social). No differences were found between groups on any other assessments of functional improvement or quality of life (cognitive functioning, functional improvement, memory, anxiety and depression, and reintegration to normal living). Cost analysis of the program revealed a slightly higher, although not significant, per-client cost in the use of health services for the intervention group as measured by the Health and Social Services Utilization Survey. It was concluded that enhanced CCAC is a feasible approach for rehabilitation provision compared to traditional outpatient services. No research has been conducted to-date on the effects of in-home rehabilitation compared with patients who receive no rehabilitation services.

The Community Stroke Rehabilitation Teams

The Community Stroke Rehabilitation Teams (CSRT) were founded in 2009 to service eight counties in Southwestern Ontario. These teams operate through annual funding provided by the Southwest Local Health Integration Network (LHIN). They aim to provide Canadian Best Practice recommended care to adult stroke survivors living in their homes who are otherwise unable to access traditional outpatient
rehabilitation services due to mobility, transportation, or geographic limitations. The CSRTs deliver services individualized to each client that may involve physical rehabilitation, social and emotional support, education, system navigation, community re-integration, and caregiver support. Provision of these services is based on an interdisciplinary model with involvement of a registered nurse, occupational therapist, physiotherapist, speech language pathologist, social worker, therapeutic recreation therapist, or rehabilitation therapist working together as necessary. This highly sought-after program has provided active services to over 1800 clients since its inception.

Initial indications are that the Community Stroke Rehabilitation Teams are effective in improving overall patient outcomes. An informal evaluation of the teams’ early performance indicated that, on average, patients made statistically significant gains on the Functional Independence Measure (FIM™) (p<0.001), as well as the physical (p=0.01) and psychosocial (p<0.001) domains of the Stroke Impact Scale (SIS) between admission and discharge. These gains were maintained at 6-month follow up. Additionally, it was found that patients in the program displayed fewer symptoms of depression on both the Hospital Anxiety and Depression Scale (HADS) and the depression domain of the Patient Health Questionnaire (PHQ), and required less caregiver assistance, as measured by the Bakas Caregiver Outcomes Scale (BCOS), at discharge than they had on admission to the program. Since program initiation, 11 patients admitted to the CSRT program from a long-term care facility were able to return to the community.

**Objectives**

The purpose of this study was to perform a prospective economic evaluation of outcomes and costs among clients of the CSRT compared to similar patients unable to access community based outpatient rehabilitation programs after hospital discharge. A secondary objective was to use this prospectively collected information to model the long-term health economic impact of CSRT care compared to no rehabilitation.

**Materials**

For the proposed economic evaluation, the following measures were used: the European Quality of Life Index (EQ-5D-5L), the Stroke Impact Scale (SIS) and the Health and Social Services Utilization Survey (HSSUS). Additional information was collected via baseline survey including date of stroke, age, sex, stroke severity, presence of a caregiver, and comorbidities. Costs were derived using the HSSUS costing manual, administrative information from the CSRTs, and supplemental sources when necessary.

The EQ-5D-5L is a generic utility based measure. It assesses five dimensions of health related to mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, with five levels of response for each. A visual analogue scale ranging from 0 (‘the worst health you can imagine’) to 100 (‘the best health you can imagine’) can also be used as a self-reported measure of health. Patient responses to the EQ-5D-5L generate a health state profile that can then be converted to index based values. Canadian value sets for the conversion of health states to index values are currently not available, so the United States value set was used. Utility values support the calculation of quality adjusted life years (QALYs),
which can then be used to perform a cost utility analysis. In a validity study with a stroke specific population, the EQ-5D-5L was found to have correlations with SIS subscales ranging from 0.15 to 0.60. Furthermore, test–retest reliability was demonstrated to be good, with interclass correlations ranging from 0.67 to 0.81.

The SIS 3.0 is a 64 item stroke-specific measure of function. It was developed to assess important consequences of stroke, specifically mild to moderate stroke severities, and to be sensitive to small changes in function. The SIS consists of eight domains pertaining to strength, hand function, instrumental activities of daily living, mobility, communication, memory, emotion and thinking, and social participation. This measure has excellent reliability with exceptional test-retest reliability in seven of the eight domains (interclass correlative coefficient: 0.70 to 0.92). Validity has also been demonstrated, with good correlation with the SF-36 and other measures of physical and cognitive function (0.44 to 0.84). Finally, construct validity is also robust with the SIS being able to accurately predict stroke severity. This measure takes approximately 20 minutes to complete, and has been validated for use over the telephone, and with proxy respondents.

The HSSUS was developed by Gina Browne at McMaster University. Developed in Ontario, Canada, this questionnaire is highly relevant to the CSRT context. It consists of a range of questions designed to capture the types and quantities of health and social services accessed by patients, summarizing both direct (physician and specialist visits, publically funded social services, medical tests, hospital admissions) and indirect health care costs (travel, loss of wages, private health and social service costs). Questions related to medications, lost time from work due to illness, and income were removed from the 6 month and 12 month follow up assessments after privacy concerns were expressed by clients during the first several phone calls that were conducted. A costing manual is available with the survey to provide estimated average health and social service costs. These cost estimates are based on Ontario data and can be used to calculate total health care expenditures for each individual.

Cost estimates in the HSSUS costing manual are derived from the Ontario Health Insurance Plan (OHIP) schedule of benefits and fees, and are based on 2003 (laboratory and diagnostic services) and 2006 (all other services) Canadian Dollars. For the purposes of our study, costs were inflated to 2012 Canadian Dollars using the Ontario health and personal care consumer price index inflation rates. Inflation rates ranged from 0.9% to 2.9% per year between 2003 and 2012. Where costing information was not available (for example, for some medical supplies and devices), the midpoint of the highest and lowest cost for the device was taken and averaged between two online Canadian sources. Other assumptions and references for costs, including CSRT visit costs, are detailed in Appendix A.
Chapter 1 - CSRT and Control Data Collection Methods and Summary

Methods

Study recruitment began in January 2012. Start dates varied between sites as a result of variation in local ethics approval dates. Recruitment sites included the Thames Valley, Huron Perth and Grey Bruce Community Stroke Rehabilitation Teams (CSRTs), Mackenzie Health Care, St. Joseph’s Health Care Guelph, Bluewater Health, Chatham-Kent Health Alliance, Sault Area Hospital, North Bay Regional Health Centre and Hamilton Health Sciences. Ethics approval was obtained for the overall study from the research ethics department at Western University, and subsequently from the appropriate research board at each participating facility.

The CSRTs were uninterrupted and continued to admit patients as usual. Consecutive patients admitted to the CSRT program were approached at first contact by CSRT staff, given a brief description of the study, and asked for written consent to provide their name and contact information to a member of the research team. They were also provided with a copy of the Letter of Information, which described the objectives of the study and their possible role.

Control patient recruitment was conducted in regions across Ontario where CSRT programs were not available. A single staff member (or several when necessary) was identified at each control site. Before patient recruitment began, information sessions were held with all potential recruiters. Sessions were held on-site or by video conference when travel was not feasible. The information sessions were one to two hours in length, and comprised of a description of the existing CSRTs, an introduction to the study purpose and design, as well as a discussion of admission criteria and the recruitment centre’s role in the study. The session was coordinated and conducted by the research team. Once trained, recruiting staff in acute and inpatient rehabilitation hospitals screened patients for suitability at (or near) discharge and obtained written consent to provide the patient’s name and contact information to a member of the research team. Patients were screened based on the inclusion criteria currently used by the CSRT, the ability of the patient or a proxy to provide accurate information during interviews or over the telephone, and their suitability as a control (Table 1). Every effort was made to ensure recruitment of similar patients in both groups. The admission criteria used by the CSRTs are intentionally vague to allow a wide variety of patients the opportunity to access services. Staff members recruiting control patients were contacted weekly by our research team to discuss the suitability of candidates and answer any questions.

<table>
<thead>
<tr>
<th>Table 1: Admission Criteria Used by Study Recruiters</th>
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<tr>
<td>Admission Criteria:</td>
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<tr>
<td>• Adult stroke survivors with rehabilitation needs</td>
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<tr>
<td>• Client’s needs are best met by specialized stroke rehabilitation services in the community</td>
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<tr>
<td>• Client consents, is motivated and able to participate</td>
</tr>
<tr>
<td>• Client has specific and achievable rehabilitation goals</td>
</tr>
<tr>
<td>• Stroke onset ≤6 months</td>
</tr>
<tr>
<td>• Client would be willing to participate in a rehabilitation program if one were available</td>
</tr>
<tr>
<td>• Client receiving ≤5 outpatient therapy sessions within a 6 month (180 day) period*</td>
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*Criteria added October 2012
As soon as possible after information was passed on to our team, contact with the patient or appropriate proxy was attempted via telephone to explain the study in detail and obtain verbal consent for participation. Phone calls were repeated frequently until contact was made. Once consent for participation was provided, the researcher administered the baseline assessment involving collection of patient information: age, sex, OHIP number (if consent was provided), place of residence (home, other community setting etc.), previous history of stroke, comorbidities (diabetes, high blood pressure, heart disease, etc.), time since stroke, retrospective assessment of stroke severity, presence of family support and initial assessment of outcome measures: the Stroke Impact Scale v. 3.0 (SIS) and the EuroQol 5D 5L (EQ-5D-5L) (Surveys are presented in Appendix B).

Follow up phone calls were performed 6 and 12 months after baseline assessment when possible. Proxy respondents were only accepted if the individual lived with, or had regular day-to-day contact with, the participant. During follow-up telephone interviews, participants were reassessed using the SIS and the EQ-5D-5L and were also administered the Health and Social Services Utilization Survey. If contact was made with the participant well beyond the 6 or 12 month follow up date (i.e. > 1 month), efforts were made to assess health care and social service use within the first six months or second six months respectively since the date of the baseline call.

**Statistical Analysis**

Summary statistics were generated for all CSRT clients and controls at baseline, 6 and 12 months where possible. Changes in health outcomes were compared among CSRT clients between baseline and 6 months, 6 – 12 months and baseline to 12 months using repeated measures ANOVA. Health care services accessed by clients between 0 – 6 and 6 – 12 months as reported during follow up assessments were summarized and described. Costs were calculated for each client based on the number of services accessed and per-service cost estimates (Appendices A and C). Only complete cases were included in outcome comparisons and in calculations of mean costs per client. All analyses were performed using SPSS Statistics Software v.21.

**Results**

A total of 227 participants were recruited between January 2012 and February 2013. Of these participants, 212 were referrals from the CSRT teams and 15 were referrals from control sites. For the purposes of completing this report, only data collected up to July 31st 2013 were analyzed.

The flow of participants through the study is illustrated in
Table 3: EQ-5D-5L and SIS across time points among CSRT clients

<table>
<thead>
<tr>
<th></th>
<th>Baseline (n=164)</th>
<th>6 Month Follow up (n=108)</th>
<th>12 Month Follow up (n=37)</th>
<th>Repeated Measures ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EQ-5D-5L Mean (SD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQ-5D-5L Index Value</td>
<td>0.758 (0.17)</td>
<td>0.743 (0.21)</td>
<td>0.743 (0.19)</td>
<td>F=2.205; P=0.125</td>
</tr>
<tr>
<td>EQ-5D-5L VAS</td>
<td>70.17 (17.83)</td>
<td>68.92 (21.82)</td>
<td>66.07 (24.39)</td>
<td>F=1.898; P=0.166</td>
</tr>
<tr>
<td><strong>SIS Mean (SD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS2 (Memory/Thinking)</td>
<td>75.04 (22.69)</td>
<td>76.36 (25.40)</td>
<td>76.17 (29.40)</td>
<td>F=0.645; P=0.531</td>
</tr>
<tr>
<td>SIS3 (Emotions)</td>
<td>75.41 (17.58)</td>
<td>78.57 (16.65)</td>
<td>76.15 (20.71)</td>
<td>F=0.743; P=0.483</td>
</tr>
<tr>
<td>SIS4 (Communication)</td>
<td>80.57 (20.41)</td>
<td>82.47 (21.31)</td>
<td>83.96 (18.99)</td>
<td>F=1.691; P=0.199</td>
</tr>
<tr>
<td>SIS8 (Participation)</td>
<td>60.19 (22.85)</td>
<td>69.57 (26.70)</td>
<td>73.66 (26.16)</td>
<td>F=9.527; P&lt;0.001</td>
</tr>
<tr>
<td>SIS1,5,6,7 (Physical)</td>
<td>72.03 (21.18)</td>
<td>74.78 (23.52)</td>
<td>74.85 (23.35)</td>
<td>F=1.186; P=0.318</td>
</tr>
</tbody>
</table>

**Health and Social Services Utilization**

Direct and indirect health care service utilization is detailed in Table 4. All clients utilized at least one form of direct care, while 92.7% of clients utilized at least one form of indirect care. Almost all clients reported having at least one visit with a primary or secondary care provider at 6 month follow up, and 92.9% of patients reported some form of travel or parking costs for the purposes of accessing health or social services during the same time period. Health care utilization remained similar for the 6 – 12 month time period. All clients utilized at least one form of direct care, and 94.3% of patients utilized at least one form of indirect care. Travel and parking for the purposes of health care and social services remained relevant for over 90% of clients at 12 month follow up.

