

**DEPRESSION SCREENING FOR PATIENTS WITH STROKE
IN AN ACUTE CARE SETTING**

by

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Abstract

This paper is written to build a case regarding the implementation of depression screening for patients with a stroke within an acute care setting. Depression screening is critical to patients overall care, furthermore studies suggest early intervention screening and treatment has a substantial impact on overall healthcare costs. Consequently, implementation of depression screening can identify early on any challenges or barriers a patient with stroke may face. The onset of recovery from an acute hospital setting to rehabilitation will reduce the costs of acute care and create improved opportunities to enhance recovery and overall health outcomes. Overall, the implementation of depression screening will have quantifiable outcomes such as:

1. Significant cost savings on the healthcare system due to decreased use of acute care bed days
2. Reduced recovery time for the patient therefore increased quality of life
3. Reduction in caregiver burden due to identification and treatment of depression
4. Benefit to society due to efficient use of acute care, rehab services and resources while minimizing disability and loss of work for patients and family.

A qualified Social Worker will have the greatest experience in addressing symptoms of depression and therefore it is recommended a Social Worker provide follow up, initiate additional assessments, and make necessary recommendations for further treatment.

Keywords: Depression Screening for patients with stroke; Fraser Health Stroke cohort; Cost Savings for Healthcare system

Executive Summary

Patients identified with having a stroke and not assessed for depression are more likely to experience lengthier acute hospital bed days compared to those who are assessed for depression. An existing challenge within Fraser Health is the absence of depression screening for patients with stroke. Depression screening is an important factor to consider when addressing patients' overall healthcare and rehabilitation needs; there is considerable evidence to indicate that early diagnosis of depression is instrumental for overall patient care. Unquestionably, there is a demand for depression screening given there is ample evidence to show that patients assessed for depression are more likely to be discharged earlier, have better outcomes and improved quality of life for the patient, family and caregivers.

Given that there are no material costs for the depression screening tool(s) it is highly beneficial to implement depression screening as soon as possible after a patient is diagnosed with suffering a stroke. Early interventions will have maximum benefit for both the patient with stroke, families, primary caregivers and the healthcare system. Furthermore, depression screening can improve access to support services and facilitate a more rapid transfer to rehabilitation. I propose it is valuable to implement depression screening early on to ensure patients with stroke are assessed efficiently to achieve the greatest outcomes. The initial evaluation of depression screening can be implemented by any inter-disciplinary healthcare team member i.e. nurses, occupational therapists, physiotherapists, speech pathologists, social workers and doctors. From the initial evaluation, the interdisciplinary healthcare team can then be alerted of any pre-existing

and present symptoms that may potentially pose as a barrier to a patient's overall progress and help identify the most appropriate treatment and interventions.

The most appropriate depression-screening tool identified for patients with stroke is the Patient Health Questionnaire 2 (PHQ-2). I highly recommend PHQ-2 for the following reasons:

1. Relatively easy to use
2. Requires very little time to administer
3. Involves minimal training
4. No costs associated with the implementation of this screening (*costs are associated with the orientation and introductory phase of the depression screening)

Finally, the PHQ-2 results are reliable in identifying potential stressors that may lead to further assessments; this will assist the inter-disciplinary healthcare team to implement the most cost effective supports and necessary interventions.

Patients with stroke will have earlier detection resulting in improved care and rehabilitation and ultimately lead healthier lives. Depression screening will have measurable cost savings for the healthcare system, subsequently saving acute bed days, facilitating a quicker transition to rehab or home and improved patients outcomes leading to enhanced quality of life.

Dedication

Dedicated to all patients with stroke, families and caregivers

My husband, children, and mother

Mee-gwetch - Niawen

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1: Introduction

The purpose of this paper is to develop a business case to improve the overall delivery of care for patients with stroke. Implementation of depression screening for patients with stroke is important since post stroke depression (PSD) and identifying symptoms and providing treatment is often overlooked in clinical practice (Naheed, et al., 2013). In British Columbia (BC) stroke is the leading cause of major disability in adults, the second leading cause of dementia, and the third leading cause of death (Fraser Health website). Stroke is a treatable disease, (Heart & Stroke) according to Canadian Stroke Best Practices (2013) depression screening should occur through all stages and settings following a stroke, including in acute care, rehabilitation, prevention clinics and outpatient community settings (including primary care, home care and long –term care).

Currently at Royal Columbian Hospital (RCH) a subsidiary hospital under the umbrella of Fraser Health, there are no clear identified practices for depression screening in place that provide an opportunity to assess early on if a patient with stroke may be susceptible to depression. It is likely we are missing the opportunity to save on healthcare costs by not providing early intervention and screening for depression.

Any patient with stroke admitted to the hospital will undergo a series of medical assessments, investigations and treatments; however, often overlooked is the psychosocial aspect. (Morris et al., 2012) reports screening is necessary to identify stroke patients who require treatment for psychological disorders. However, anxiety and depression are not explicitly screened for, or considered, hence the implications of this

are significant. A patient's length of hospital stay in an acute care setting is longer, opportunities to transfer to rehabilitation are prolonged, patients potentially may become more ill and may end up with multiple comorbidities or even death, thus overall resulting in increased healthcare costs.

The focus of this paper will highlight the benefits of early intervention and why it is important to screen for depression. By providing early interventions and screening for depression, patients will have better outcomes, there will be cost savings for patients, families, caregivers, healthcare system, and society. There are several screening instruments that can be incorporated early on to assess for depression; I would recommend the use of the Patient Health Questionnaire 2 (PHQ-2). PHQ-2 is an ultra short screening instrument, which asks two simple questions about mood, has strengths and is as effective as longer screening instruments (Maurer, 2012). Several considerations emphasizing the significance and why it is crucial to implement depression screening early on include the following:

1. Reduces the length of hospital stay
2. Provides earlier opportunities to return to normal everyday living
3. Enhances quality of life
4. Reduction in family stressors and caregiver burden
5. Rapid transition to rehabilitation and prevent costs associated with long term disability
6. Assists in a considerably smoother transition from acute care to rehabilitation to provide and support on-going treatment

Alternatively, consequences of not integrating depression-screening interventions are significant, resulting in potentially reduced cognitive function, a lack of motivation and unwillingness to participate in their own recovery overall all these factors contribute to an increased length of stay in an acute care setting resulting in higher healthcare costs,

poorer outcomes, reduced quality of life and potentially higher mortality rates.

Depression may also interfere with a patient's ability to follow recommendations that help in recovery such as taking medication, stopping smoking, reducing heavy alcohol use or refraining from using illicit drugs (PHAC, 2009).

Patients with stroke are most likely to experience altered and life-changing events subsequently, have short and long term impacts on patients, families, caregivers and societal systems. Some of these impacts may include: dependence on government supports, loss of wages for both the patient and caregivers potentially leading to long-term disability. It is important the inter-disciplinary healthcare team endeavour to provide quality care to ensure patients recover function, and overall independence thus reducing the burden of care and potentially leading to long-term disability. Post stroke depression (PSD) is one of the main psychopathological consequences of stroke (Giuseppe, M et al., 2011). Many studies indicate patients with depression need to be identified and treated (Ricardo, et al., 2003) despite the evidence there is a lack of screening. Some of the barriers that may contribute to the lack of screening may include:

1. Stigma associated with depression
2. Silo care in the healthcare system
3. Lack of inter-professional approach to patient care
4. Lack of knowledge regarding the use of depression screening tools
5. Sensitivity regarding how to approach someone who may be potentially depressed

There are several fundamental components to consider when developing depression-screening tools for patients with stroke. Important considerations include: defining depression, what screening tool is most appropriate and cost effective, who will screen for depression, impacts of depression on the patients, families/caregivers, costs

associated with depression and significance of screening for depression. It is important to emphasize that major improvements in screening rates will require the development of systematic protocols, using the principles of knowledge translation, that consider organizational factors, the staff involved, the training required and the screening instruments to use (Morris et al., 2012).

As a practicing Social Worker working on the Stroke Unit at Royal Columbian Hospital, I have a vested interest; ensuring patients are screened for depression. Ultimately, timely interventions will assist patients understand their medical illness, generally providing patients with the knowledge and awareness to make informed choices and provide clarity and understanding regarding their medical diagnosis. Social Workers have the clinical expertise, knowledge and skills necessary to complete psychosocial assessments, and know what signs to look for during routine assessments. Early interventions such as depression screening will provide patients with stroke; increased opportunities to seek the appropriate help necessary, assist in a more rapid discharge and increased quality of life. In addition, depression screening can assist social workers and the inter-disciplinary healthcare team with opportunities to provide improved care and treatment while informing and educating a patient about their overall prognosis. Patients who arrive at the hospital and are identified as suffering from a stroke often require considerable supports and careful attention.

Overall, this paper will emphasize the perspective of both the patient and family, in line with a patient and family centred approach. A family centred approach is an approach to the planning, delivery and evaluation of health care that is grounded in mutually beneficial partnerships among healthcare providers, the people we serve and

their families (Providence Healthcare, 2014). The foundation of this paper is driven from an extensive literature review yet highlights are originated from both personal and professional, expert opinions. Stroke is highly preventable and treatable with the interventions available within the community and the health care system. But to be effective, interventions must be organized and the basic resources provided to enable both the health care system, the public and patients to respond (Heart and Stroke, 2007). In summary, as the evidence suggests patients, families, caregivers, healthcare systems, and society would benefit significantly from early intervention and the implementation of depression screening plus saves costs on the healthcare and societal systems.

