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CHANGING SYSTEMS: IMPROVING LIVES

PEI Integrated Stroke Strategy

August, 2006



Finding answers. For life.



Department of Health

PEI Integrated Stroke Strategy

ACKNOWLEDGEMENTS

This report summarizes the investigative findings of the Prince Edward Island Integrated Stroke Strategy Advisory Committee (ISSAC) on ways and means to improve stroke prevention and care for all Islanders.


In 2003, the Canadian Stroke Network and the Heart and Stroke Foundation of Canada launched the Canadian Stroke Strategy, with a goal to achieve "... a coordinated and integrated approach to stroke prevention, treatment and rehabilitation ... in every province and territory in Canada by 2010." The Canadian Stroke Strategy provides a framework to ensure that the latest science and research evidence results in measurable and tangible policy and practice change at the provincial, territorial and local levels where health care is delivered.

Concurrently, in 2003, the Atlantic Health Promotion Research Centre (AHPRC) at Dalhousie University received funding from the Canadian Stroke Network to conduct a knowledge translation research project on health system change for stroke care. This funding was used to support the work of ISSAC and a Stroke Navigator position. In addition to financial support, the AHPRC also provided research expertise and the infrastructure for the four Atlantic Provinces to share information on the integrated stroke strategy development. ISSAC wishes to thank the Atlantic Health Promotion Research Centre for their support.

Building on this support, a wide range of partners gave generously of their time and applied the knowledge and expertise of their various disciplines to the shared goal of improving stroke prevention and care in Prince Edward Island. We thank them for their contributions. In addition, we thank Wendy MacDonald & Associates Inc. for writing the document. Our thanks go as well to our Stroke Navigator, Cathy Sinclair for her support and assistance.



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PEI Integrated Stroke Strategy

TABLE OF CONTENTS

Acknowledgements	
Executive Summary	i
Summary of Recommendations	ii
Introduction	1
Vision, Guiding Principles and Goals	2
What is a Stroke?	3
Risk Factors for Stroke	4
Effects of Stroke	6
Current Status on Prince Edward Island	7
Recommendations & Rationale	13
Stroke Prevention and Health Promotion	13
Emergency and Acute Care	16
Rehabilitation and Community Re-Integration	20
Evaluation and Monitoring	24
Governance and Implementation	26
And Now...	27
References	28
Appendix One:	Members of the Integrated Stroke Strategy Advisory Committee (ISSAC) and Task Groups and Sub-Committees 30
Appendix Two:	ISSAC Organization Chart 35
Appendix Three:	Rehabilitation and Community Re-Integration Environmental Scan 36

PEI Integrated Stroke Strategy

EXECUTIVE SUMMARY

In Prince Edward Island, approximately 200 people experience strokes annually. Stroke is the leading cause of acquired adult disability. On the Island at any one time, there are approximately 800 stroke survivors. A stroke survivor has a 20% chance of having another stroke within two years.¹

The risk of stroke increases with age. As a result of the population's aging demographics, the incidence of stroke will rise at a rate of 1% - 2% per year for the next decade.²

New treatments and clinical practices offer hope to stroke patients. Over the past ten years, the research community has identified many new best practices in stroke prevention, treatment and rehabilitation. Unfortunately, these best practices are often not consistently applied, leaving a significant "gap" between best practices and what is being done in Canada's healthcare system.

An Integrated Stroke Strategy could dramatically reduce the incidence and impact of stroke by creating an organized system of prevention and treatment – from effective prevention and awareness measures, to early identification of warning signs through to prompt diagnosis, timely targeted treatment, focused, intensive rehabilitation and community re-integration.

The Heart and Stroke Foundation of Canada is leading the way, in partnership with the Canadian Stroke Network, to implement system changes throughout Canada. PEI has the potential to become a leader in the management of stroke. The need is urgent and the benefits are substantial. The partners are ready and the time to act collectively is now.

PEI Integrated Stroke Strategy

SUMMARY OF RECOMMENDATIONS

PREVENTION AND HEALTH PROMOTION

1. Support and assist efforts by all health partners to address population risk factors and to promote healthy lifestyles.
2. Develop and implement a strategy to identify and reduce hypertension.
3. Develop and implement a coordinated province-wide public education program on stroke awareness.
4. Establish a Provincial Stroke Prevention Clinic to provide an individualized, comprehensive, interprofessional approach to primary and secondary stroke prevention.