Mean per client costs are also detailed in Table 4. From 0 – 6 months, the per-client average service costs ranged from $42.08 for special treatments to $2644.64 for CSRT services. Total average costs per client from 0 – 6 months was $8152.70 (SD 11537.98). From 6 – 12 months, total average costs dropped to $4373.02 (SD 7551.48). Approximately one third of total mean costs per client were associated with CSRT services. From 6 – 12 months approximately 3% of costs were attributable to CSRT services and mean costs per client ranged from $9.01 for special treatments to $2054.44 for LTC. Mean cost of LTC per client was higher at 12 month follow up compared to 6 month follow up because a greater percentage of individuals surveyed at twelve months were in LTC and, on average, spent more days residing there. All other costs from 6 – 12 months were lower on average per client compared to 0 – 6 months. Further details regarding the health care and social services included in the utilization and cost estimates are presented in Appendix C.

Details of the mean cost of health and social services utilization for CSRT clients from baseline to 12 month follow up are presented in table 5. Total costs per client on average were $15041.33 (SD 24805.18) and CSRT services represented approximately 19.8% of these costs.
Due to time restraints, the study end date had not been reached at the time this report was completed and, therefore, 12 (7.3%) 6 month phone calls and 58 (53.7%) 12 month phone calls remain to be completed. Of those participants who completed baseline phone calls, 108 (71.1%) CSRT clients and 4 (50%) controls had 6 month calls completed, and 37 (74.0%) CSRT clients had 12 month calls completed. Due to late recruitment, none of the 4 control participants who completed 6 month follow-up were due for 12 month calls before July 31st, 2013.
Figure 1: Participant flow through study

212 CSRT Patients Referred
- Recruited after study end date (n=3)
- Secondary Stroke/Discharged to LTC (n=1)
- Did not have a stroke (n=3)
- Passed away (n=2)
- Unable to contact (n=6)
- Declined to participate (n=30)
- Unable to contact before February 28th, 2013 (n=3)
Total (n=48)

15 Control Patients Referred
- Declined to participate (n=2)
- Unable to contact (n=1)
- Did not meet inclusion criteria (n=1)
- Discharged to LTC (n=1)
Total (n=5)

164 CSRT Baseline Calls completed
- Did not have a stroke (n=2)
- Declined to continue (n=11)
- Number not in service (n=2)
- Unable to contact (n=15)
- Passed away (n=3)
- Scheduled for after July 31st, 2013 (n=12)
- Unable to contact before July 31st, 2013 (n=9)
- Discharged from team (n=1)
- Declined CSRT services (n=1)
Total (n=56)

10 Control Baseline Calls completed
- Declined to continue (n=1)
- Number not in service (n=2)
- Unable to contact (n=1)
- Scheduled for after July 31st, 2013 (n=2)
Total (n=6)

108 CSRT 6 Month Calls completed
- Declined to continue (n=3)
- Unable to contact (n=1)
- Unable to contact before July 31st, 2013 (n=8)
- Recurrent stroke (n=1)
- Scheduled for after July 31st, 2013 (n=58)
Total (n=71)

4 Control 6 Month Calls completed
- Unable to contact before July 31st, 2013 (n=4)
Total (n=4)

37 CSRT 12 Month Calls Completed

0 Control 12 Month Calls Completed
Baseline patient demographics, details of the stroke event, stroke history and relevant comorbidities are detailed in Table 2. On average, CSRT clients were contacted by the research team 10.1 days (SD 18.3) after their first visit with the team. The mean length of time from first visit to referral was 3.6 days (SD 17.4) and the mean time from referral to first contact was 6.5 days (SD 6.6). Due to limited numbers of controls, comparative statistics between CSRT clients and controls were not performed. From this point forward, analyses will be restricted to participants from CSRTs only.

Table 2: Baseline Characteristics

<table>
<thead>
<tr>
<th></th>
<th>CSRT (n= 164)</th>
<th>Control (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age - years (SD)</td>
<td>66.7 (12.8)</td>
<td>62.9 (14.6)</td>
</tr>
<tr>
<td>Number of Males (%)</td>
<td>95 (57.9%)</td>
<td>9 (90%)</td>
</tr>
<tr>
<td>Place of Residence (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>House/Apartment</td>
<td>148 (90.2%)</td>
<td>8 (80%)</td>
</tr>
<tr>
<td>Nursing Home</td>
<td>2 (1.2%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Retirement Home</td>
<td>3 (1.8%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>Seniors Apartment</td>
<td>6 (3.7%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Relatives House</td>
<td>3 (1.8%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Lives with family member or other support person</td>
<td>142 (86.6%)</td>
<td>9 (90%)</td>
</tr>
<tr>
<td>Family or other support available on a daily basis</td>
<td>126 (76.8%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>Stroke Event and History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to stand up and walk around on own after stroke (%)</td>
<td>82 (50%)</td>
<td>84 (48.3%)</td>
</tr>
<tr>
<td>Days Since Stroke (Median, IQR)</td>
<td>62 (66)</td>
<td>70 (70.25)</td>
</tr>
<tr>
<td>Recurrent Event (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>27 (16.5%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>TIA</td>
<td>4 (2.4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Stroke Risk Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosed with Diabetes</td>
<td>50 (30.5%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>Diagnosed with High Blood Pressure</td>
<td>116 (70.7%)</td>
<td>4 (40%)</td>
</tr>
<tr>
<td>Diagnosed with Heart Disease</td>
<td>37 (22.6%)</td>
<td>4 (40%)</td>
</tr>
<tr>
<td>Diagnosed with High Cholesterol</td>
<td>82 (50%)</td>
<td>4 (40%)</td>
</tr>
</tbody>
</table>

**EQ-5D-5L and SIS**

CSRT clients maintained their perceived level of functioning and quality of life between baseline, 6 and 12 month follow up in all domains of the EQ-5D-5L and SIS (}
Table 3). Clients also demonstrated statistically significant gains for the participation domain of the SIS from baseline to 12 month follow up (F=9.527; P<0.001).
Table 3: EQ-5D-5L and SIS across time points among CSRT clients

<table>
<thead>
<tr>
<th></th>
<th>Baseline (n=164)</th>
<th>6 Month Follow up (n=108)</th>
<th>12 Month Follow up (n=37)</th>
<th>Repeated Measures ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-5D-5L Mean (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQ-5D-5L Index Value</td>
<td>0.758 (0.17)</td>
<td>0.743 (0.21)</td>
<td>0.743 (0.19)</td>
<td>F=2.205; P=0.125</td>
</tr>
<tr>
<td>EQ-5D-5L VAS</td>
<td>70.17 (17.83)</td>
<td>68.92 (21.82)</td>
<td>66.07 (24.39)</td>
<td>F=1.898; P=0.166</td>
</tr>
<tr>
<td>SIS Mean (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS2 (Memory/Thinking)</td>
<td>75.04 (22.69)</td>
<td>76.36 (25.40)</td>
<td>76.17 (29.40)</td>
<td>F=0.645; P=0.531</td>
</tr>
<tr>
<td>SIS3 (Emotions)</td>
<td>75.41 (17.58)</td>
<td>78.57 (16.65)</td>
<td>76.15 (20.71)</td>
<td>F=0.743; P=0.483</td>
</tr>
<tr>
<td>SIS4 (Communication)</td>
<td>80.57 (20.41)</td>
<td>82.47 (21.31)</td>
<td>83.96 (18.99)</td>
<td>F=1.691; P=0.199</td>
</tr>
<tr>
<td>SIS8 (Participation)</td>
<td>60.19 (22.85)</td>
<td>69.57 (26.70)</td>
<td>73.66 (26.16)</td>
<td>F=9.527; P&lt;0.001</td>
</tr>
<tr>
<td>SIS1,5,6,7 (Physical)</td>
<td>72.03 (21.18)</td>
<td>74.78 (23.52)</td>
<td>74.85 (23.35)</td>
<td>F=1.186; P=0.318</td>
</tr>
</tbody>
</table>

Health and Social Services Utilization

Direct and indirect health care service utilization is detailed in Table 4. All clients utilized at least one form of direct care, while 92.7% of clients utilized at least one form of indirect care. Almost all clients reported having at least one visit with a primary or secondary care provider at 6 month follow up, and 92.9% of patients reported some form of travel or parking costs for the purposes of accessing health or social services during the same time period. Health care utilization remained similar for the 6 – 12 month time period. All clients utilized at least one form of direct care, and 94.3% of patients utilized at least one form of indirect care. Travel and parking for the purposes of health care and social services remained relevant for over 90% of clients at 12 month follow up.

Mean per client costs are also detailed in Table 4. From 0 – 6 months, the per-client average service costs ranged from $42.08 for special treatments to $2644.64 for CSRT services. Total average costs per client from 0 – 6 months was $8152.70 (SD 11537.98). From 6 – 12 months, total average costs dropped to $4373.02 (SD 7551.48). Approximately one third of total mean costs per client were associated with CSRT services. From 6 – 12 months approximately 3% of costs were attributable to CSRT services and mean costs per client ranged from $9.01 for special treatments to $2054.44 for LTC. Mean cost of LTC per client was higher at 12 month follow up compared to 6 month follow up because a greater percentage of individuals surveyed at twelve months were in LTC and, on average, spent more days residing there. All other costs from 6 – 12 months were lower on average per client compared to 0 – 6 months. Further details regarding the health care and social services included in the utilization and cost estimates are presented in Appendix C.

Details of the mean cost of health and social services utilization for CSRT clients from baseline to 12 month follow up are presented in table 5. Total costs per client on average were $15041.33 (SD 24805.18) and CSRT services represented approximately 19.8% of these costs.
Table 4: Direct and Indirect Health Care Costs at 6 and 12 Month Follow up

<table>
<thead>
<tr>
<th></th>
<th>6 Month Follow up</th>
<th>12 Month Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (% of N)</td>
<td>Mean Cost Per Client* (SD)</td>
</tr>
<tr>
<td><strong>Direct Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSRT Services</td>
<td>75 (76.5)</td>
<td>2644.64 (3103.18)</td>
</tr>
<tr>
<td>Primary/ Specialist Care Provider Visits</td>
<td>105 (97.2)</td>
<td>365.58 (412.00)</td>
</tr>
<tr>
<td>Other Health and Social Services</td>
<td>86 (84.3)</td>
<td>1541.94 (2410.81)</td>
</tr>
<tr>
<td>Hospital Admissions</td>
<td>16 (14.8)</td>
<td>1186.95 (6271.80)</td>
</tr>
<tr>
<td>LTC or Retirement Home Stay</td>
<td>6 (5.6)</td>
<td>798.50 (4384.10)</td>
</tr>
<tr>
<td>Day Surgeries</td>
<td>8 (7.5)</td>
<td>472.30 (1896.63)</td>
</tr>
<tr>
<td>Lab and Diagnostic Services</td>
<td>88 (82.2)</td>
<td>237.74 (322.18)</td>
</tr>
<tr>
<td>Special Treatments</td>
<td>41 (38.3)</td>
<td>42.08 (320.72)</td>
</tr>
<tr>
<td>Supplies, Aids, Devices</td>
<td>27 (27.3)</td>
<td>406.67 (2651.88)</td>
</tr>
<tr>
<td>Mean Direct Costs Per Client</td>
<td>82 (100)</td>
<td>7664.04 (11275.28)</td>
</tr>
<tr>
<td><strong>Indirect Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel and Parking</td>
<td>91 (92.9)</td>
<td>188.25 (256.93)</td>
</tr>
<tr>
<td>Babysitting and Household Help</td>
<td>16 (15.1)</td>
<td>127.32 (622.76)</td>
</tr>
<tr>
<td>Mean Indirect Costs Per Client</td>
<td>89 (92.7)</td>
<td>317.09 (687.29)</td>
</tr>
<tr>
<td><strong>Average Total Cost Per Client:</strong></td>
<td></td>
<td>8152.70 (11537.98)</td>
</tr>
</tbody>
</table>

*Based on complete cases (N).