2: Stroke

A stroke is a sudden loss of brain function. It is caused by the interruption of flow of blood to the brain (ischemic stroke) or the rupture of blood vessels in the brain (haemorrhagic stroke) as outlined in (Figure 1). The interruption of blood flow or the rupture of blood vessels causes brain cells (neurons) in the affected area to die. The effects of a stroke depend where the brain was injured, as well as how much damage occurred. A stroke can impact any number of areas including your ability to move, see, remember, speak, reason and read and write (Heart and Stroke Foundation).

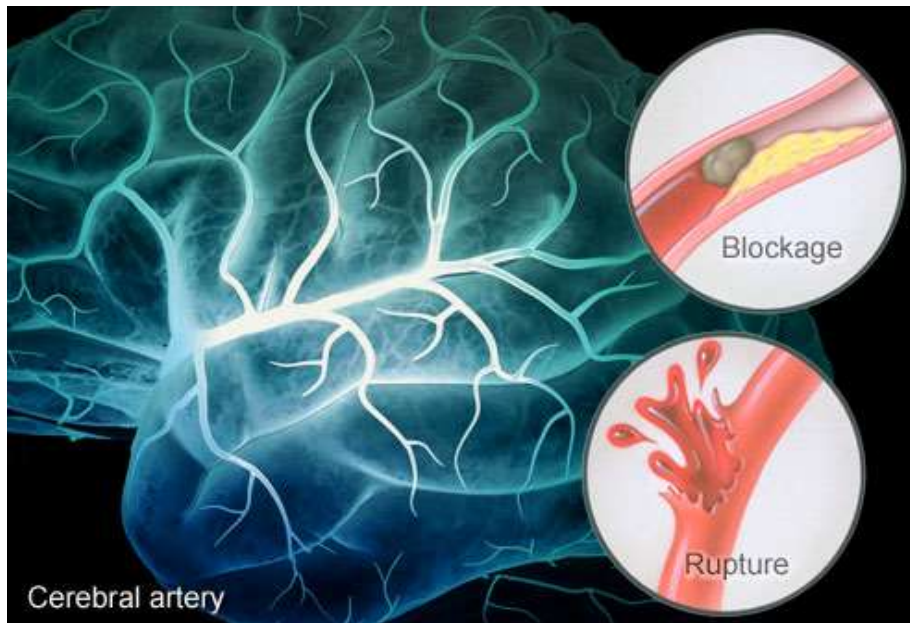


Figure 1: What is a stroke provided by WebMD. Image provided by Photo Researchers Inc. / Phototake. Retrieved from <http://www.webmd.com/stroke/ss/slideshow-stroke-overview>

Stroke is a major cause of death and disability worldwide (Jackson, C., Mishra, G. 2013) and is a complicated, heterogeneous condition with complex and enduring sequelae (Hill, K., et al., 2009). Stroke costs the Canadian economy \$3.6 billion a year in physician services, hospital costs, lost wages, and decreased productivity (PHAC, 2009)

Fraser Health (FH) provides a wide range of integrated health care services to more than 1.6 million people living in communities stretching from Burnaby to White Rock to Hope (FHA, 2014). There are 12 hospitals that fall under the umbrella of FHA; of all the hospitals there are 4 hospitals (Abbotsford Regional Hospital and Cancer Centre, Royal Columbian Hospital, Peace Arch Hospital, and Surrey Memorial Hospital) that provide particular care to patients with stroke. In late 2012, Fraser Health initiated the development of Specialized Stroke Cohorts in alignment with the Provincial Collaborative Initiative to improve stroke care across the province for all British Columbians (Fraser Health, 2014).

A stroke is a prevalent medical condition (FH: Clinical Practice Guideline, 2013) requiring immediate attention not only from a medical perspective; however, encompassing an overall psychosocial assessment. Shakeri and McKay (2013) describe stroke as a life changing event, that no one is ever prepared for, that “scares the living daylights out of all of us” and affects all ages in four areas: emotions, lifestyle, sense of control on life and finances. In addition, Shakeri and McKay suggests best practice is every patient with stroke should be seen by a social worker and a social work initial assessment should be completed within the first 48 hours (Shakeri, F., McKay, S. 2013)

At Royal Columbian Hospital (RCH), the Emergency Department (ED) initiates stroke assessments focusing largely on a medical component. (Walker et al., 2013) reports depression is frequently unidentified in the medical consultation because the relevant symptoms are normalized or are simply not discussed, in part because patient and clinician focus on the management of the medical condition. There are a number of medical assessments i.e. blood pressure monitoring, assessments for facial droop, speech and swallowing assessments, CT scans and other tests that take priority.

Efficient depression screening should make its effective management a priority; unfortunately, management is often inadequate in practice, with shortcomings in both identification and treatment (Cape & McCulloch, 1999; Nutting et al., 2000). Stroke is a serious problem faced by society. The disease brings not only health problems to individuals suffering from it, but also a serious economic burden to patients and their families. Moreover, it reduces social benefits and the labor force (Huang, 2009). Financial costs will be covered more in the following sections.

3: Depression and Stroke

Depression is the most common mental health condition after stroke, affecting more than one-fourth of all stroke patients (Pedersen, T. 2012); and can impede the process of rehabilitation, depression has been associated with poorer outcomes and increased length of stay in hospital (Turner-Stokes, L., Hassan, N., 2002) hence, depression is a common consequence of stroke.

This section emphasizes the implications of identifying depression in patients with stroke. A number of factors considered important in developing a clearer understanding of depression in patients with stroke include; defining depression, understanding more about the origin of depression (biological vs. psychosocial), recognizing the severity of depression (major vs. minor) addressing some screening tools to consider most appropriate for this target population and more importantly an overview of the cost effectiveness of implementing depression screening early on. (Cinamon, J.S. et al., 2010) and much of the literature suggests measuring depression among persons with stroke faces many challenges; diagnostics tools are lengthy and do not measure the extent of depression; screening tools are not stroke-specific; and metrics from the available indices do not provide a value that is mathematically or clinically meaningful.

As a medical social worker working with patients with stroke, there are obvious commonalities that can be recognized or considered as indicators of someone who may potentially be depressed. Some of the indications that may suggest someone is depressed include: lack of involvement and not willing to participate in rehabilitation, demotivation, a lack of communication and withdrawal. Many authors indicate that post stroke depression is associated with worse functional outcomes and increased mortality and is

frequently under diagnosed and undertreated (Williams et. al, 2011) Furthermore, (Turner-Stokes, L., Hassan, N., 2002) suggests post stroke depression is confounded by the fact that many somatic symptoms of depression may also arise directly from the stroke itself or from hospitalization. (Man-Van Goinkel et. al., 2013) found the strongest predictor for PSD was a previous medical history of depression or other psychiatric disorders.

In 2013, at RCH estimates indicated 473 patients were identified as having a stroke and spent on average 12.6 hours in the Emergency Department. (Pedersen, 2012) estimates that 25% of all stroke patients are identified with depression. Depression is a common and costly problem (Pirraglia, et al., 2004). Emergency visits alone are very costly and can have huge impacts on the healthcare system. For those that are admitted, the average length of stay in acute care for patients with stroke is 16.6 days. The average cost for a bed in acute care is approximately \$700.00¹ per day. Assuming early intervention of depression screening will enable the patient to be diagnosed and transferred to rehab services quicker, it is estimated that the time in acute care could be reduced by up to 40% (6.6 days on average). The cost savings at RCH in acute care would amount to \$4,620 per patient (6.6 x \$700). On an annual basis, the cost savings at RCH would be \$545,160 (\$4,620 x 118).

3.1 Early Screening is Better

During the patients time in the Emergency Department, routine assessments for patients with stroke can last anywhere from 5.7 hours – 13.7 hours. While patients with

¹ Source: Finance Department, Royal Columbian Hospital

stroke are being assessed i.e. CT scans, MRI scans, and are awaiting additional medical exams this could be a suitable time to assess for depression. In the event, a patient is not able to provide consent or the impacts of the stroke are severe, depression screening can be initiated at a later time. The earlier a patient is assessed for depression the sooner the most appropriate care can be initiated.

Preferably, once a patient is identified as potentially depressed the plan of care would immediately include interventions provided by a social worker. A trained social worker can initiate additional psychosocial assessments and is most prepared to collaborate with other professionals, especially if there is a previous mental illness identified. This approach is most appropriate to ensure on-going and consistent care for the patient with stroke is provided.

Another important consideration is to ensure families and caregivers are provided with relevant and necessary support; subsequently, they too would be extremely involved in the care and direction of the patient with stroke. Families and caregivers should be prepared as to what to expect, and aware of any impending outcomes associated with the impacts of the stroke. Section 4, will provide more details regarding the impact of depression on patients, families and caregivers. The more supported families and caregivers are, the easier it will be to provide a patient and family centred approach.

3.2 Defining Depression

The criteria for Major Depressive Disorder (MDD) from the Diagnostic and Statistic Manual of Mental Disorders IV (DSM) is described as having a depressed mood, loss of interest or pleasure in daily activities for more than two weeks. An individual must have specific symptoms (Psych Central, 2013) such as:

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feeling sad or empty) or observation made by others (e.g., appears tearful). (In children and adolescents, this may be characterized as an irritable mood.)
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.
4. Insomnia (inability to sleep) or hypersomnia (sleeping too much) nearly every day
5. Psychomotor agitation or retardation nearly every day
6. Fatigue or loss of energy nearly every day
7. Feelings of worthlessness or excessive or inappropriate guilt nearly every day
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

If a patient has at least 5 of the 9 symptoms listed above, this would indicate an individual might be depressed.

3.3 Biological and Psychosocial Factors of Depression

Given there are variables to depression, it is important to understand and learn more about a patient's medical and psychosocial history to determine if the patient's depression is caused primarily by the stroke or previously predisposed to depression. This is critical to ensure appropriate interventions and medical interventions are initiated in an effective manner.