Table 5: Total Health Care Costs at 6 and 12 Month Follow up

<table>
<thead>
<tr>
<th></th>
<th>Mean Cost Per Client* (SD) 0 - 6 Month Follow up</th>
<th>Mean Cost Per Client* (SD) 6 – 12 Month Follow up</th>
<th>Mean Cost Per Client* (SD) 0 – 12 Month Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSRT Related Costs</td>
<td>2644.64 (3103.18)</td>
<td>135.93 (490.08)</td>
<td>2983.64 (2959.60)</td>
</tr>
<tr>
<td>All Other Costs**</td>
<td>5365.16 (10537.25)</td>
<td>4229.32 (7555.61)</td>
<td>11518.17 (24099.80)</td>
</tr>
<tr>
<td><strong>Average Total Cost Per Client:</strong></td>
<td>8152.70 (11537.98)</td>
<td>4373.02 (7551.48)</td>
<td>15041.33 (24805.18)</td>
</tr>
</tbody>
</table>

*Based on complete cases (N).**All other costs: Primary and specialty care, all other health service providers, hospital admissions, day surgeries, LTC, retirement home, shelter, outpatient laboratory tests, special treatments, supplies, household help, babysitting, total travel costs, total parking costs
Discussion

A total of 164 CSRT clients and 10 controls completed baseline assessments. On average, CSRT clients reported their health related utility at 0.758 and this value was essentially maintained at 12 month follow up. All patients utilized some form of health care or social services from baseline to 12 months and, on average, cost $8152.70 from baseline to 6 months and $4373.02 from 6 to 12 months. CSRT services from baseline to 12 months cost $2983.64 per client on average.

The cohort of clients recruited by this study had a mean age of 66.7 years and was 57.9% male. On average, patients were recruited into the study at 62 days post stroke and 15.6% of patients had a previous history of stroke or TIA. Community stroke rehabilitation team data suggest that clients admitted between January 2012 and February 2013 had a mean age of 69.9 years, were 53.4% male, and had a median time since stroke of 49 days. This comparison suggests that patients who were recruited or who consented to participate in our study tended to be younger, were more likely to be male, and were longer post-stroke, on average, than the general population of clients. Since consecutive clients were approached, these differences likely represent bias in participation. However, our sample is comparable to other community rehabilitation programs reported in the literature. For instance, one systematic review found that the age of patients enrolled in community rehabilitation programs ranged between means of 60 and 80 years old [43], while another based on worldwide data for all strokes found that stroke is more common in men, and the mean age of an index stroke event was 68.6 years for men and 72.9 years for women [44].

Our original study design proposed the recruitment of an equal number of control patients from select hospital sites that do not have access to CSRT services. We were met with unexpected challenges for control recruitment despite our best efforts. Recruitment sites were engaged during study design and asked to estimate their anticipated numbers. The appropriate contacts at each control hospital were then trained regarding study objectives and recruitment criteria and offered support as needed. Recruiters were contacted weekly and financial incentives were provided on a per-patient recruited basis. After initially slow recruitment rates were detected, additional recruitment sites were sought as the study progressed and exclusion criteria were made less restrictive. Despite these efforts, reasons for low recruitment remain unclear. It is possible that the number of patients that were anticipated to meet inclusion criteria and consent to participation was overestimated, or that time constraints at the recruitment site influenced recruitment efforts. Difficulties in recruiting controls are not unique to our study. McDonald and colleagues reviewed RCTs funded by two agencies in the UK and found that 84% of studies did not meet recruitment targets, with 63% of studies reporting that recruitment was slower than expected [45]. As a result of these challenges, our discussion will reflect the experiences of patients in the CSRT group only. We do, however, acknowledge that the interpretation of our results is challenging in the absence of a study-specific control group.

Clients in the CSRT program experienced gains in, or maintenance of, their perceived quality of life and functioning during the first six months after stroke. In particular, clients experienced statistically significant gains in the participation domain of the SIS. Levels of participation are particularly important following stroke as they have been found to influence independence in activities of daily living [46], cognitive functioning [46,47], and overall life satisfaction [48]. Additionally, patients who are moderately and
highly socially active have been reported to have greater life satisfaction up to 3 years post stroke. Although other domains of the SIS and EQ-5D-5L did not demonstrate statistically significant improvements, the absence of decline is important to note. Initial informal evaluations of the CSRT program suggested that clients made statistically significant gains in Functional Independence Measure (FIM) and the physical and psychosocial domains of the SIS at discharge from the program. Clients are typically discharged from CSRTs within 4.41 (SD 2.9) months, and it is therefore possible that assessing outcomes at 6 months overlooked statistically significant gains that may have been present at earlier stages of recovery.

Clients in the CSRT program also maintained their perceived quality of life and functioning at twelve month follow up and outcomes for the participation domain of the SIS remained statistically significantly greater than baseline scores. This is a noteworthy result as only 6 (16.2%) patients reported having received CSRT services from 6 – 12 months after baseline contact. This may suggest that the maintenance of outcomes is due to the residual effects of CSRT care received. Similar to findings at 6 months, there were no statistically significant declines in EQ-5D-5L or SIS outcome measures, which is important given the potential for patient decline following a stroke. In a 2001 study, Tilling and colleagues illustrated a typical stroke recovery trajectory, finding that patients start to decline approximately 9 months following stroke. Since patients included in our study were recruited on average two months after stroke, the maintenance of outcomes is even more meaningful. Due to study time constraints it is unknown if CSRT clients maintain outcomes beyond the study window (12 months), but if they did there may be additional benefits of CSRT that were overlooked in the long term.

From baseline to 6 month follow up, all patients reported accessing at least one form of direct medical care. Family physicians were accessed most frequently by clients followed by other health and social services and lab and diagnostic services. As a proportion of mean costs per client, however, CSRT services contributed the greatest percentage (33%) of direct costs. Total direct costs were approximately $7664.04 on average and although CSRT costs represented a third of these costs, one objective of the CSRT services is to consolidate therapy, such as physiotherapy and occupational therapy, to reduce duplication of services and unnecessary expenses. Furthermore, CSRT services were designed to help prevent unnecessary visits to a family doctor or hospital and to act as a program to facilitate early supported discharge, which may have helped to save costs by limiting the number of days spent in acute care or inpatient rehabilitation. Unfortunately, the inability to recruit controls limited our ability to test these hypotheses directly.

The percentage of clients utilizing health care and social services was lower for all categories of services from 6 – 12 months after baseline contact, except for other health and social service provider use, admissions to long term care and the number of day surgeries. Given the sample sizes at each time point, this may be a consequence of fewer clients available for 12 month follow up (N=37) compared to 6 month follow up (N=108). Overall, direct and indirect health care costs at 12 month follow up were lower than at 6 months. It is also important to note that services such as long term care or hospital admissions, although costly, were accessed by a small percentage of patients: 5.6% and 14.8% of patients respectively. With higher sample sizes, it is likely that the mean cost of these services per patient would be lower. It is also interesting to note that utilization of travel and parking for the purposes of accessing
health care services contributed to costs for 92.7% of clients from 0 – 6 months, and 94.3% of clients from 6 – 12 months. Given the home-based care provided by CSRT clinicians, it is likely that these indirect costs would be even greater for patients who do not have access to these services.

Limitations
Given the prospective nature of the study, use of telephone surveys, and associated time constraints, complete data for patient’s at all three time points was difficult to obtain. Some clients had moved, had phone numbers that were no longer in service, were assessed as not having a stroke between time points, or were too busy to remain in the study. Survey completion by proxy respondents also has its limitations. Finally, due to circumstances beyond our control, not all clients were contacted at the exact baseline, 6 month or 12 month time points. As a result, not all patient-reported outcomes correlate to these exact 6 month and 12 month time points.

Chapter 2 – CSRT vs. Literature-based Estimates of Stroke Recovery & Cost

Methods
A cost-utility analysis was used to determine the cost effectiveness of the Community Stroke Rehabilitation Teams (CSRT) compared to a literature derived No Further Therapy group.

Markov Model
The model for this economic analysis consists of a decision tree with each branch ending in a Markov model. Decision trees model. Decision trees provide a visual indication of different intervention possibilities †. The decision tree examines the cost-effectiveness of two intervention options for patients leaving inpatient hospital services after stroke:

1. Community Stroke Rehabilitation Team: after inpatient hospital stroke care (either acute or rehabilitation), individuals are discharged home and receive in home, interdisciplinary rehabilitation services
2. No further therapy: after inpatient hospital stroke care (either acute or rehabilitation), individuals are discharged home and receive no further publicly funded therapy or rehabilitation services

Figure 2: Decision tree for cost analysis
Markov modelling is a well-validated and commonly used method for modelling the long-term impacts of healthcare interventions. Markov models allow individuals to transition between a set of defined health states over a given period of time (or cycle). Based on the sample of interest, each health state starts with a percentage of the total number of individuals in the sample, and has a cost and a utility value associated with it. The average number of individuals in a given health state over the life of the model, determined by the starting distribution and the probabilities of transitioning between health states, are used to calculate the mean cost and utility for that particular state. Markov models can be projected for a pre-specified length of time, providing an indication of the long term impacts of a program. The Markov model used here consists of four possible health states (detailed below) and involves patients transitioning between these states in six month cycles for 35 years or until death. Cycle parameters were also adjusted to reflect changes in risk of recurrent stroke and death over time.

The four possible health states in this Markov model are illustrated in Figure 3. An individual can begin in either the ‘Independent Living’, ‘Dependant Living’, or ‘Long Term Care’ states:

1. **Independent living**: an individual is able to live completely independently, in their own home, while being completely independent in their activities of daily living;
2. **Dependent living**: an individual is able to live in their own home, but requires assistance for activities of daily living either from a family/ friend caregiver or from home care services (i.e. Community Care Access Centres);
3. **Long Term Care Living**: an individual resides in a long term care or assisted living facility and is no longer capable of residing in their own home;
4. **Death**: the final absorbing state in the model.

**Figure 3: Markov Model**

The EQ-5D-5L was used to distinguish between individuals in independent and dependent living health states. Question #2 ("Self Care") and #3 ("Mobility") were examined, with individuals reporting at least ‘moderate problems washing and dressing myself’ (#2), and/or ‘moderate problems doing my usual
activities’ (#3) being classified as dependent living. This was similar to the classification system used in the BURST study\textsuperscript{52}. Long term care living was based on client self-report.