Biological factors will determine location of the stroke and the impact and injury to the brain. Medical examinations (CT Scan and MRI) are a few tests that assist in determining the exact location of the stroke. Stroke is obviously a medical stressor for any individual, especially when one has no control over one's body.

Psychosocial factors are exceptionally important to consider when a patient with stroke is further assessed. Not only are the interdisciplinary healthcare team working with the medical concerns specific to the stroke but additional concerns are heightened when a patient has predisposed and existing symptoms of depression and potential history of mental illness. In addition to any pre-existing symptoms of mental illness or depression it is important to complete a full psychosocial assessment. A comprehensive assessment will assist the interdisciplinary healthcare team to establish any potential barriers that may interfere with recovery. Patients with stroke who are identified as depressed have overall poorer outcomes, reduced quality of life and greater risk of death.

3.4 Major and Minor Depression

(Robinson, 2003) found that 19.3 % and 18.5 % of stroke survivors had major depression or minor depression respectively in acute rehabilitation setting. Several factors

are pertinent to consider when determining the level of depression. Individuals with fewer supports are more predisposed to major depression and may experience the following:

- Unemployment
- Limited healthcare coverage
- No close family or friends connections
- Predisposed mental illness

Individuals who have a greater network of supports are less likely to experience major depression and are often employed, have a secure income and a supportive network of family and friends.

Patients, who experience major depression, will most likely require on-going treatment; have lengthier in patient hospital admissions, and higher probability of relapse, as a result this will have a significant financial costs for the healthcare system.

The direct costs of depression are related to diagnostic and therapeutic contacts i.e., visits to physicians and treatment, both medication and counselling, (Pirraglia et al., 2004) another valid reason to expedite depression screening that potentially may have major cost savings for the healthcare system.

Currently, at RCH there are no measures in place to assess for depression, if depression screening were implemented there is high probability patients with stroke may be identified early on and treatment can be initiated. Depression is a common and costly problem (Pirraglia, et al., 2004).

4: Impact of Depression on Patients, Families and Caregivers

4.1 Impact on patients, families and caregivers

The effect of depression and anxiety after stroke is not confined only to the person who has had the stroke. Canadian Stroke Best Practices Recommendations highlights the importance of early patient and family engagement in supporting recovery after stroke (Canadian Stroke, 2014). Caring for someone with stroke is often challenging (Kneebone, Neffgen, & Pettyfer, 2011). (Berg, et al., 2009) indicates in an assessment of depression after stroke study that caregivers rated patient depressive symptoms with the Becks Depression Inventory (BDI) approximately 4 points higher than the patients themselves.

Family members are able to recognize their loved ones are depressed, as a result have an impact on the family as well. Families and caregivers are often faced with the challenges of dividing their time and responsibilities between the hospital, home and work. (Joo et. al., 2014) indicates informal caregiving hours attributable to stroke were 8.5 hours per patient. The economic value of informal caregiving per stroke survivor was \$8,211 per year, of which \$4,356 (53%) was attributable to stroke. Many patients with stroke are often older (Joo et. Al., 2014), (Schulz et. al., 2003) indicates the time required to competently care for a frail elderly relative often amounts to a full time job. Further, studies observed the level of productivity at work was affected by individuals who were family caregivers since family caregivers were more tired, had to take more days off, and had to leave work earlier to attend to their care recipient (Enright & Friss, 1987; Neal et. al., 1988) Of equal concern, is the large number of family members and informal

caregivers who may experience depressive symptoms in the post stroke recovery phase (CTBP, 2013)

On the Stroke Unit at RCH, it is commonplace to hear the family's concerns regarding the high level of stress they face concerning their loved one who has just experienced a stroke. The stroke itself is a life changing event, unexpected and most often no one is prepared for this. Financial burden is a huge reality when taking into consideration the patient with stroke may be the sole provider, as well as the primary caregiver. Families and caregivers are notably overwhelmed as they make efforts to adjust and create new ways of moving forward while trying to maintain balance. (Heart and Stroke Foundation, 2010) suggests families take on a greater proportion of stroke related expenses, including those associated with caregiving, transportation, and lost income, beginning at the seventh month post stroke and beyond.

More devastating is the adjustment of potential role reversal and stressors of managing a new way of life and the preoccupation of securing an additional source of income. Depending on a patient's length of hospital stay, families and caregivers can experience financial hardship, such as: loss of salary, and additional costs associated with visiting. Some intangible costs may include parking, meals, gas (transportation) and other costs to help pass the time during any visit(s) with a patient. Anything that prolongs the admission adds to this burden on the family such as undiagnosed or delayed assessments and treatment of depression. Families and caregivers are susceptible to burnout due to added stressors, and are unusually exposed to airborne diseases, bacteria and infections in the acute care environment. Finally, as families and caregivers

continue to visit, they too increase the chance they could potentially become ill; as a result this will have further additional costs, as outlined in (Figure 2).

Not only are costs associated with the patient during an acute stay, but also once a patient returns home costs continue to add up. Dr. Sharma, of the Ottawa Hospital presented at the Stroke Congress in Quebec in 2010 and highlights that personal costs for stroke survivors continue through their lifetime, “ it’s a burden on individuals, their families and communities”. Heart and Stroke Foundation spokesperson, Dr Michael Hill emphasized “a stroke doesn’t just affect one person, it has a ripple effect, and can challenge families, overburden caregivers, and have a tremendous toll on our healthcare system”.

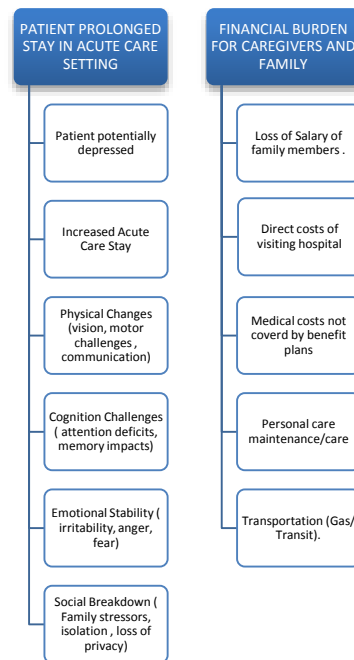


Figure 2: Lengthy Hospital Admission are Associated with Added Costs and Obvious Stressors for Families and Caregivers. Ann M. Seymour

In my analysis of financial burden for families and caregivers, I make a few assumptions related to the costs and benefits of early depression screening for patients

with stroke. (Table 1) below illustrates estimated costs of financial burden on patients, families and caregivers. This estimate is based on a double income family, highlighting the impact of depression on patient with stroke.

Table 1: Financial Burden for Patients, Families and Caregivers. Ann M. Seymour

Financial Burden (Annual Estimate for First Year)	Estimate
<p>Loss of Income</p> <p>Medium family income for a family in BC is \$71,660 (2012 Census Data). Assume that both the caregiver and patient have to take a 30% reduction in their income as a result of the stroke.</p>	\$21,498
<p>Direct Costs of Visiting Hospital</p> <p>Direct costs of visiting hospital. This would include, meals, coffee, parking and miscellaneous items. (Assume \$75.00 per day). Estimated number of days in hospital and rehab facility: 17 in acute, 50 days in rehab = 67 days.</p>	\$5,025
<p>Medical Expenses Not Covered by Benefit Plans</p> <p>Medical expenses not covered by employer health plans. \$5,000 per year (Services for both the patient with stroke and families /caregiver, the caregiver may require professional services due to added stress).</p>	\$5,000
<p>Transportation Costs</p> <p>Transportation costs, medical appointments i.e. rehab, follow up etc. Assume 83 appointments in the first year, mileage cost of \$25.00 per trip, total cost \$2,075.</p>	\$2,075
<p>Personal Care Costs (i.e. housekeeping, meal programs)</p> <p>Additional costs related to personal care/maintenance. Estimate \$60 per day times 83 days in the first year (twice per week) = \$4,980 per year.</p>	\$4,980
Total Estimated Financial Burden (Annual)	\$38,578

I project early depression screening could result in a more effective treatment plans for patients with stroke and that this treatment plan will result in a speedier overall recovery for the patient. The total recovery period includes time in acute care, rehab care and transition at home. For purposes of this analysis, I have made the assumption that there could be a reduction in recovery time of 20% of the total recovery time with improved diagnosis and treatment plan.

Financial burden for one family is estimated to be \$38,578 per year. For 118 families (estimate of number of families who have a patient with stroke and depression at Royal Columbian Hospital), the total burden for all of these families would be \$4,552,204 per year. If depression screening were able to reduce the financial burden on families by 20%, the burden would then be reduced by an estimate of \$910,440.80 per year.

Due to the huge costs savings, a follow up study could be implemented to validate the findings of overall cost savings for patients, families and caregivers.

5: Approaches to Screening

Depression frequently goes unrecognized in primary care, but screening has been shown to increase detection and can lead to improved outcomes when linked to adequate treatment (Pirraglia, et al., 2004). The Canadian Stroke Best Practice Recommendations (CSBP, 2013) indicate screening should occur through all stages and settings following a stroke, including in acute care, rehabilitation, prevention clinics and outpatient community settings (including primary care, home care and long-term care). I suggest screening for depression should occur in the ER along with other usual preliminary assessments. When a patient arrives in the ER; it is during this time, routine assessment for depression regarding typical everyday emotional health must be initiated. This process will assist with ensuring proper protocols are followed and expedite proper services to ensure the patients receive the necessary care (Figure 3). At this stage, any medical staff present can administer the initial screening, there is no additional time needed, no extra work required and it is not necessary that a designated professional be obligated to see the patient during this routine screening phase.

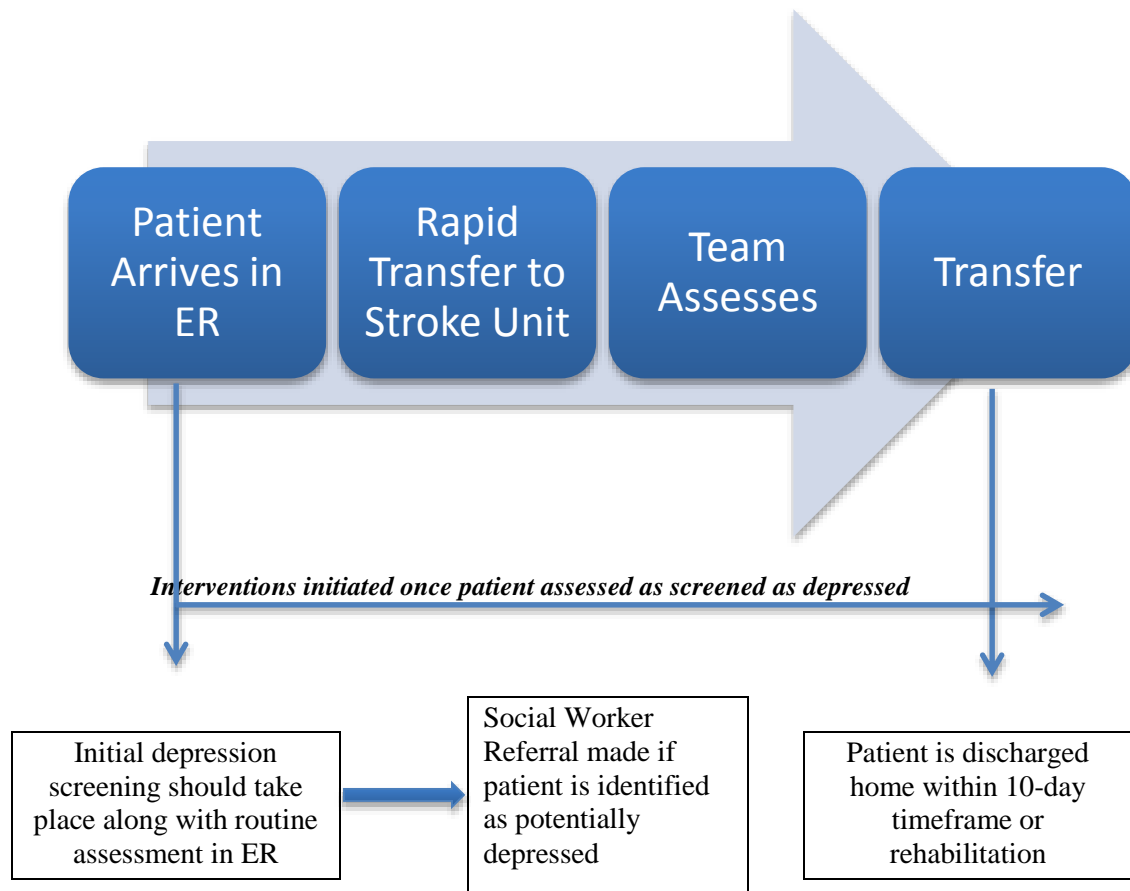


Figure 3: Patients Journey During Stroke Care: From Emergency Room to Point of Transfer. Ann M. Seymour

Once a patient is recognized as depressed, the interdisciplinary healthcare team can make the necessary recommendations and referrals to develop an appropriate care plan and services initiated as quickly as possible. According to (Canadian Stroke Best Practice Recommendations, 2013) ideally, when screening is suggestive of a mood or cognition issue, patients and families should be referred to clinical experts without delay to facilitate access to appropriate in-depth assessment and management, and to receive support and education for coping and self-management.

As the patient transfers from the Emergency Department to the stroke unit, a collaborative team approach will ensure the patient's depression screening outcome is incorporated into the patient plan of care. This immediate diagnosis is critical to the patient's journey through the healthcare system to ensure appropriate interventions are integrated in a timely manner, which could then potentially expedite a patient's safe discharge resulting in significant costs saving for the healthcare system.

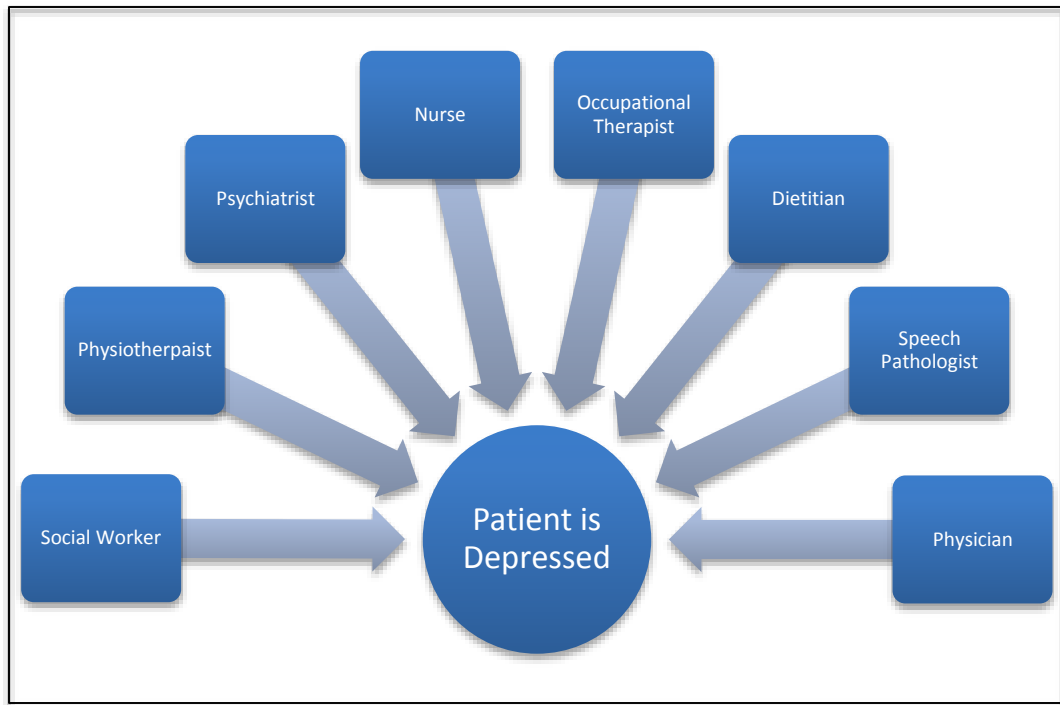
Throughout this period of intervention, it is important to designate an appropriate interdisciplinary healthcare team member to follow the identified patient with depression to ensure appropriate support and services are implemented on an on-going basis. Ideally, this task can be carried out by a trained social worker, there would be no added costs since social workers are part of the inter disciplinary healthcare team. If a social worker were absent another social worker could unquestionably pick up the assigned task, thus there would be no extra training and no interruption in the care plan. Having an alternative plan and back up social worker will have measurable savings for the healthcare system and present as the most cost effective approach. This approach ensures patients are receiving appropriate interventions and continuous treatment. Moreover, other explanations why social workers are the preferred profession compared to nursing staff, physicians and other disciplines is to continue further work with a patient identified as depressed is due to their clinical expertise, familiarity with appropriate resources and community services; additionally, saves money on overall operational costs.

It is anticipated the social worker can address moderately- minor depression prior to the 10-day timeframe and initiate any additional referrals. Integrating social workers at the early stages is cost effective; hence, social workers can follow the patient from the Emergency Department and information can easily transition to the stroke unit without any interruption in the delivery of care. (Table 2) provides an overview of estimated cost comparisons for the healthcare disciplines.

Estimated Salary Cost Comparison of Salary for Healthcare Team	
Social Worker	\$84,000 – \$92,000
Speech Pathologist	\$93,000
Rehabilitation Assistant	\$62,000
Occupational Therapist	\$90, 000
Physiotherapist	\$94,000

***Table 2: Estimated Salary Cost Comparison for Healthcare Disciplines.
Ann M. Seymour***

I would recommend protocols be implemented to ensure a smooth process when considering a patients overall mental health status specifically related to depression. Good communication and a clear understanding is instrumental in ensuring the healthcare team is aware of the assigned tasks and designated role a social worker has when treating patients with depression, see (Figure 4).