**Data Sources**

**Cost Estimates**

Literature based cost estimates were derived from the BURST study\textsuperscript{52}. This study provides Canadian cost information on health care usage for individuals who have had an ischemic stroke during the first 12 months following their stroke event. Information is available by health state (non-disabled and disabled), service type, and time frame (0-3 months, 4-6 months, 7-12 months). Average costs for each time frame were provided for both health states and according to service type (i.e. percentage of costs attributable to hospitalizations, medications, rehabilitation etc.). Since the purpose of this study was to evaluate costs of CSRT clients and not acute medical costs, only costs for 4-6 month and 7-12 month average health care usages were used. Cost estimates beginning at 4 months post stroke in the BURST study were considered to be equivalent to cost estimates beginning at the baseline time point for the CSRT group. Clients are typically admitted to the CSRT program beyond two months post stroke and therefore this was deemed a reasonable assumption. In addition, the combined median hospital length of stay for Canadians is 42 days post stroke (7 days acute, 35 days inpatient rehabilitation)\textsuperscript{53}, meaning that the majority of individuals in the BURST study would have been discharged from inpatient care for the initial stroke event by 4 months. All medication, rehabilitation, and indirect costs were removed from mean costs of the 4-6 month estimate for disabling and non-disabling strokes as these expenses were not available for the CSRT cohort. Medication cost, indirect costs, and outpatient rehabilitation costs only were removed from the 7-12 month mean estimates for each group. All cost data derived from this study were inflation adjusted to 2012 Canadian dollars using the appropriate Ontario consumer price index, health and personal care, and annual inflation rates\textsuperscript{42}.

Because the BURST study did not have cost estimates available for individuals residing in long term care (LTC), estimates for the costs of this health state were derived from the Ministry of Health and Long Term Care. Based on a standard room in an Ontario LTC facility in 2012, the daily co-payment estimates for LTC residents ($55.04) and the daily per resident contribution from the Ontario Ministry of Health and Long Term Care ($152.94) were combined and multiplied by 182 days to obtain a 6 month cost estimate\textsuperscript{54}. This approximation was believed to be a conservative estimate for patients in the No Therapy Group as it assumed no other costs were incurred during that time.

Health services utilization costs for the CSRT cohort were derived from several sources. Because of the delay in contact between the initiation of CSRT services and baseline contact, as well as possible client recall bias, the number of visits a client had with CSRT care providers was derived from administrative data. This data source contained all visits the client received during their time in the program. For the purposes of our analysis, all visits recorded in the database were assumed to have taken place within the first 6 months – a reasonable assumption based on the average length of stay in the program (<5 months). Based on the number of visits for each client and the costs/visit outlined in Appendix A, the average cost of CSRT services from baseline to 6 months were calculated. Only those clients who consented to participate in our study and had completed a 12 month follow up assessment were included in these cost calculations. All other health and social service utilization costs were derived from
the Health and Social Services Utilization Survey (HSSUS) costing manual and supplemental sources when necessary. Using the CSRT and HSSUS data, mean costs for both 6 month and 12 month follow up were calculated for each health state. Costs for transportation, child care, and household services were removed as these expenses were not captured by estimates from the BURST study. Estimates for individuals residing in long term care were calculated using daily co-payment estimates and per resident contributions from the Ministry of Health and Long Term Care as described above. Where applicable, costs were inflation adjusted using appropriate Ontario consumer price index, health and personal care annual inflation rates to reflect 2012 Canadian dollars. Cost estimates are detailed in Appendix A.

After 12 months, all values for both CSRT and No Further Therapy groups were held constant using the literature derived estimates of costs.

Utility Estimates
Utility values for independent and dependent living health states for the No Further Therapy group were derived from estimates of QALYs following stroke in a study completed by Dorman et al. (2000). Utility estimates for individuals in the No Further Therapy LTC health state were derived from a study by Sturm et al. (2004).

Utility values for the CSRT program were derived using patient responses from the EQ-5D-5L as described previously. Mean utility values for each health state were calculated for each time point (baseline, 6 months and 12 months). Utility values for 0-6 months were determined by taking the mean of baseline and 6 month values. Similarly, values for 6-12 months were determined using a mean of 6 month and 12 month utility values.

After 12 months, all values for both CSRT and No Further Therapy groups were held constant using literature derived estimates of utility.

Transition Probabilities
Transition probabilities for the No Further Therapy group were derived from a study by Chuang et al. (2005). This study provided information examining transitions between institution based care, home based care, family based care, and recovery of all activities of daily living (ADLs) for individuals who had experienced a stroke. Timeframes of 0-3 months post hospital discharge and 3-6 months post hospital discharge we examined. Home based care and family based care were combined to determine an estimate for the dependent living health state. Individuals who recovered all ADLs were classified as being in the independent health state. Individuals receiving institution based care were considered to be in the long term care health state. This study also provided death rates for each health state.

Transition probabilities for the CSRT cohort were determined by examining the proportions of individuals who transitioned between health states from baseline to 6 month follow up, and 6 month to 12 month follow up. Following 12 months, all values for both CSRT and No Further Therapy groups were held constant using literature derived estimates of transition probabilities.

Additional Model Considerations
The risk of death and further disability as a result of a recurrent stroke was also incorporated into the model. These estimates were derived from a longitudinal study of risk of recurrent stroke over a 10 year
period (Hardy et al. 2004), and were included in the model as tunnel states, staying constant for the life of the model. Risk of recurrent stroke included an additional risk of death and the potential to move into a lower health state.

Cost-Utility Analysis
A Willingness To Pay (WTP) threshold of $50,000 per QALY was used for all cost analysis. Given the average annual health care cost reported by the Canadian Institute for Health Information of $5,614/year, health care spending for Canadians of any age would exceed $50,000 after only 10 years. Therefore, this threshold was thought to be a conservative estimate and is consistent with WTP thresholds from economic analysis of other health care programs. Furthermore, a sensitivity analysis was conducted for WTP to compare the net monetary benefit of both CSRT and No Further Therapy across a range of WTP values. An acceptability curve was generated to compare the probability of cost effectiveness of both treatment options at various WTP thresholds.

In order to ensure the robustness of our assumptions and parameter estimates, a probabilistic sensitivity analysis was completed using Monte Carlo microsimulation methods (10,000 iterations, WTP= $50,000). This method accounts for the inherent variation and uncertainty in the cost and utility estimates that are used to inform the model. The process involves randomly selecting a cost and utility value from the respective cost and utility probability distributions and generating an outcome (cost/QALY) based on these values. Following 10,000 iterations, an overall distribution of outcomes (Cost /QALY) is generated. This simulation is presented in the form of an Incremental Cost Effectiveness (ICE) Scatterplot which was used to compare the CSRT program cost utility to the No Further Therapy group. Furthermore, this output enabled us to determine a cut off for the cost effectiveness of the Community Stroke Rehabilitation Team program strategy, and to determine how variation in QALYs gained and program costs affect the estimated ICE Ratios.

The model was projected for a total length of 35 years or until death (70 cycles of 6 months each). Costs after the first cycle were discounted at a rate of 3% per year (1.5% per 6 month cycle). All analyses were conducted using TreeAge Pro 2013.

Results
The costs, utilities, and transition probabilities for baseline to 6 months, and 6 to 12 months for both the CSRT program and No Further Therapy groups according to health state are detailed in Appendix D.

Cost-utility analysis
The CSRT program cost $232,533 per 11 QALYs gained and No Further Therapy cost $104,121 per 6 QALYs gained (Figure 4). Therefore, the Incremental Cost Effectiveness Ratio (ICER) was $25,692/1QALY, suggesting that the CSRT program costs $25,692 more than No Further Therapy to generate 1 QALY. Costs per QALY for each individual health state are presented in Table 6. At a WTP threshold of $50,000, the CSRT program was dominant over No Further Therapy.
Table 6: Cost ($) per Quality Adjusted Life Year (QALY)

<table>
<thead>
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<th>Independent Living</th>
<th>Dependent Living</th>
<th>Long Term Care</th>
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<tr>
<td>CSRT</td>
<td>$14,825/ 4 QALY</td>
<td>$8,779/ 1 QALY</td>
<td>$208,929/ 6 QALY</td>
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<tr>
<td>No Further Therapy</td>
<td>$18,409/ 4 QALY</td>
<td>$31,039/ 2 QALY</td>
<td>$54,647/ 0 QALY</td>
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</tbody>
</table>

Figure 4: ICER of CSRT vs. No Further Therapy

Sensitivity Analysis
A sensitivity analysis was complete using a Monte Carlo simulation method with 100,000 microsimulations and a WTP threshold of $50,000. An Incremental Cost Effectiveness Scatterplot (CSRT vs. No therapy) was generated (Figure 5), and shows that the majority of simulated data points fall below the WTP threshold. Furthermore, the report generated from this analysis indicates that 36.78% of simulations fall below this threshold and are in the ‘superior’ quadrant of this plot. An additional 37.98% of simulations are more costly than No Further Therapy, but fall below the WTP threshold. In total, 76.99% of simulations are considered to be cost effective in favour of the CSRT program.

Figure 5: ICE Scatterplot of CSRT vs. No Further Therapy
An acceptability curve and a sensitivity analysis for WTP were also generated using this data. Both of these plots indicate that any WTP value of greater than $26,000 would result in superiority of the CSRT program. The sensitivity analysis for WTP (Figure 6) shows that as the WTP threshold exceeds $26,000, the net monetary benefit of the CSRT program also increases at a greater rate than that of No Further Therapy. The acceptability curve (Error! Reference source not found.) indicates that any WTP value greater than $16,666 will result in a higher probability that the CSRT program is more cost effective than No Further Therapy.

Figure 6: Sensitivity Analysis on WTP Threshold

![Net Monetary Benefits](image1)

**Figure 7: Acceptability Curve of WTP**
Discussion

This study used a 35 year cost-utility model to demonstrate the cost-effectiveness of the CSRT program compared to No Further Therapy. The CSRT was found to cost, on average, $232,533/11 QALYs and No Further Therapy to cost $104,121/6 QALYs, producing an Incremental Cost Effectiveness Ratio (ICER) of $25,692/1 QALY. Using a probabilistic sensitivity analysis, the CSRT program was found to be cost effective in >75% of simulations. Furthermore, the net monetary benefit of the CSRT cohort increased at a dramatically faster rate than that of No Further Therapy after a WTP threshold of only $16,666. The results of all analyses indicate that the CSRT program is a cost effective alternative to no therapy. This cost analysis was designed to use a payer (or funder) perspective in an effort to mirror the costs reported in the BURST study. Consequently, direct health care costs were the primary focus, while out of pocket expenses (e.g. travel and parking costs) and expenditures associated with lost productivity were largely excluded. Indirect costs were also excluded from cost estimates as there was not enough information available to accurately compare what was captured within the two data sources. Additionally, since all costs included in the BURST study were not explicitly stated, it is possible that CSRT estimates included services that were not recognized by the BURST study, which may have inflated the CSRT cost values.

Compared to the No Further Therapy group, individuals in the CSRT program incur greater costs in the early stages of stroke recovery. However, the results also suggest that CSRT clients use fewer health care resources and therefore offer the potential for overall health care cost savings. It is likely that the CSRT program, which offers an opportunity for the consolidation of services, results in a more efficient use of health care and social services by clients. These efficiencies emerged even during the first 6 months of client enrollment in the CSRT program, the time when services are generally provided and program costs are high. During the 6-12 month time frame, health care resource use, on average, was lower in the CSRT cohort for both independent (51% lower) and dependent (41% lower) living individuals compared to the
BURST participants. Health care usage cost estimates for LTC were slightly higher in the CSRT group at both 6 and 12 month follow up (14% and 6% respectively) since estimates included additional health care usage as reported on the HSSUS that were not available for the No Further Therapy LTC cost estimates. Despite the conservative estimates of health care expenditure for clients in the CSRT cohort, the CSRT program remained a cost effective alternative to No Further Therapy.

Utility estimates are difficult to generalize across populations and can vary dramatically depending on the method used to derive them and the sample population used (Post 2001). For this reason, only literature-based utility estimates derived using the EQ-5D were used in this model. Although utility estimates for both dependent and independent living came from a reliable source and appear reasonable, some difficulty was encountered in deriving an estimate for LTC that was representative of a sample that would be similar to the LTC CSRT client population. It is presumed that the utility derived from the literature for this estimate includes all individuals living in LTC following a stroke, many of whom would not be candidates for the CSRT program. In the model, this utility estimate was only allowed to vary between CSRT and No Further Rehab for the first 12 months when study derived CSRT utilities were available. The utility value for this health state was then held constant for the remaining 34 years of the model.

Setting all costs, transition probabilities, and utilities equal to literature based estimates following the first 12 months of the model is not likely a realistic assumption. Because baseline to 12 month estimates of all variables suggest that the CSRT clients do better than the general, literature-based, stroke population, it is reasonable to assume that these individuals would continue to do better. However, it was felt that keeping estimates equal for the remainder of the model following any CSRT service provision was the best way to maintain the most conservative estimate of the effectiveness of the CSRT program.

Despite the somewhat restricted scope of this cost effectiveness study, the model suggests that the CSRT program is cost effective compared to No Further Therapy. Clients accessing the CSRT program appear to use fewer health care resources during the first 12 months of service provision and report a better quality of life in all health states. Furthermore, we were able to demonstrate this cost effectiveness while maintaining a conservative estimate of costs, utilities, and transition probabilities for the majority of the model. The Community Stroke Rehabilitation Team model of care is a feasible and effective method of rehabilitation service delivery post stroke.

**Summary**

The Community Stroke Rehabilitation Teams were developed to offer people dealing with the effects of stroke a convenient and efficient option for meeting their rehabilitation needs after returning to the community. This study was designed to test the cost-effectiveness of the program and, despite some limitations, appears to have done so. Follow-up assessments demonstrated that participants generally maintained, or gained, function and perceived quality of life up to 12-months post stroke at an acceptable cost. More importantly, long-term modeling suggests that CSRT clients are likely to enjoy greater quality of life when compared to literature-based controls.
This study was initially designed to prospectively compare CSRT clients to Ontario patients with limited access to post-discharge rehabilitation. Several Ontario reports have noted that outpatient and community-based rehabilitation programs are limited across the province and stroke patients, especially those who live in rural areas, have difficulty accessing services. Provincial data, and contact with care providers at recruitment sites, seemed to confirm that control patients would be relatively easy to identify; so a prospective study design was proposed. Unfortunately, this did not prove to be the case. Despite the best efforts of our research team, so few control patients were identified that direct prospective comparisons could not be performed. It is difficult to know why this was the case, but several possible explanations can be theorized. In order to identify control patients who were not accessing rehabilitation services, patients being discharged to outpatient rehabilitation were initially excluded from the study. It is possible that in the absence of a CSRT-like program in other regions, patients are being referred to outpatient rehabilitation programs which, although limited in the number of visits provided, may have caused patients to be excluded from our study. Another equally likely possibility is that recruiters, many of whom were nursing staff, did not make recruitment in our study a priority during their busy days in spite of regular reminders. Regardless of the reason, the lack of directly measured control data was disappointing. However, the data collected on CSRT clients did provide an excellent data set from which to compare CSRT outcomes to literature-based controls.

Evaluation of CSRT client data demonstrated a meaningful impact on patient’s lives in the first 12 months after admission. On all domains of the SIS and EQ-5D-5L, clients demonstrated maintenance of baseline function and quality of life. This is an important finding. Stroke is a disabling disease with often devastating impacts on patient’s lives. The typical life expectancy of a stroke survivor is 7 years and research suggests that patients generally experience steady loss of function over that period. Despite the lack of statistically significant improvements, the maintenance of function and quality of life among CSRT patients represents an important positive result relative to their peers that should not be discounted. In addition, CSRT clients made significant gains on the social participation domain of the SIS, which has been demonstrated to play a crucial role in the health and wellbeing of patients after stroke.

The prospective nature of data collection in this study allowed for important evaluation of not only patient function, but also self-reported quality of life up to 12-months post-admission to the CSRT. Quality of life is an important outcome to patients that is often neglected in traditional program evaluations. This information provided critical insight into the patient’s perception of their status and also allows for comparison of quality adjusted life-years against population-specific norms. In this study, only literature-based quality of life values derived using the EQ-5D in post-stroke populations were used for consistency purposes, and CSRT clients reported higher than average utilities. One explanation for these higher values is their ability to live independently in the community and receive services at home. Research has shown that patients receiving rehabilitation at home make greater gains in instrumental activities of daily living, which is likely to improve their perceived quality of life. However, higher values were also noted among CSRT clients in assisted living situations. These findings might be explained by improvements in social participation, which has been demonstrated to play a critical role in perceived quality of life after stroke. Feelings of loneliness and isolation are common after stroke and have been demonstrated to play a significant role in experiences of psychological distress. The CSRTs
were specifically designed to support community re-integration and participation through their interdisciplinary approach. Consequently, it is not surprising that clients’ rated their quality of life in these areas higher than their peers.

The higher utility values reported by CSRT clients not only demonstrate 1-year benefits of CSRT, but also play a large role in the 35-year model of patient recovery. Cost-utility analyses with Markov modeling are a well-validated method for assessing long-term benefits of health care. In our model, every effort was made to be reasonable and conservative with anticipated patient outcomes, which included holding all long-term health utilities, health state transitions, and costs constant between the CSRT group and the literature-based control group. This is important because it suggests that CSRT care is cost effective in a 35-year model based solely on outcomes observed after a single year. Since there is no reason to believe that the benefits of CSRT care would stop after 12 months, these results are likely overly conservative, but provide important evidence for the benefits of this type of program.

While the economic model developed in this study was designed to be as robust as possible, limitations in the available literature made some analyses impossible. Examples include out-of-pocket expenses and indirect medical care costs. Results from the CSRT surveys found that patients and their families often accrued travel costs when accessing healthcare services. It is fair to assume that patients without access to CSRT-style programs would spend more money on travel and parking, although this could not be directly assessed. Data also seem to suggest that CSRT clients accessed fewer healthcare resources (e.g. physician visits, ER admissions) than typical patients with stroke. Were a truly societal perspective taken for the cost-utility evaluation, these factors would have played heavily in the results and likely would have further favoured CSRT care.

Additional benefits of an in-home rehabilitation program not assessed in this study include reduced hospital LOS and the benefits of in-home rehabilitation. An extensive literature base exists supporting the benefits of early supported discharge on both patient outcomes and healthcare costs. In order to be truly effective, an ESD program must draw patients from in-hospital and allow for reductions in length of stay. Data were not available on hospital length of stay among CSRT clients making it impossible to evaluate the effectiveness of the CSRT program as ESD. Still, the program is well situated to serve this role. Similarly, data suggest that patients who receive rehabilitation at home benefit more than those who receive their rehabilitation in the hospital setting. Having the ability to practice in their living environment is important in helping patients to recover function, and may help to engage caregivers in these activities so they feel more actively involved in the rehabilitation process. Each of these areas offers opportunities for future evaluation and study.

Strokes are a major event that cause tremendous burden to patients, families and society in general. Programs to help stroke survivors recover function and return to normal living are critically important. This study suggests that the community stroke rehabilitation team model is a cost-effective way to provide community rehabilitation services. This model should be explored for incorporation elsewhere in Ontario and Canada.
References


(26) Outpatient Service Trialists. Therapy-based rehabilitation services for stroke patients at home. Cochrane Database of Systematic Reviews 2003;CD002925.


**Glossary**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ADL</td>
<td>Activities of Daily Living</td>
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<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
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<tr>
<td>BCOS</td>
<td>Bakas Caregiver Outcomes Scale</td>
</tr>
<tr>
<td>CCAC</td>
<td>Community Care Access Centre</td>
</tr>
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<td>CIHI</td>
<td>Canadian Institute for Health Information</td>
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<td>CSRT</td>
<td>Community Stroke Rehabilitation Team</td>
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<td>EQ-5D-5L</td>
<td>European Quality of Life Index</td>
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<td>FIM</td>
<td>Functional Independence Measure</td>
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<td>HADS</td>
<td>Hospital Anxiety and Depression Scale</td>
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<td>HSSUS</td>
<td>Health and Social Services and Utilization Survey</td>
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<td>ICE</td>
<td>Incremental Cost Effectiveness</td>
</tr>
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<td>ICER</td>
<td>Incremental Cost Effectiveness Ratio</td>
</tr>
<tr>
<td>IQR</td>
<td>Interquartile Range</td>
</tr>
<tr>
<td>LHIN</td>
<td>Local Health Integration Network</td>
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<tr>
<td>LTC</td>
<td>Long Term Care</td>
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<td>OHIP</td>
<td>Ontario Health Insurance Plan</td>
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<td>Patient Health Questionnaire</td>
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<td>QALYs</td>
<td>Quality adjusted life years</td>
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<td>RCT</td>
<td>Randomized Controlled Trial</td>
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<td>SD</td>
<td>Standard Deviation</td>
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<td>SF-36</td>
<td>Short Form 36</td>
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<tr>
<td>SIS</td>
<td>Stroke Impact Scale</td>
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<tr>
<td>TIA</td>
<td>Transient Ischemic Attack</td>
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<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>VAS</td>
<td>Visual Analogue Scale</td>
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<td>WTP</td>
<td>Willingness to Pay</td>
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Appendices

Appendix A: Detailed Costs for each client service utilized from 0 – 12 Month Follow Up

### Health and Social Service Utilization Costs (CSRT Care)

<table>
<thead>
<tr>
<th>CSRT Provider</th>
<th>CSRT Physiotherapist</th>
<th>CSRT Occupational Therapist</th>
<th>CSRT Speech Language Pathologist</th>
<th>CSRT Nurse</th>
<th>CSRT Social Worker</th>
<th>CSRT Recreational Therapist</th>
<th>CSRT Rehabilitation Therapist</th>
<th>CSRT Other</th>
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<tbody>
<tr>
<td>Thames Valley CSRT</td>
<td>$128.76</td>
<td>$110.71</td>
<td>$125.20</td>
<td>$148.71</td>
<td>$191.99</td>
<td>$77.83</td>
<td>$82.31</td>
<td>$123.64</td>
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<td>Seaforth CSRT</td>
<td>$119.07</td>
<td>$114.64</td>
<td>$128.42</td>
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<td>$162.65</td>
<td>$78.49</td>
<td>$89.39</td>
<td>$114.69</td>
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<td>Owen Sound CSRT</td>
<td>$131.83</td>
<td>$170.91</td>
<td>$164.45</td>
<td>$155.54</td>
<td>$179.86</td>
<td>$135.73</td>
<td>$96.72</td>
<td>$147.86</td>
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</table>

*Cost per visit based on an hour long visit. Cost estimate includes hourly wage, benefits, mileage, travel time and 20% overhead.

### Health and Social Service Utilization Costs (Primary and Specialist Care)

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<th>Provider</th>
<th>Mean cost per visit*</th>
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<td>Primary Care Provider Visits</td>
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<td>Family Physician</td>
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<td>Walk-in Clinic</td>
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<td>Emergency Room</td>
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<td>911 Calls</td>
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<td>Ambulance Service</td>
<td>$269.26</td>
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<td>Specialist Visits</td>
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<tr>
<td>Other Health and Social Service Provider</td>
<td>Mean cost per visit*</td>
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<td>----------------------------------------</td>
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<td>Chiropractor</td>
<td>$ 37.58</td>
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<td>Psychologist</td>
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<td>Physiotherapist</td>
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<tr>
<td>Occupational Therapist</td>
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<td>Speech Language Pathologist</td>
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<td>Podiatrist/Chiropodist</td>
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<td>Nutritionist/Dietitian</td>
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<td>Nurse Practitioner</td>
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<td>Visiting Nurse</td>
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<td>Optometrist</td>
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<td>Dentist</td>
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<td>Social Worker</td>
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<td>Personal Support Worker (Hrs)</td>
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<td>Naturopath/Homeopath</td>
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<td>Acupuncture</td>
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<td>Massage</td>
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<td>Meals on Wheels (Meals)</td>
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<td>Community Support Programs</td>
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<td>Peer Support Groups</td>
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<td>Community Health Education/Prevention Talks</td>
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<td>Transportation Services</td>
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<td>Other: Not Specified</td>
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*Costs derived from the Health and Social Services Utilization costing manual. Inflation adjusted to 2012 Canadian Dollars. **Client self-report.