Communication is clear and consistent to ensure best practice and patient care outcomes

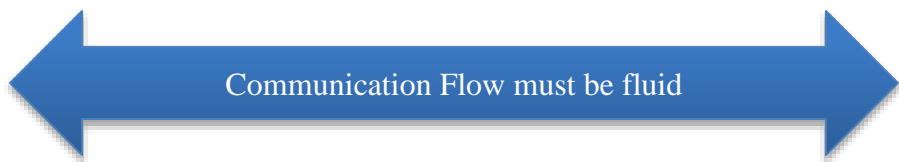
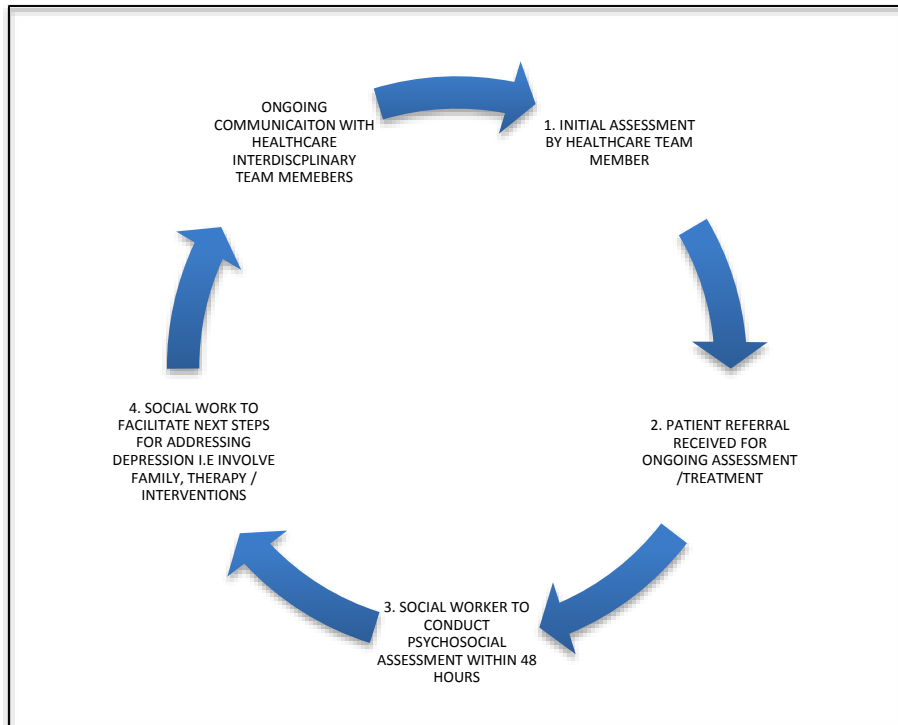


Figure 4: Communication Pathway for Healthcare Team. Ann M. Seymour

Social Workers can do the initial follow up after the patient has been screened for depression in the Emergency Department; additionally the Social Workers can provide on-going support, monitor the patient’s progress, provide appropriate referrals and make recommendations, (Figure 5) highlights this process. Significant cost savings are expected, given Social Workers are previously trained to provide primary support therefore it is not necessary for additional training. Over a 6-month period, there are estimated costs of \$32, 071.52 to implement depression screening

for patients with stroke. Furthermore, by utilizing social workers this will enhance collaboration of the interdisciplinary healthcare team; by providing improved communications, delivering consistent routine care, and largely resulting in improved patient outcomes.



***Figure 5: Process Map for Implementation of Depression Screening.
Ann M. Seymour***

The (Heart and Stroke Foundation of Canada: Stroke Report, 2014) reported today's stroke patient is sicker with two-thirds having one or more chronic conditions making treatment more complex. Not enough patients are getting access to the care and rehabilitation they need to have the best possible outcomes and coordinated systems are the best way to ensure "the right resources, in the right place at the right time". Once a patient arrives in ER (Figure 6) highlights a recommended process to undertake to assess if a patient may potentially be identified as depressed.

Patient Arrives in ER



Routine collateral assessment *including* Depression Screening

PHQ-2



Patient is *Aphasic / Cognitive Impairment*:
Use Appropriate Screening Tool (SADQ-H 10)

Patient Screened for Depression in ER



Patient Depressed



Patient Not Depressed



Collaborative Team Approach



Referral initiated to Social Work

Additional Interventions (PHQ9), counselling, referrals



Patient will have routine care and discharged (home or rehab) within the 10-day timeframe

Referral to Specialist (Psychiatrist)



Community Supports & Services

Figure 6: Depression Screening: Patient Identification (Depressed or Not Depressed): Ann M. Seymour

Clinicians report difficulty selecting appropriate tools from the wide range available (Burton & Tyson, 2014). For a short period, PHQ-2 and PHQ-9 were utilized at RCH. Due to insufficient time, lack of knowledge regarding depression screening from the healthcare team and insufficient support regarding the use of PHQ-2, the screening tools were short-lived. Furthermore, much of the assessments surrounding patients with stroke focused primarily on medical assessments. As a result, it is necessary to acknowledge, the structural use of a screening instruments in the daily care of stroke patients will promote the early recognition of depression (Man –van Ginkelt, et. al., 2013). Other barriers to screening included: time pressure on clinical staff, lack of shared understanding among clinicians about responsibility for screening, poor awareness of screening guidelines, and screening not being seen as a part of routine practice (Hart & Morris, 2008)

Selecting a specific depression-screening tool for the stroke population will require some dialogue and systematic review however; PHQ-2 and PHQ-9 were preferable screening tools since they were easy to administer, required very little time, no training was involved, and no monetary fees were required. Additional depression screening tools include: Hospital Anxiety and Depression Scale (HADS), Becks Depression Inventory (BDI), and the Geriatric Depression Scale (GDS). Meanwhile, some patients with stroke may have speech or cognitive deficits; it is exceptionally important to take this into consideration and choose a screening tool that can be adapted to each individual’s particular situation. In these kinds of situations it is important to

select an appropriate tool such as Stroke Aphasic Depression Questionnaire -10 (SADQ-10), Aphasia Depression Rating Scale (ADRS).

5.1 Challenges of Depression Screening Tools

There are several screening tools that are practical to assess for post stroke depression however, likewise there are certain challenges that may be present. Some considerations include; origin of depression including biological factors, predisposed psychosocial factors, overall impact and potential deficits i.e. communication challenges (aphasia), insomnia, physical capacity and most important any identified cognitive deficits. (Hollender, 2014) states depression is often under diagnosed and undertreated in primary care settings, and can be more complicated in individuals who have a stroke.

In a study lead by (Berg, et. al., 2009) the group focused on a comparison of different screening instruments such as: Beck Depression Inventory (BDI), Hamilton Rating Scale for Depression (HRSD), and Visual Analogue Mood Scale. The group concluded that many of the screening instruments were useful, but none of the instruments clearly stood apart from others. (Kneebone, 2012) further suggests a number of barriers to screening included:

1. The time taken to administer
2. Deficits in knowledge about and skills in administration
3. Costs associated to purchase the screening tools
4. Training related to the delivery of depression screening tools
5. Some screening tools required observation, which added to the already strained workload of the healthcare team.

The Aphasic Depression Rating Scale (ADRS) although free, required training and was an observational tool involving additional staffing time. Becks Depression

Inventory II was a self-reporting tool, requiring no training however has on-going costs for record forms and additional costs for interpreting results. A popular screening tool often used is the self reported Hamilton Anxiety Depression Screening (HADS) however this comes with on going costs and has a wait time for record forms and digital administrations.

As shown in (Table 3) there are various depression screening tools relevant to assess for depression in patients with stroke; however, I recommend integrating the PHQ-2 as the most valuable for the following reasons: there are no costs associated with administering the PHQ-2, it takes very little time to administer and can be used by any interdisciplinary healthcare team member.

Table 3: Comparison of Screening Tools. Ann M. Seymour

Method	Describe	Time to Administer	Training Required	Initial Costs	Recurring Costs
Patient Health Questionnaire 2 (PHQ-2)	Self report – 4 point scale for 2 items regarding presence of depression over a 2 week period	Less than 2 minutes	No	0	0
Patient Health Questionnaire 9 (PHQ-9)	Self report- 4 point scale for 9 items regarding presence of depressive symptoms over 2 weeks	3-5 minutes	No	0	0
Hamilton Anxiety Depression Screening (HADS)	Self report – Patients rate their agreements with 7 anxiety and 7 depression items over previous week on a 4 point scale	2-6	No	Must be purchased	On-going Costs for records and forms
Becks Depression Inventory (BDI)	Self report. Patients choose 1 of 4 statements for 21 items regarding symptoms and attitudes over previous week	10 minutes +	No	Must be purchased	
Aphasic Depression Rating Scale (ADRS)	Observer rated – patients observed based on observations / interview on nine items		Yes	Free	

6: Change Management

To estimate the costs for implementation of depression screening, I would recommend introducing a change management model, such as Prosci's ADKAR Model. Change management is the application of a structured process, a set of tools for leading the people to the side of change to achieve a desired outcome. Prosci's ADKAR Model is an individual change management model. It outlines the five building blocks of successful change, whether that change occurs at home, in the community or at work (PROSCI, 2014). The name "ADKAR" is an acronym based on the five building blocks

- **A** Awareness of the need for change
- **D** Desire to participate and support the change
- **K** Knowledge on how to change
- **A** Ability to implement required skills and behaviours
- **R** Reinforcement to sustain the change.

To implement the PHQ-2 depression-screening tool for patients with stroke, I would extremely encourage applying the ADKAR model, followed by an analysis of the depression screening implementation costs.

6.1 Awareness of the Need for Change

It is imperative team members are informed of the depression-screening project, which can occur at many levels. An effective communication plan is essential to highlight the benefits of implementing depression screening for patients with stroke. This process may involve leadership, clinical supervisors and reinforced by interdisciplinary healthcare team who are well informed and up to date regarding this initiative. This fluid communication plan will provide clarity and a strong foundation and understanding regarding the importance of implementation of depression screening. This proactive

approach will support transparency, furthermore will highlight the issue and generate critical buy in to the idea that depression screening is a worthy idea.

6.2 Desire for Change

Health Administrators / Leadership: For obvious reasons, Health Administrators and Leadership would support a decrease in healthcare costs through a reduction in acute care bed days and implementing cost effective depression screening for patients with stroke.

Interdisciplinary Healthcare Team: Any tools that support patient outcomes the healthcare team would support solely, to have patients transfer to rehab is most often a goal for discharge. Depression screening will improve health outcomes for further treatment resulting in increase survivor rates of patients with stroke, and improved recovery rates.

6.3 Knowledge about How to Change

There are several areas where knowledge can be shared; most important developing a plan to initiate the process is key to ensure all key players are involved in the process and have access to the information. Depression Screening Tools can easily be uploaded and saved to the N: Drive where all healthcare providers will have easy and equal access.

This informal access will encourage self-learning, as well opportunities to review the material at any time. Further knowledge can be shared creating PowerPoint presentations for different groups who have a vested interest, i.e. Stroke Working Group, Stroke Congress, and Allied Health Team. Easy access to the knowledge further supports flexibility, there are no time constraints and opportunities to connect with the social worker at their convenience to answer any questions they may have.

6.4 Ability to Implement

With time and practice, the interdisciplinary healthcare team members will have definite hands on experience incorporating the depression-screening tool. Since, there is a designated Social Worker assigned to the Stroke Unit the team have opportunities to request coaching i.e. how to do the screening, make sure the screening is done correctly and also the occasion to provide feedback. Direct involvement with the Social Worker will provide hands on opportunities and provide assistance in the overall delivery of the depression screening.

6.5 Reinforcement to Sustain the Change

After a 6-month period, a performance review could be initiated to determine if in fact the average length of stay in acute care did go down, due to the implementation of depression screening. Throughout the implementation period, it is critical to observe and monitor the project for results and feedback. This is also important to ensure the depression screening is delivered in an efficient and effective manner. At the end of the implementation phase, it would extremely important to have a celebration event to announce and share the results to acknowledge all the people who contributed to the project. In summary, the implementation of a depression-screening tool will contribute to substantial cost savings for the healthcare system.

7: Implementation Process

7.1 Estimating Costs to Implement Depression Screening

In order to assemble a cost benefit analysis for depression screening it is essential to consider the costs required for implementation. The previous section on change management provides us with some ideas on the different tasks needed for implementing a successful project.

For our analysis, we will make the following assumptions:

Implementation of this project will take approximately 6 months at Royal Columbian Hospital (RCH). This project will start as a pilot project at RCH, with the intention to roll this out to the other Stroke Cohorts and Units (Peace Arch Hospital, Abbotsford Regional Cancer Hospital, Burnaby General Hospital and Surrey Memorial Hospital) all within Fraser Health, after a successful implementation.

Table 4: Estimated Salaries of Stakeholders. Ann M. Seymour

Healthcare Discipline	Estimated Salary
Social Worker (SW):	\$92,000 / \$47.17 per hour
Manager on Stroke Unit (SU):	\$110,000 / \$56.41 per hour
Professional Practice Leader (PL):	\$97,000 / \$49.74 per hour
All others (AO):	\$84,750 / \$43.46 per hour

Considering the overall implementation of this project, factoring in staff time, meetings, education and awareness, implementation, monitoring and reinforcement, it is estimated if this project were successful, there would be an estimated cost of \$32, 071.52 over a 6-

month period to implement depression screening. (Table 5) highlights initial costs associated with implementing depression screening including staffing and time dedicated to the project.

Table 5: Costs Associated with Implementing Depression Screening. Ann M. Seymour

Project Management (Meetings to get buy in and get organized)

Healthcare Discipline	Hours Per Week	Costs Per Week
SW time	3	\$141.51
Manager on Stroke Unit	1	\$56.41
Professional Practice Leader	1	\$49.74
Total		\$247.66

Education and Awareness (Meetings and Presentations)

Healthcare Discipline	Hours Per Week	Costs Per Week
SW time	2	\$94.34
Manager on Stroke Unit	1	\$56.41
Professional Practice Leader	2	\$99.48
Total		\$250.23

Implementation (Coaching)

Healthcare Discipline	Hours Per Week	Costs Per Week
SW time	.5	\$23.60
Manager on Stroke Unit	1	\$56.41
Professional Practice Leader	1	\$49.74
All Others	4	\$43.46 x 4 (\$173.84)
Total		\$303.59

Monitoring (Compile stats from forms, Managers review stats)

Healthcare Discipline	Hours Per Week	Costs Per Week
SW time	.5	\$23.60
Manager on Stroke Unit	1	\$56.41
Professional Practice Leader	.5	\$24.87
Total		\$104.88

Reinforcement (Additional meetings and coaching)

Healthcare Discipline	Hours Per Week	Costs Per Week
SW time	1	\$47.17
Manager on Stroke Unit	1	\$56.41
Professional Practice Leader	1	\$49.74
All Others	4	\$173.84
Total		\$327.16

Grand Total Per Week: (Costs for Depression Screening Training)	\$1,233.52 (X 6 months)
Grand Total for 6 Months Training Costs	\$32, 071.52

8: Treatments for Post Stroke Depression

The rehabilitation of depressed patients with stroke is more difficult than the rehabilitation of patients who are not depressed (Watkins, 2001) the preferable method of addressing depression is implementing early depression screening and to have a Social Worker provide immediate interventions once a patient is identified as potentially depressed. This may include supportive, emotional counselling and involving other healthcare team members. As the patient becomes the key focus and the various disciplines are working with the patient, the likelihood of the patient transferring to rehabilitation programs is greater as length of acute care stay is decreased resulting in vast savings to the healthcare systems.

Once a patient is identified as medically cleared, the next step is to advance mobilization with a specific focus on working towards transfer to the most appropriate rehabilitation program. The rehab programs strive to provide interdisciplinary care, reduce burden of care, provide access to services and work towards incorporating Canadian Best Practices Guidelines by helping patients recover function, independence, and participation in meaningful activity following stroke (FHA: Rehab Power Point). What level of rehabilitation will be determined by the patient's overall impact of stroke and how well the patient is recovering? Early depression screening will assist alongside ensuring there are no barriers that may interfere with rehabilitation goals and a patient's current and overall recovery and functional status. The different levels of rehabilitation include: General Rehab, High Intensity Rehab and Outpatient Rehab.

There are numerous benefits associated with rehabilitation including: decreased length of acute care stay, increased opportunities for functional recovery, improved

quality of life, patient driven by directing their overall recovery, ability to participate in recovery, and capacity to increase overall independence.

Once a patient is transferred from Acute Care, 6% of patients in 2013 have transferred to General Rehab, 10.3% transferred to High Intensity Rehab and almost 15% were scheduled for outpatient rehab. Therefore, of 44.7 % patients with stroke in acute care, 31.3% were transferred to rehabilitation programs.

8.1 Case (Depression Screening) Management by Social Workers / All Others

Stroke patients incur significant costs for rehabilitation. Based on a 2006 study by Bagg, Pombo and Hopman; the mean length of stay (LOS) of a stroke patient in rehabilitation was 49.2 days. Based on what we know about depression screening, there is merit to conducting additional research into the idea that rehabilitation outcomes could be improved if the stroke patient was pre-assessed as being depressed. Managing and addressing the depression may result in faster recovery and shorter rehabilitation and length of stay (LOS).

Social Workers and the healthcare team i.e. Occupational Therapist (OT), Physiotherapist (PT) and Speech Language Pathologist (SLP) can provide collaborative care in ensuring patients with stroke is screened for depression. This provides an opportunity to assess early on for any challenges / barriers the patient may have. Implementing the depression screening will have improved patient outcomes, and appropriate individualized care plans can be arranged for each patient.

9: Cost Effectiveness of Depression Screening

Stroke is estimated to cost British Columbia \$327 million in direct costs each year. These costs will increase dramatically as the population ages. Older stroke patients require longer lengths of stay in acute care and have increased potential for disability (Heart and Stroke, 2013). Every year, patients with stroke spend more than 639,000 days in acute care in Canadian hospitals and 4.5 million days in residential care facilities (CSN, 2011). Waiting for access to rehabilitation can have several implications, including increased health care costs and increased prevalence of disability among those waiting, who may then require care in other settings.

Patients who remain in acute care settings are at increased likelihood of becoming exposed to airborne illness, increased chances of being exposed to infections as a result leading to lengthy hospital admissions therefore increases healthcare costs. It is critical patients are assessed as quickly as possible to address any barriers that may be present.

A cost benefit analysis of identifying appropriate depression-screening tools for patients with stroke outlined in (Table 6) supports the notion that depression screening will keep overall costs down. This can be determined by ensuring the patient with stroke receives early interventions, appropriate medical care, tests and treatments are administered and ultimately rehabilitation is initiated once the patient is medically stable or prepared for transfer.

Table 6: Cost Benefit Analysis: Depression Screening at RCH. Ann M. Seymour

Benefits	Estimate
Reduce Length of Stay in Acute Care Hospital	\$545,160 (Savings Annually at RCH)
Other Benefits: Quicker recovery - reduce stress on patients, families and caregivers	\$910,440.80 (20% reduction in financial burden on patients, families /caregivers)
Total Benefits	\$1,455,600.80
Costs	
Implementation of Depression Screening Training (\$32, 071.25 per 6 months)	\$64,142 Annually
Marketing (Pamphlets, Poster /Flyers) for Patients, Families and Caregivers	\$2,500
Total Costs	\$66, 642
Net Benefit	\$1,388,958.80 Annually

By reducing the length of stay in acute care, there will be an estimated cost savings of \$545, 160. The estimated full cost for an acute bed for a full year totals approximately \$260,000 / or \$700.00 day. Full costs includes the cost of direct supports i.e. PT, OT, SW, Lab, Pharmacy and indirect supports i.e. housekeeping, health records, and transcription. As mentioned previously, on page 10 it is noted that on average patients with stroke could reduce their stay on acute care by 6.6 days, at approximately \$700.00 per day. In 2013, 473 patients were admitted at the RCH ER, if 25% of these patients (118) were identified with depression there would be a net benefit of \$545,160

$$- \$64, 142 \text{ (costs of depression screening training)} = \$481,018$$

Annually, the net benefit is substantial, there is supporting evidence that depression screening for patients with stroke in the early stages of assessment are crucial and have significant costs savings for the healthcare savings. Despite the barriers, and considering the cost effectiveness, why are we not implementing depression screening?