### Health and Social Service Utilization Costs (Hospital admissions, day surgeries, lab tests, supplies etc.)

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<th>Miscellaneous Direct Costs</th>
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<td>Bladder (Laser)</td>
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<td>X-rays</td>
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</tr>
<tr>
<td>Grab Bars in Shower</td>
<td>$78.11</td>
</tr>
<tr>
<td>Blood Pressure Monitor</td>
<td>$80.49</td>
</tr>
</tbody>
</table>

*Costs derived from the Health and Social Services Utilization (2006 Canadian Dollars) costing manual. Inflation adjusted to 2012 Canadian Dollars.

**Costs derived from the Canadian Institute of Health Information Patient Cost Estimator.

***Costs derived from the Health and Social Services Utilization (2003 Canadian Dollars) costing manual. Inflation adjusted to 2012 Canadian Dollars.

****Costs derived from the Health and Social Services Utilization (2006 Canadian Dollars) costing manual where possible. Inflation adjusted to 2012 Canadian Dollar. Otherwise, costs were based on the midpoint of the highest and lowest cost for the device was taken and averaged between two online Canadian sources.

### Health Service Utilization (Out of Pocket Expenses)

<table>
<thead>
<tr>
<th>Service</th>
<th>Mean Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Help</td>
<td></td>
</tr>
<tr>
<td>Cleaning/ Grocery Shopping</td>
<td>$23.90 /hour</td>
</tr>
<tr>
<td>Babysitting</td>
<td>$23.90 /hour</td>
</tr>
<tr>
<td>Travel</td>
<td></td>
</tr>
<tr>
<td>Appointments</td>
<td>$0.42 /km</td>
</tr>
<tr>
<td>Lab Tests</td>
<td>$0.42 /km</td>
</tr>
<tr>
<td>Parking</td>
<td></td>
</tr>
<tr>
<td>Appointments</td>
<td>$9.54 /visit</td>
</tr>
<tr>
<td>Lab Tests</td>
<td>$9.54 /visit</td>
</tr>
</tbody>
</table>

*Costs derived from the Health and Social Services Utilization (2006 Canadian Dollars) costing manual. Inflation adjusted to 2012 Canadian Dollars. Unless specific costs were stated by the client.
Appendix B: Outcomes measures used in data collection

Health Questionnaire

English version for Canada
Under each heading, please tick the ONE box that best describes your health TODAY

**MOBILITY**
- I have no problems in walking about
- I have slight problems in walking about
- I have moderate problems in walking about
- I have severe problems in walking about
- I am unable to walk about

**SELF-CARE**
- I have no problems washing or dressing myself
- I have slight problems washing or dressing myself
- I have moderate problems washing or dressing myself
- I have severe problems washing or dressing myself
- I am unable to wash or dress myself

**USUAL ACTIVITIES** *(e.g. work, study, housework, family or leisure activities)*
- I have no problems doing my usual activities
- I have slight problems doing my usual activities
- I have moderate problems doing my usual activities
- I have severe problems doing my usual activities
- I am unable to do my usual activities

**PAIN / DISCOMFORT**
- I have no pain or discomfort
- I have slight pain or discomfort
- I have moderate pain or discomfort
- I have severe pain or discomfort
- I have extreme pain or discomfort

**ANXIETY / DEPRESSION**
- I am not anxious or depressed
- I am slightly anxious or depressed
- I am moderately anxious or depressed
- I am severely anxious or depressed
- I am extremely anxious or depressed
We would like to know how good or bad your health is TODAY.
This scale is numbered from 0 to 100.
100 means the best health you can imagine.
0 means the worst health you can imagine.
Mark an X on the scale to indicate how your health is TODAY.
Now, please write the number you marked on the scale in the box below.

YOUR HEALTH TODAY =
Stroke Impact Scale
VERSION 3.0

The purpose of this questionnaire is to evaluate how stroke has impacted your health and life. We want to know from YOUR POINT OF VIEW how stroke has affected you. We will ask you questions about impairments and disabilities caused by your stroke, as well as how stroke has affected your quality of life. Finally, we will ask you to rate how much you think you have recovered from your stroke.
Stroke Impact Scale

These questions are about the physical problems which may have occurred as a result of your stroke.

1. In the past week, how would you rate the strength of your....

<table>
<thead>
<tr>
<th></th>
<th>A lot of strength</th>
<th>Quite a bit of strength</th>
<th>Some strength</th>
<th>A little strength</th>
<th>No strength at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Arm that was most affected by your stroke?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Grip of your hand that was most affected by your stroke?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Leg that was most affected by your stroke?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Foot/ankle that was most affected by your stroke?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

These questions are about your memory and thinking.

2. In the past week, how difficult was it for you to...

<table>
<thead>
<tr>
<th></th>
<th>Not difficult at all</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Extremely difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Remember things that people just told you?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Remember things that happened the day before?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Remember to do things (e.g. keep scheduled appointments or take medication)?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Remember the day of the week?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>e. Concentrate?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f. Think quickly?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>g. Solve everyday problems?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
These questions are about how you feel, about changes in your mood and about your ability to control your emotions since your stroke.

<table>
<thead>
<tr>
<th>3. In the past week, how often did you...</th>
<th>None of the time</th>
<th>A little of the time</th>
<th>Some of the time</th>
<th>Most of the time</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Feel sad?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Feel that there is nobody you are close to?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Feel that you are a burden to others?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Feel that you have nothing to look forward to?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>e. Blame yourself for mistakes that you made?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f. Enjoy things as much as ever?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>g. Feel quite nervous?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>h. Feel that life is worth living?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>i. Smile and laugh at least once a day?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The following questions are about your ability to communicate with other people, as well as your ability to understand what you read and what you hear in a conversation.

<table>
<thead>
<tr>
<th>4. In the past week, how difficult was it to...</th>
<th>Not difficult at all</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Extremely difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Say the name of someone who was in front of you?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Understand what was being said to you in a conversation?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Reply to questions?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Correctly name objects?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>e. Participate in a conversation with a group of people?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f. Have a conversation on the telephone?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>g. Call another person on the telephone, including selecting the correct phone number and dialing?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
The following questions ask about activities you might do during a typical day.

<table>
<thead>
<tr>
<th>5. In the past 2 weeks, how difficult was it to...</th>
<th>Not difficult at all</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Could not do at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cut your food with a knife and fork?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Dress the top part of your body?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Bathe yourself?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Clip your toenails?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>e. Get to the toilet on time?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f. Control your bladder (not have an accident)?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>g. Control your bowels (not have an accident)?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>h. Do light household tasks/chores (e.g. dust, make a bed, take out garbage, do the dishes)?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>i. Go shopping?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>j. Do heavy household chores (e.g. vacuum, laundry or yard work)?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The following questions are about your ability to be mobile, at home and in the community.

<table>
<thead>
<tr>
<th>6. In the past 2 weeks, how difficult was it to...</th>
<th>Not difficult at all</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Could not do at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Stay sitting without losing your balance?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>b. Stay standing without losing your balance?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. Walk without losing your balance?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>d. Move from a bed to a chair?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>e. Walk one block?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f. Walk fast?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>g. Climb one flight of stairs?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>h. Climb several flights of stairs?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>i. Get in and out of a car?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
The following questions are about your ability to use your hand that was MOST AFFECTED by your stroke.

<table>
<thead>
<tr>
<th>7. In the past 2 weeks, how difficult was it to use your hand that was most affected by your stroke to...</th>
<th>Not difficult at all</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Could not do at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Carry heavy objects (e.g. bag of groceries)?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Turn a doorknob?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Open a can or jar?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Tie a shoe lace?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Pick up a dime?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following questions are about how stroke has affected your ability to participate in the activities that you usually do, things that are meaningful to you and help you to find purpose in life.

<table>
<thead>
<tr>
<th>8. During the past 4 weeks, how much of the time have you been limited in...</th>
<th>None of the time</th>
<th>A little of the time</th>
<th>Some of the time</th>
<th>Most of the time</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Your work (paid, voluntary or other)</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Your social activities?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Quiet recreation (crafts, reading)?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Active recreation (sports, outings, travel)?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Your role as a family member and/or friend?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Your participation in spiritual or religious activities?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Your ability to control your life as you wish?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Your ability to help others?</td>
<td>5 4 3 2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Stroke Recovery

On a scale of 0 to 100, with 100 representing full recovery and 0 representing no recovery, how much have you recovered from your stroke?

_____ 100 Full Recovery
—
_____ 90
—
_____ 80
—
_____ 70
—
_____ 60
—
_____ 50
—
_____ 40
—
_____ 30
—
_____ 20
—
_____ 10

_______ 0 No Recovery
Health and Social Service Utilization Survey

HS1: Health and social service provider visits

PART A: Have you seen a doctor or physician specialist in the last 6 months?
☑ Yes  ☐ No → If no, go to PART B.

Note to interviewer: Do not include visits with specialists during hospitalizations or day surgeries.

<table>
<thead>
<tr>
<th>Primary Care provider visits:</th>
<th>☑ Yes</th>
<th>☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Physician / Walk-in Clinic (primary care)</td>
<td>Emergency Room</td>
<td>911 Calls</td>
</tr>
<tr>
<td>☑ ☐ visits</td>
<td>☑ ☐ times</td>
<td>☑ ☐ times</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Any other Specialist visits:</th>
<th>☑ Yes</th>
<th>☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergist (allergy specialist)</td>
<td>Cardiologist (heart specialist)</td>
<td>Dermatologist (skin specialist)</td>
</tr>
<tr>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
</tr>
<tr>
<td>Gastroenterologist (Stomach and bowel specialist)</td>
<td>Gynaecologist / Obstetrician (Women’s reproductive care specialist)</td>
<td>Infectious Disease / HIV Specialist</td>
</tr>
<tr>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
</tr>
<tr>
<td>Neurologist (Brain/nervous system specialist)</td>
<td>Ophthalmologist (Eye specialist)</td>
<td>Pediatrician (Children/adolescent specialist)</td>
</tr>
<tr>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
</tr>
<tr>
<td>Rheumatologist (Arthritis specialist)</td>
<td>Rehabilitation doctor (Stabilizes or improves physical/mental/social functioning)</td>
<td>Surgeon (General, dental)</td>
</tr>
<tr>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
<td>☑ ☐ visits</td>
</tr>
</tbody>
</table>

*Midwife*: is a registered health care professional who provides primary care to low-risk women throughout their pregnancy, labour and birth and provides care to both mother and baby during the first six weeks following the birth.
PART B: Have you seen any other health and/or social service providers in the last 6 months? (Use list below for prompts if necessary)

☑️ Yes ☐ No → If no, go to PART C on next page.

Note to interviewer: Do not include visits with service providers during hospitalizations or day surgeries.

<table>
<thead>
<tr>
<th>Provider Type</th>
<th>Visits</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiropractor</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Psychologist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Speech Language Pathologist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Podiatrist/Chiroprodist (Foot specialist)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Nutritionist/Dietician</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Visiting Nurses (Home Care / PHN / VON / SEN)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Private Nurse (Cost/hour: _____)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Optometrist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Dentist</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Social Worker</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Children's Aid Worker</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Adolescence / School Counsellor</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Family Counsellor</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Addiction Counsellor</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Homemaker/Personal Support Worker (home care)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Child/Day Care (Cost/visit: _____)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Subsidized day care (Cost/Visit: _____)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Naturopath/Homeopath</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Complementary Therapy</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Cost/visit: _____</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Employment Refraining Services</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Meals on Wheels (Cost/meal: _____)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Emergency Food/Food Bank</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Police</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Probationary Services</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Correction Facilities</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Social and Recreation Programs (e.g., sports, swimming, gymnastics, music, dancing, SAM etc)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Community Support Programs (e.g., Wellness House, Helping Hand) (Cost/visit: _____)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(a) Groups / Peer Support</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(b) Community Health Education / Prevention Talks</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(c) Transportation Services (e.g., community Volunteer transportation Services)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(d) Housing Services (e.g. Supportive Housing)</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(e) Financial Support /Counselling</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(f) Other community Support Services specify</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>(g) Other community Support Services Specify</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Other Health &amp; Social services providers</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Other Health &amp; Social services providers</td>
<td>☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Specify: ________________</td>
<td>☐ ☐</td>
<td></td>
</tr>
</tbody>
</table>

*Home maker (routine household activities, menu planning, meal preparation, shopping, light housekeeping)

Personal Support (activities of daily living such as bathing, grooming, dressing, eating etc)

*SAM (Senior Activation Maintenance Program)
HS2. Have you had any hospital admission in the past 6 months?