10: Risk Assessment

10.1 Why a Risk Assessment Important

A risk assessment is important to address any factors that may stand out as potential challenges for the implementation of depression screening. Though, it presents evident that depression screening for patients with stroke is crucial, it may not present as valuable to another healthcare team member. A risk assessment will help the team to identify early on any challenges that may be present. If a concern arises, it will be imperative to have a opportunity to address any concerns as quickly as possible to mitigate any negative consequences i.e. stressful work environment, disgruntled staff and /or patients and family. (Table 7) highlights several risks associated with implementation of depression screening for patients with stroke.

Table 7: Identified Risks. Ann M. Seymour

Number	Risk	Strategies to Address Risk
<i>Risk 1</i>	Lack of knowledge regarding depression screening, lack of understanding of depression program and staff not engaged	<ul style="list-style-type: none"> ✓ Education sessions provided to educate, inform and review depression screening program, check in opportunities will be provided on a regular basis
<i>Risk 2</i>	New incoming staff are not made aware of the pilot project	<ul style="list-style-type: none"> ✓ Primary person assigned to ensure new staff are informed
<i>Risk 2</i>	Poor communication	<ul style="list-style-type: none"> ✓ Managers / Team Leaders will review depression screening program at daily rounds
<i>Risk 4</i>	Conflicting priorities (May not be seen as urgent by all disciplines)	<ul style="list-style-type: none"> ✓ Managers will take a leadership role
<i>Risk 5</i>	Healthcare team member may have not feel comfortable or may feel overwhelmed	<ul style="list-style-type: none"> ✓ The most experienced and oriented staff will provide support to the interdisciplinary healthcare team ✓ Role modelling ✓ Depression Screening will be incorporated as part of regular training
<i>Risk 6</i>	Denial of Depression (Stigma attached to this concept)	<ul style="list-style-type: none"> ✓ Campaign Awareness ✓ Education addressing common myths regarding depression
<i>Risk 7</i>	Families/ caregivers may not feel supported	<ul style="list-style-type: none"> ✓ Provide support groups, peer groups, education sessions for patients, families and caregivers

10.2 How to Mitigate Risks

With a multitude of programs, services and medical emergencies on any given day in the hospital, it is predictable issues may arise regarding the pilot project for depression screening for patients with stroke. Keeping this in mind, it is imperative the entire interdisciplinary healthcare team are well informed, and are keep abreast of changes or any new information that may come up. An important component to mitigating any risks associated with this project is to ensure clear and consistent communication. Most relevant to this process is the interdisciplinary healthcare team are well rehearsed regarding the overall purpose, goals and outcomes of the depression screening pilot project. Transparency and accountability are influential in ensuring the interdisciplinary healthcare team feel supported are on board regarding this pilot project.

Staff engagement and buy-in would be most acceptable the more the interdisciplinary healthcare team feel they are an important part of the team and contributors to this process. Another beneficial component to mitigate potential risks throughout this process may involve assigning an individual(s) to oversee the pilot project; someone that can address enquires and provides support when needed.

11: Marketing Plan

The purpose of this marketing plan is to ensure all stakeholders are aware and informed concerning the development and importance of implementing depression screening for patients with stroke. An important quality of this marketing plan is to ensure the concept and delivery of the depression screening process is delivered in a prompt and comprehensive manner. Depression is not a particularly comfortable topic individuals are accustomed to use on a regular basis; however, by ensuring a sensitive approach to conveying the importance of depression screening for patients with stroke will help in delivering the message. This sensitive and timely approach will ensure depression screening becomes a routine process throughout patient care and overall enhancing the best outcomes for patients with stroke ensuring a rapid transition to rehab or home.

11.1 Marketing Objectives

The overall objective of this marketing plan is to ensure a wide audience; particularly patients with stroke, families/caregivers and the immediate healthcare team are apprised of the new process regarding the plan of care and implementation of depression screening. Secondly, it is anticipated the early analysis of depression screening will support and provide the best patient outcomes and recognizing how the impacts of stroke may affect families and caregivers. Thirdly, staff will understand the benefits of depression screening and will support and encourage other staff to administer depression screening at the most appropriate time once patients arrive in the ER. It is crucial patients with stroke feel supported.

11.2 Branding

Royal Columbian Hospital, Stroke Cohort will be a host pilot site for depression screening for patients with stroke; therefore, it is crucial the planning, implementation and delivery of the depression screening is delivered without delay. The more prompt, professional and efficient RCH is in implementing the depression screening for patients with stroke, the more RCH will stand out as a leader, and prove their expertise in delivering the best healthcare possible. Depression screening for patients with stroke is an opportunity to be innovative and to brand itself as delivering the best healthcare within Fraser Health. It's an opportune time for RCH to be placed on the map as providers of the best health care for patients with stroke and ensuring best practices are integrated in routine assessments.

11.3 Marketing Methods

Fraser Health employs a diverse network of communication tools to support effective communication with employees, patients, families and caregivers. While there are internal and external marketing approaches, the depression screening is specific to RCH Stroke cohort; therefore, the initial marketing plan will comprise of an internal marketing plan (Table 8) involving mostly RCH. In the future, once the pilot project is underway, proven successful and operating out of the various sites, the marketing plan will continue to follow an internal process. Once the depression screening have been established and celebrated, RCH would be in an excellent position to share their outcomes with the Canadian Stroke Foundation, others Stroke Centres and cohorts. During this time, an external marketing plan (Table 9) can be introduced. To support the significance of this important issue, the poster presentation “ Opening the Door to

Recovery and Beyond - Acute Stroke Depression Screening: A Protocol Proposal”

(Appendix D) can be shared and hopefully lead and engage other about this this important issue.

Table 8: Internal Marketing Plan for Depression Screening. Ann M. Seymour

Method	Details
Meetings	Meet with Clinical Practice Leader, Patient Family & Counselling Meet with Manager, Allied Health
Information Bulletin	One pager outlining pertinent information normally distributed through email and sometimes posted on bulletin boards through the hospital
Fraser Health News	Mass email distributed widely throughout Fraser Health on every desktop
Memorandum	Normally, forwarded to Leadership who than forward to their teams
Emails	All Fraser Health employees are added to a general email distribution list
Posters	Once approved by appropriate Leadership Team Member i.e. Site Director, Team Managers posters are than posted designated sites throughout Fraser Health
Pamphlets /Flyers	Once approved by Program Manager, Media Relations, pamphlets and flyers can than be situated where appropriate or provide by the healthcare team to identified patient population group
Working Groups (Presentations)	A number or groups working specifically with patients with stroke include: RCH Stroke Working Group, Regional Stroke Working Group, RCH Stroke Cohort

A key factor to consider when marketing depression screening is to incorporate a strong message regarding the importance and value of why it is necessary to introduce depression screening during the early stages when a patient arrive in ER. A SWOT

analysis (Figure 7) can capture both strengths and weakness and explain opportunities and threats associated with depression screening.



Figure 7: SWOT Analysis for Depression Screening Implementation.
Ann M. Seymour

Given the many groups of individuals who are affected by a patient with stroke, it is important everyone impacted is aware of this project; I would suggest two separate avenues of distributing information and marketing this project. I would suggest a proactive approach in marketing this important project to the healthcare team. This may include, meetings with leadership and the primary stroke cohort team followed by memorandum (Appendix B) and Fraser Health online News insert, while this is the common method for distributing any news related to healthcare, additionally; this is the simplest route given a separate team develops and administers the information clearly. For patients, families and caregivers the best marketing tool may include a pamphlet

highlighting the purpose and detailed information related to the depression screening finally, a poster (Appendix C) can be situated within the stroke unit, nursing station and in the ER Department highlighting and bringing attention to this important issue to both the healthcare team, patients and their families. For families and caregivers it is pertinent to ensure they are made aware of the many support groups available to them. It would be worthwhile to have posters and signs displayed within the unit and made available to families and caregivers during their time with the patient in the acute care setting.

Table 9: External Marketing Plan for Depression Screening. Ann M. Seymour

Method	Details
Email Distribution	Heart & Stroke Foundation Stroke Recovery Association of BC American Stroke Association Other Health Authorities
Conferences	Fraser Health Stroke Congress Canadian Stroke Congress National Stroke Congress
Websites	Canadian Stroke Foundation
Posters	Various sites as listed in the External Marketing Plan
Pamphlets /Flyers	Various sites as listed in the External Marketing Plan
Working Groups	Stroke Recovery Groups (Regional) START Program (Stroke Assessment Rehabilitation and Transitions)

12: Recommendations

There is ample evidence to suggest depression screening is critical to patients overall care plan; ultimately, providing the best patient outcomes. I recommend the implementation of depression screening, by incorporating the PHQ -2 and PHQ-9 to initiate depression screening for all patients with stroke. An effective timeline would be implemented over a short period of time to ensure services and supports are identified and initiated in a timely manner. A projected timeline will include a three-week period, involving the introduction, implementation and delivering the results of the depression screening. (Figure 8) highlights the suggested timeline and process for implementation of the PHQ-2 depression-screening tool.