☐ Yes →

2a. How many hospital admissions in the past 6 months? ______

2b. Total number of days in the hospital in the past 6 months? ______ days

☐ No

HS3. Have you had any day surgery(ies) done in the past 6 months?

☐ Yes →

3a. How many day surgery(ies) did you have in the past 6 months? ______

3b. Specify the type(s) of day surgery(ies) you had in the past 6 months?

☐ No

HS4. Have you had an admission to a long-term care facility in the past 6 months?

☐ Yes →

4a. Total number of days in a long-term care facility in the past 6 months? ______ days

☐ No

HS5. Have you spent any time in a retirement home in the past 6 months?

☐ Yes →

5a. Total number of days in the retirement home in the past 6 months? ______ days

☐ No

HS6. Have you been stayed in a shelter (e.g., women’s, homeless) in the past 6 months?

☐ Yes →

6a. Total number of shelter admission(s) in the past 6 months? ______ admissions

6b. Total number of days in the shelter in the past 6 months? ______ days

☐ No
HS7. Have you had any out-patient tests done in the **past 6 months**? □₁ Yes □₂ No → HS8

**If yes,** please tell me how many times for each of the following tests:

<table>
<thead>
<tr>
<th>Test Description</th>
<th># of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Blood</td>
<td></td>
</tr>
<tr>
<td>b. Specimens (i.e., urine, throat swab)</td>
<td></td>
</tr>
<tr>
<td>c. Scopes (i.e., endoscopy, bronchoscopy, sigmoidoscopy)</td>
<td></td>
</tr>
<tr>
<td>d. X-rays</td>
<td></td>
</tr>
<tr>
<td>e. Scans (i.e., ultrasound, CT scan)</td>
<td></td>
</tr>
<tr>
<td>f. Breathing tests (i.e., spirometry)</td>
<td></td>
</tr>
<tr>
<td>g. ECG (heart monitoring)</td>
<td></td>
</tr>
<tr>
<td>h. EEG (brain waves)</td>
<td></td>
</tr>
<tr>
<td>i. EMG (muscles)</td>
<td></td>
</tr>
<tr>
<td>j. Other tests (Please Specify)</td>
<td></td>
</tr>
<tr>
<td>k. Other tests (Please Specify)</td>
<td></td>
</tr>
</tbody>
</table>
### Use of medications/treatments

**a) Have you taken any prescription medications in the past 2 days (other than those received while you were a patient in the hospital)?**
- Yes
- No ➔ If no, go to next question.

If yes, please write the name of the medication in the first column, the dosage in the second column, number of pills each dose in the third column, and frequency of each dose in the fourth column.

<table>
<thead>
<tr>
<th>Prescription Drugs taken in the last 2 days</th>
<th>Dose (mg)</th>
<th># Pills each time (pills per dose)</th>
<th># Times each day (doses per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Antidepressant Drugs**
- Alprazolam/Xanax
- Amitriptyline/Ellavil/Endept/Lenoxil/Tryptizol/Trabalene
- Aurotix
- Bromazepam/Lacoten
- Buspar/BuSpar
- Buproprion/Wellbutrin/Wellbutrin SR/Wellbutrin XL
- Carbamazepine/Carlia/Tegretol/Citable
- Citalopram (Cipramil)/Cipramil/Citralex
- Clomipramine/Aveniran
- Desipramine/Parnofane
- Diazepam/Velum
- Desipramine/Neuramin
- Dothepin (Dotrep, Prohixides)
- Doxepin/Adapin/Senzaquin
- Doxepin (Depresar, Sibecual)
- Duloxetine/Zybalta
- Escitalopram/Lexapro
- Fluoxetine/Prozac, Lexapro, Zactin
- Fluvoxamine/Feverin/Luvox
- Imipramine/Tootam
- L-Tryptophan/Opipram
- Lithium Carbonate/Pascal
- Mirtazapine/Remeron/Zelapin
- Moclobemide/AntinaMewik
- Nefazodone/Duodopa/Serzone
- Norclopramine/Antenon/Pamelor
- Paroxetine/Paxil/Paxil CR
- Lamoxin
- Phenergan/Nardil
- Propranolol/Mercurin/Vivacliff

**Anticonvulsants**
- Carbamazepine (Tegretol, Trig)
- Phenytoin (Dilantin)
- Sodium Valproate (Epilim, Valpro)

**Anti-Parkinsonians**
- Levodopa (Madopar, Sinemet)

**Antipsychotics/neuroleptics**
- Chlorpromazine (Largactil®)
- Fluphenazine (Stelazine®)
- Haloperidol (Sernace®, Thorazine, Melleril® or Aldazine®)
- Olanzapine (Zyprexa®)
- Risperidone (Risperdal®)
- Quetiapine (Serquel®)

**Anti-histamines**
- Deschlorpheniramin (Polarine®)
- Promethazine (Phenergan®)

**Opioid analogics**
- Codeine (also present in Paradise Forte®)
- Mephrine (MS Contin®, Kapou® or Orinade®)
- Oxycodeone (Endone, Oxycontin, OxyNorm)
- Tramadol (Tramal)

**Cardiovascular medicines**
- Amlodipine (Norvasc®)
- Atenolol (Tenormin® or Novolin®)
- Digoxin (Lanoxin®)
- Dilatazans (Cardizem®, Coras® or Vasocandol®)
- Ibesartan (Kavers® or Arvas®)
- Lisinopril (Zestril® or Prinivil®)
- Metoprolol (Betabers® or Minax®)
- Perindopril (Coveryl®)
- Verapamil (Isoprin® or Anspoc®)

**Anti-anginals**
- Glyceryl Trinitrate (Anginil®, Nitro-Dur Patch®)
- Transderm-Nitro Patch® or Nitro-Lingual Spray®
- Isosettone Mononitrate (Imdur®)

**Diuretics**
- Furosemide (Lasix® or Uremide®)
- Hydrochlorothiazide (Dichloride®)
- Indapamide (Natrilix®)
HS8b) Have you received any special treatment(s) in the past 6 months (other than those received while you were a patient in the hospital)?

- Yes
- No

- Yes - HS9

Examples: IV (chemotherapy, antibiotics, ganciclovir, foscarinet, anthericin, amphotericin B, pentamidine), vaccinations, aerosolized pentamidine, dressing change, TPN (total parenteral nutrition), radiotherapy (radiation), blood transfusions, injections (vitamin B12, steroids, neutropenia (G-CSF), GM-CSF)

<table>
<thead>
<tr>
<th>Number of Times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

If yes, please specify:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HS9. Have you been provided/bought/rented/leased any supplies, aids or devices (i.e., wheelchairs, syringes, walker, crutches, pillows, tissues, etc.) in the past 6 months (other than those you received while you were a patient in the hospital)?

- Yes
- No

- Yes - HS10

If yes, please specify:

<table>
<thead>
<tr>
<th>Item description</th>
<th>Cost to nearest dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
HS10. Due to your health in the past 6 months, did you:

a) Receive household help (e.g., cleaning, grocery shopping, light housekeeping, lawn care etc) (Not homemaking or personal support from CCAC)?

☐ 1 Yes → Hours: ____________ Cost: ____________

☐ 2 No

b) Receive help with babysitting?

☐ 1 Yes → Hours: ____________ Cost: ____________

☐ 2 No

HS11. In the past 6 months, did you:

a) travel to receive health care or social services (cost at $0.37/km if by car, or cost if by bus, taxi etc)?

☐ 1 Yes → Cost: ____________

☐ 2 No

b) pay for parking while receiving services?

☐ 1 Yes → Cost: ____________

☐ 2 No

HS12. a) In the past 6 months, was any time lost from work due to your illness?

i) by you

☐ 1 Yes → Number of lost hours ________

Amount of lost wages ________

☐ 2 No

ii) by others, i.e., family

☐ 1 Yes → Number of lost hours ________

Amount of lost wages ________

☐ 2 No

b) In the past 6 months, was any time lost from work due to your treatment?

i) by you

☐ 1 Yes → Number of lost hours ________

Amount of lost wages ________

☐ 2 No

ii) by others, i.e., family

☐ 1 Yes → Number of lost hours ________

Amount of lost wages ________

☐ 2 No
HS13. In the **past 6 months**, did you receive any government cheques? □, Yes □, No → HS15.

If **yes**, complete the following, specifying the type of cheque, number of cheques received and the amount of each cheque in the **past 6 months**.

<table>
<thead>
<tr>
<th>Type of Cheque</th>
<th>How many cheques?</th>
<th>Amount of each cheque</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Worker's Compensation</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>b) Old Age Security</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>c) Disability Pension, private</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>d) Ontario Disability Support Program (ODSP)</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>e) Canada Pension</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>f) Canada Pension, disability</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>g) Child Tax Benefit</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>h) GAINS</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>i) Veteran's Pension</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>j) Survivor's Benefits (CPP)</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>k) Employment Insurance</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>l) Welfare (social Assistance, Ontario Works)</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
<tr>
<td>m) Other</td>
<td>□, Yes</td>
<td>□, No</td>
</tr>
</tbody>
</table>

**HS14.** Due to your health in the **past 6 months**, did you receive any other cheques:

* from private insurance □, Yes □, No

**NB:** * Interviewer: this refers to income from private insurance. It does not include insurance that compensates for costs i.e., dental insurance, supplies for colostomies, etc.
HS15. Can you estimate in which of the following groups your individual income falls?