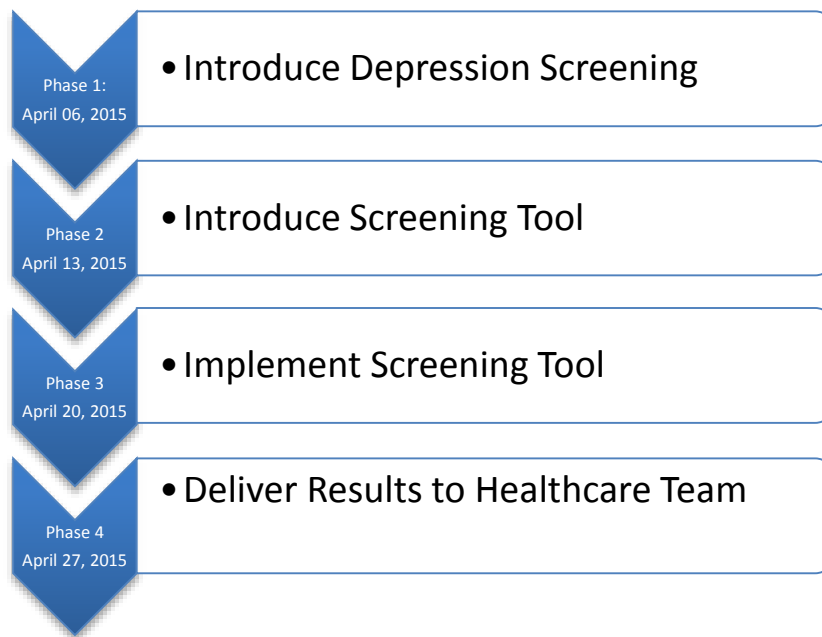


Figure 8: Timeline: Introduce, Implement and Deliver Results of Screening Tool. Ann M. Seymour

Appendix A: Screening Tool PHQ-2

Choose one answer for each question from the PHQ-2:

1. Little interest or pleasure in doing things?

- a. Not at all
- b. Several days
- c. More than half the days
- d. Nearly every day

2. Feeling down, depressed, or hopeless?

- a. Not at all
- b. Several days
- c. More than half the days
- d. Nearly every day

Now, **score your answers** by adding up the points:

a=0; b=1; c=2; d=3.

Retrieved from <https://www.google.ca/search/images>

Appendix B: Memorandum to Healthcare Staff

MEMORANDUM

To: Stroke Cohort Program
From: Helen DeAngelis, Manager
Date: March 30, 2015
Re: **Depression Screening for Patients with Stroke**

The FHA STROKE COHORT program is pleased to inform you there will be a new pilot project starting on March 30, 2015. This pilot project will include the implementation of the PHQ-2 Depression Screening Tool and embraces a collaborative care approach. All interdisciplinary team members will participate in this process, from the time the patient arrives in ER and transitions to the Stroke Acute Cohort Unit. This project will run for approximately a 6-month period at which time we will evaluate processes and outcomes.

The purpose of this pilot project is to provide better care for our patients with stroke, identify early on any potential barriers or challenges the patient and /or family may face and ultimately to ensure a seamless transition to rehabilitation or home.

We will be targeting patients who may identify as being potentially depressed. One of the key outcomes is to address these core needs in a timely manner and ensure patients overall care needs are attended to in an efficient manner. The Unit Social Worker will play a crucial role ensuring the patient receives the most appropriate psychosocial assessments, connecting the patient to the most appropriate services, make referrals and provide recommendations for further support services where necessary.

We look forward to your support with this pilot project as we aim to improve the overall care of our patients with stroke.

Appendix D: Poster Presentation: Presented at the Stroke Congress Conference



**Opening the Door to Recovery and Beyond
Acute Stroke Depression Screening: A Protocol Proposal**

Ann M. Seymour, MSW, RSW
Social Work Department, Royal Columbian Hospital, Fraser Health Authority, British Columbia, Canada

Rehabilitation Program



Background

- Depression is the most common mental health condition after a stroke, affecting more than one-fourth of all stroke patients (1). If not treated, post-stroke depression (PSD) contributes to reduced functional recovery and quality of life and increased cognitive impairment and mortality risk (2)
- The Royal Columbian Hospital (RCH) stroke cohort strives to have every stroke patient seen by a social worker within 48 hours of admission to evaluate psycho-social and emotional needs of the patient and family.
- Currently there is no established protocol in place to ensure consistent early screening and treatment of PSD in our acute stroke patients at RCH.

Purpose:

To develop a protocol for depression screening and priority referral to Social Work for patients with acute stroke; to be implemented within 48 hours of admission to RCH Stroke Cohort.



Figure 1: Flow Diagram: Depression Screening and Referral to Social Work for Follow-up and Depression Management Planning.

Implementation Process

DEPRESSION SCREENING AND SOCIAL WORK REFERRAL

Referral: Social workers in the acute care setting will receive an automatic referral for all new patients with stroke to assess:

- Emotional, psychological status and values of patients and families prior to stroke.
- Psycho-emotional impact of stroke on patients and families.
- Level of depression.
- Family support and caregiver capacity.

Evaluation: Social workers will ensure that level of depression is always evaluated and assist the care team to determine an appropriate plan for managing depression if it is present (Figure 1).

Timelines and Care Plan Template

Table 1: Social Work Action Plan Based on Degree of Depression

Stage	Action
STAGE 1: Patient assessed: No depression	<ul style="list-style-type: none"> 1. Alert interdisciplinary team 2. Provide supportive counselling - Motivation (relaxing) - Strength base approach - Provide support material (educational materials, brochures, videos, support groups, family)
STAGE 2: Patient assessed: Low level of depression	<ul style="list-style-type: none"> 1. Alert interdisciplinary team 2.5. Obtain information - if seen in community prior to admission, contact healthcare professional and collaborate 3. Referral made to Psychiatry - Ger-Psychiatry 4. Provide ongoing support 5. Monitor and re-assess as needed
STAGE 3: Patient assessed: Moderate or Higher Level Depression	<ul style="list-style-type: none"> 1. Alert interdisciplinary team 2.5. Obtain information - if seen in community prior to admission, contact healthcare professional and collaborate 3. Referral made to Psychiatry - Ger-Psychiatry 4. Provide ongoing support 5. Monitor and re-assess as needed

Conclusion:

Establishing a protocol for early screening for post-stroke depression in the acute care setting is a priority for social workers at RCH to ensure that efficient and appropriate care plans for the management of depression are in place within 48 hours of admission following stroke.

Acknowledgments:
Farimah Shakiri, MSW, RSW Clinical Practice Leader Social Work Department, RCH
Lynne Feehally, Ph.D., MSc, Lescher Clinical Research, UBC

References:
1. Canadian Stroke / Patient created for Depression Without Diagnosis: Tools for Prevention
2. Royal Columbian Hospital: Depression: Screening and Assessment Canadian Best Practice Guidelines for Stroke Rehabilitation, 2018

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Appendix E: Admissions (ER, Acute and Rehab)

Royal Columbian Hospital

Indicators		FP01	FP02	FP03	FP04	FP05	FP06	FP07	FP08	FP09	FP10	FP11	FP12	FP13
Emergency	# of stroke patients identified in ER	31	46	37	27	29	36	37	40	32	33	39	32	44
	6 hour rule %	42%	39%	49%	44%	41%	58%	57%	45%	38%	42%	49%	47%	45%
	Ave LOS in ER (hr)	12.4	13.0	11.0	10.2	14.6	5.7	9.6	13.7	15.8	11.0	12.4	12.3	15.2
Acute	# of stroke patients admitted in acute site	38	54	43	38	38	51	48	46	39	40	48	44	55
	Average Acute LOS in all acute units (days) exclude Rehab	15.1	17.3	15.9	21.6	12.8	14.7	12.3	16.9	15.4	21.7	16.3	25.5	10.8
	% patients who are transferred to an acute stroke unit													
	Average Acute LOS in ASU (days)													
	% of patients discharged with approval/home	58%	43%	56%	58%	37%	59%	42%	48%	44%	53%	40%	41%	44%
Rehab	% of acute stroke patients admitted to General Rehab	5%	4%	2%	0%	11%	4%	10%	2%	5%	3%	17%	5%	11%
	% of acute stroke patients admitted to High Intensity Rehab	5%	9%	12%	5%	16%	8%	6%	11%	15%	13%	15%	16%	4%
	% of acute stroke patients admitted to Outpatient Rehab	11%	11%	12%	11%	21%	12%	8%	20%	23%	28%	23%	9%	4%

Fraser Health Authority *(Final numbers included for all 12 Hospitals within Fraser Health)

Indicators		FP01	FP02	FP03	FP04	FP05	FP06	FP07	FP08	FP09	FP10	FP11	FP12	FP13
Emergency	# of stroke patients identified in ER	183	213	199	184	170	196	182	187	162	200	208	209	206
	6 hour rule %	33%	32%	40%	33%	41%	43%	37%	29%	31%	31%	36%	30%	31%
	Ave LOS in ER (hr)	22.2	14.2	16.5	16.5	13.8	13.1	21.1	19.3	22.9	18.6	18.2	20.7	22.6
Acute	# of stroke patients admitted in acute site	200	228	210	202	188	222	203	207	178	210	230	236	227
	Average Acute LOS in all acute units (days) exclude Rehab	13.2	12.1	12.4	13.1	11.4	12.4	12.7	13.8	14.3	14.5	12.5	13.5	11.5
	% patients who are transferred to an acute stroke unit													
	Average Acute LOS in ASU (days)													
	% of patients discharged with approval/home	56%	56%	59%	63%	54%	57%	53%	52%	53%	60%	47%	59%	49%
Rehab	% of acute stroke patients admitted to General Rehab	7%	11%	5%	8%	6%	7%	7%	7%	4%	8%	9%	11%	7%
	% of acute stroke patients admitted to High Intensity Rehab	5%	4%	4%	5%	6%	7%	6%	5%	4%	4%	6%	4%	4%
	% of acute stroke patients admitted to Outpatient Rehab	16%	10%	10%	12%	12%	12%	11%	15%	12%	13%	10%	11%	6%

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