- No income
- Below $10,000
- $10,000 - $20,000
- $20,000 - $30,000
- $30,000 - $40,000
- $40,000 - $50,000
- $50,000 - $60,000
- $60,000 - $70,000
- $70,000 - $80,000
- $80,000 - $90,000
- $90,000 - $100,000
- $100,000 and up
- Don't know
- Refused to answer

Thank you
Appendix C: Detailed Health and Social Service Utilization and Costs for CSRT Clients at 6 and 12 Month Follow Up

### Health and Social Service Utilization (CSRT Care)

<table>
<thead>
<tr>
<th>Health and Social Service Utilization (CSRT Care)</th>
<th>6 Month Follow Up</th>
<th>12 Month Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>Mean Visits (SD)*</td>
</tr>
<tr>
<td>CSRT Team Member Visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>60 (68.8)</td>
<td>5.42 (8.63)</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>50 (49.5)</td>
<td>3.71 (6.29)</td>
</tr>
<tr>
<td>Speech Language Pathologist</td>
<td>38 (36.5)</td>
<td>3.09 (8.29)</td>
</tr>
<tr>
<td>Nurse</td>
<td>55 (53.4)</td>
<td>2.48 (4.27)</td>
</tr>
<tr>
<td>Social Worker</td>
<td>39 (37.9)</td>
<td>1.60 (3.17)</td>
</tr>
<tr>
<td>Rehabilitation Therapist</td>
<td>17 (16.8)</td>
<td>1.55 (4.79)</td>
</tr>
<tr>
<td>Recreational Therapist</td>
<td>33 (32)</td>
<td>1.75 (4.34)</td>
</tr>
<tr>
<td>Other CSRT Member</td>
<td>12 (11.7)</td>
<td>0.71 (2.58)</td>
</tr>
<tr>
<td>Mean CSRT Cost Per Client:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Based on complete cases (N)

### Health and Social Service Utilization (Primary and Specialist Care)

<table>
<thead>
<tr>
<th>Health and Social Service Utilization (Primary and Specialist Care)</th>
<th>6 Month Follow Up</th>
<th>12 Month Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>Mean Visits (SD)*</td>
</tr>
<tr>
<td>Primary Care Provider Visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Physician</td>
<td>102 (94.4)</td>
<td>3.42 (2.41)</td>
</tr>
<tr>
<td>Walk-in Clinic</td>
<td>6 (5.6)</td>
<td>0.13 (0.66)</td>
</tr>
<tr>
<td>Emergency Room</td>
<td>29 (26.9)</td>
<td>0.44 (0.86)</td>
</tr>
<tr>
<td>911 Calls</td>
<td>8 (7.4)</td>
<td>0.10 (0.39)</td>
</tr>
<tr>
<td>Ambulance Service</td>
<td>8 (7.4)</td>
<td>0.13 (0.53)</td>
</tr>
<tr>
<td>Specialist Visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allergist</td>
<td>0 (0.0)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>Cardiologist</td>
<td>13 (12)</td>
<td>0.18 (0.18)</td>
</tr>
<tr>
<td>Dermatologist</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
</tr>
<tr>
<td>ENT Specialist</td>
<td>1 (2.8)</td>
<td>0.03 (0.17)</td>
</tr>
<tr>
<td>Specialty</td>
<td>n (%)</td>
<td>Mean Visits (SD)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>------------------</td>
</tr>
<tr>
<td>Endocrinologist</td>
<td>4 (3.7)</td>
<td>0.08 (0.60)</td>
</tr>
<tr>
<td>Gastroenterologist</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
</tr>
<tr>
<td>Gynaecologist</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
</tr>
<tr>
<td>Infectious Disease Specialist</td>
<td>0 (0.0)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>Oncologist</td>
<td>7 (6.5)</td>
<td>0.09 (0.35)</td>
</tr>
<tr>
<td>Nephrologist</td>
<td>1 (0.9)</td>
<td>0.08 (0.87)</td>
</tr>
<tr>
<td>Neurologist</td>
<td>13 (12)</td>
<td>0.17 (0.48)</td>
</tr>
<tr>
<td>Ophthalmologist</td>
<td>15 (13.9)</td>
<td>0.22 (0.65)</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>4 (3.7)</td>
<td>0.10 (0.60)</td>
</tr>
<tr>
<td>Respirologist</td>
<td>0 (0.0)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>Rheumatologist</td>
<td>2 (1.9)</td>
<td>0.04 (0.27)</td>
</tr>
<tr>
<td>Rehabilitation Doctor</td>
<td>9 (7.3)</td>
<td>0.14 (0.48)</td>
</tr>
<tr>
<td>Surgeon (General)</td>
<td>14 (13)</td>
<td>0.18 (0.54)</td>
</tr>
<tr>
<td>Surgeon (Orthopedic)</td>
<td>1 (1.9)</td>
<td>0.02 (0.14)</td>
</tr>
<tr>
<td>Urologist</td>
<td>2 (1.9)</td>
<td>0.03 (0.21)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (8.3)</td>
<td>0.12 (0.45)</td>
</tr>
<tr>
<td><strong>Mean Primary and Specialty Care Cost Per Client:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Based on complete cases (N)</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Health and Social Service Utilization (Other Health and Social Service Providers)**

<table>
<thead>
<tr>
<th>Provider Category</th>
<th>6 Month Follow Up</th>
<th>12 Month Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>Mean Visits (SD)*</td>
</tr>
<tr>
<td>Other Health and Social Service Provider Visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chiropractor</td>
<td>11 (10.2)</td>
<td>0.91 (3.44)</td>
</tr>
<tr>
<td>Psychologist</td>
<td>2 (1.9)</td>
<td>0.08 (0.55)</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>14 (13)</td>
<td>3.07 (12.59)</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>3 (2.8)</td>
<td>0.06 (0.39)</td>
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<tr>
<td>Speech Language Pathologist</td>
<td>1 (0.9)</td>
<td>0.24 (2.50)</td>
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<td>Podiatrist/Chiropodist</td>
<td>8 (7.4)</td>
<td>0.13 (0.49)</td>
</tr>
<tr>
<td>Nutritionist/Dietitian</td>
<td>16 (14.8)</td>
<td>0.28 (0.84)</td>
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<tr>
<td>Nurse Practitioner</td>
<td>6 (5.6)</td>
<td>0.15 (0.94)</td>
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<tr>
<td>Health and Social Service Utilization (Hospital admissions, day surgeries, lab tests, supplies etc.)</td>
<td>6 Month Follow Up</td>
<td>12 Month Follow Up</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
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</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>Mean (SD)*</td>
</tr>
<tr>
<td>Miscellaneous Direct Costs</td>
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<td></td>
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<tr>
<td>Hospital Admission days</td>
<td>15 (13.9)</td>
<td>1.28 (6.78)</td>
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<tr>
<td>Day Surgeries</td>
<td>9 (8.3)</td>
<td>0.09 (0.32)</td>
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<tr>
<td>Long Term Care days</td>
<td>3 (2.8)</td>
<td>2.03 (17.73)</td>
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<tr>
<td>Retirement Home days</td>
<td>3 (2.8)</td>
<td>3.66 (23.38)</td>
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<tr>
<td>Shelter days</td>
<td>0 (0.0)</td>
<td>0.00 (0.00)</td>
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### Outpatient Tests

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<th>n (% )</th>
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<th>12 Month Follow Up</th>
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</thead>
<tbody>
<tr>
<td>Blood Tests</td>
<td>81 (75)</td>
<td>4.22 (6.93)</td>
<td>159.64 (262.30)</td>
</tr>
<tr>
<td>Urine Tests</td>
<td>29 (26.9)</td>
<td>0.45 (0.91)</td>
<td>4.41 (8.91)</td>
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<tr>
<td>Scopes</td>
<td>8 (7.4)</td>
<td>0.07 (0.26)</td>
<td>13.48 (47.89)</td>
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<tr>
<td>X-rays</td>
<td>21 (19.4)</td>
<td>0.30 (0.76)</td>
<td>13.29 (33.49)</td>
</tr>
<tr>
<td>CT/CAT Scan</td>
<td>13 (12)</td>
<td>0.15 (0.43)</td>
<td>16.16 (46.72)</td>
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<tr>
<td>MRI</td>
<td>9 (8.4)</td>
<td>0.10 (0.36)</td>
<td>12.37 (43.51)</td>
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<tr>
<td>Ultrasound</td>
<td>7 (6.5)</td>
<td>0.14 (0.59)</td>
<td>14.56 (61.59)</td>
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<tr>
<td>Breathing Tests</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
<td>0.22 (2.31)</td>
</tr>
<tr>
<td>ECG</td>
<td>9 (8.3)</td>
<td>0.12 (0.43)</td>
<td>2.69 (9.99)</td>
</tr>
<tr>
<td>EEG</td>
<td>0 (0.0)</td>
<td>0.00 (0.00)</td>
<td>0.00 (0.00)</td>
</tr>
<tr>
<td>EMG</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
<td>1.66 (17.26)</td>
</tr>
<tr>
<td>ECHO</td>
<td>3 (2.8)</td>
<td>0.03 (0.17)</td>
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</tr>
<tr>
<td>Biopsy</td>
<td>1 (0.9)</td>
<td>0.01 (0.10)</td>
<td>2.72 (28.31)</td>
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<tr>
<td>Special Treatments</td>
<td>45 (41.7)</td>
<td></td>
<td>42.08 (320.72)</td>
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<tr>
<td>Supplies</td>
<td>36 (33.3)</td>
<td></td>
<td>406.67 (2651.88)</td>
</tr>
</tbody>
</table>

#### Mean Outpatient Test Costs Per Client:

- 6 Month Follow Up: 237.74 (322.18)
- 12 Month Follow Up: 165.05 (212.48)

#### Mean Other Treatment Costs Per Client:

- 6 Month Follow Up: 42.08 (320.72)
- 12 Month Follow Up: 9.01 (37.35)

#### Mean Supplies Costs Per Client:

- 6 Month Follow Up: 406.67 (2651.88)
- 12 Month Follow Up: 151.86 (633.47)

*Based on complete cases (N)*

### Health Service Utilization (Out of Pocket Expenses)

<table>
<thead>
<tr>
<th>Service Type</th>
<th>6 Month Follow Up</th>
<th>12 Month Follow Up</th>
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<tbody>
<tr>
<td>n (%)</td>
<td>Mean Cost (SD)*</td>
<td>n (%)</td>
</tr>
<tr>
<td>Household Help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning/ Grocery Shopping</td>
<td>18 (16.7)</td>
<td>70.50 (231.75)</td>
</tr>
<tr>
<td>Babysitting</td>
<td>1 (0.9)</td>
<td>55.77 (579.54)</td>
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<tr>
<td>Travel</td>
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<tr>
<td>Appointments</td>
<td>95 (92.2)</td>
<td>161.78 (240.29)</td>
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<tr>
<td>Lab Tests</td>
<td>16 (29.6)</td>
<td>19.02 (41.96)</td>
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## Parking

<table>
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<tr>
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<th>6 Month Follow Up</th>
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<tr>
<td><strong>Appointments</strong></td>
<td>43 (42.6)</td>
<td>11.41 (23.28)</td>
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<tr>
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<td></td>
<td>13 (39.4)</td>
</tr>
<tr>
<td><strong>Lab Tests</strong></td>
<td>5 (7.9)</td>
<td>3.02 (12.70)</td>
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<td>2 (8.3)</td>
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<tr>
<td><strong>Mean Household Help Cost Per Client:</strong></td>
<td>127.32 (622.76)</td>
<td>22.64 (95.25)</td>
</tr>
<tr>
<td><strong>Mean Travel Costs Per Client:</strong></td>
<td>171.88 (241.89)</td>
<td>128.71 (185.29)</td>
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<tr>
<td><strong>Mean Parking Costs Per Client:</strong></td>
<td>13.16 (27.02)</td>
<td>9.53 (18.79)</td>
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</table>

*Based on complete cases (N)*

## Health Service Utilization (Lost Productivity)

<table>
<thead>
<tr>
<th>Lost time from Work due to Treatment, hours</th>
<th>6 Month Follow Up</th>
<th>12 Month Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>n (%)</td>
<td>Mean (SD)*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean (SD)*</td>
</tr>
<tr>
<td>Lost time from Work due to Treatment, hours</td>
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<td></td>
</tr>
<tr>
<td>Client</td>
<td>4 (3.7)</td>
<td>1.21 (7.83)</td>
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<td>3 (8.1)</td>
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<tr>
<td></td>
<td></td>
<td>1.43 (5.61)</td>
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<tr>
<td>Family/Friends</td>
<td>22 (20.4)</td>
<td>42.73 (190.17)</td>
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<td></td>
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<td>2 (5.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.38 (13.18)</td>
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</tbody>
</table>

*Based on complete cases (N)*
Appendix D: Mean cost, utility, and transition values for CSRT and No Further Therapy used in Markov modelling

<table>
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<th>Baseline to 6 months</th>
<th>6 to 12 months</th>
<th>12+ months</th>
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<td><strong>Cost ($)</strong></td>
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<tr>
<td><strong>CSRT</strong></td>
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<tr>
<td>Independent</td>
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<tr>
<td>Other</td>
<td>2223.55</td>
<td>1706.62</td>
<td>3782.28</td>
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<td>3782.28</td>
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<tr>
<td>Other</td>
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<tr>
<td>Other</td>
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<td>29,778.13</td>
<td>27,988.02</td>
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<tr>
<td>Total</td>
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<td>29,778.13</td>
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<td><strong>No Therapy</strong></td>
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<td>27,988.02</td>
<td>27,988.02</td>
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<tr>
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<tr>
<td><strong>Transition</strong></td>
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