EMERGENCY AND ACUTE CARE

5. Provide emergency stroke care at designated hospitals which possess the following characteristics:

- 24/7 capabilities for CT scanning (Computerized Tomography)
- 24/7 capabilities for a radiologist interpretation of the CT scan
- 24/7 emergency department

Currently, the Queen Elizabeth Hospital and the Prince County Hospital fulfill these characteristics.

6. Establish policies and protocols governing pre-hospital care. This includes the role of paramedics in assessing suspected acute stroke patients and transporting them to the nearest designated hospital.

7. Offer intravenous rt-PA therapy for acute ischemic stroke to those who qualify for such care according to specific rt-PA protocols, at designated hospitals if deemed clinically appropriate and safe by the treating physician.

8. Establish an Acute Stroke Unit on a single designated medical unit at the Queen Elizabeth Hospital, responsible for providing patients from all over PEI with equal access to acute stroke care. This Unit is to be resourced in keeping with national best practices.

9. Develop, adopt, and communicate doctors' orders/care plans/pathways/protocols on dealing with management of Transient Ischemic Attacks (TIAs or "mini-strokes") and acute stroke, in the emergency and acute care setting.

10. Clearly define the roles and responsibilities of all key personnel involved in emergency, acute, and rehabilitative care for stroke patients.

PEI Integrated Stroke Strategy

SUMMARY OF RECOMMENDATIONS

REHABILITATION AND COMMUNITY RE-INTEGRATION

11. Adequately staff and resource a coordinated multi-level system of stroke rehabilitation and community re-integration for PEI, including dedicated beds on the Provincial Rehabilitation Unit, plus outpatient and in-home services for stroke rehabilitation.
12. Develop a system with guidelines to help patients and their families navigate more smoothly along the continuum of stroke care.
13. Mandate provincial use of objective assessment tools for rehabilitation which are sensitive to the issues of stroke patients.
14. Develop demonstration projects to identify, apply, and adapt best practices in PEI for stroke rehabilitation at home and in long-term care facilities.

EVALUATION AND MONITORING

15. Establish a broadly representative Stroke Monitoring and Evaluation Implementation Team to carry out the detailed design of PEI's stroke monitoring and evaluation system.
16. Establish an evaluation framework for the Stroke Strategy initiative.
17. Establish a PEI Stroke Research Interest and Knowledge Evaluation Group (STRIKE Group) to foster regional and national collaboration.

GOVERNANCE AND IMPLEMENTATION

18. Make the implementation of this strategy a health priority.
19. Mandate a multidisciplinary body of stroke health partners to advise on the implementation of the recommendations.

PEI Integrated Stroke Strategy

INTRODUCTION

Integrated, coordinated stroke strategies provide a very tangible demonstration of how we can effectively bridge the gap between research and policy – translating the best science into effective practice and ultimately leading to improved outcomes for those who have suffered a stroke and those who are at risk.

Dalhousie University's Atlantic Health Promotion Research Centre provided the financial support for development of the Integrated Stroke Strategy, including the staff position of stroke navigator. As a result, a province-wide, multi-disciplinary Integrated Stroke Strategy Advisory Committee (ISSAC) was formed in September 2004. It was co-chaired by the Department of Health and Social Services and the Heart and Stroke Foundation of PEI. ISSAC struck the following four task groups to carry out the details required to develop the strategy:

- Prevention and Health Promotion
- Emergency and Acute Care
- Rehabilitation and Community Re-Integration
- Evaluation and Monitoring

Some task groups, in turn, struck sub-committees.

(See Appendix One for membership of task groups and sub-committees.)

This report represents the considerable amount of consultation and input required to develop an integrated and comprehensive stroke strategy. The review process undertaken by ISSAC and its task groups involved:

- reviewing the evidence
- completing an environmental scan
- conducting a gaps analysis
- developing recommendations

The recommendations set out in this document were developed by ISSAC, the four task groups and their sub-committees. These recommendations are aimed at reducing the damage of stroke by bringing knowledge of new research and best practices forward, to improve stroke prevention and care in Prince Edward Island.

This report begins with the vision, guiding principles and goals that guided the work of the committees. Next the report describes stroke, its risk factors and effects. The report then sets out the current approach to stroke care followed by recommendations and supporting rationale. The report concludes by proposing next steps to enhance stroke care in Prince Edward Island.

PEI Integrated Stroke Strategy

VISION, GUIDING PRINCIPLES AND GOALS

Vision:

“Islanders have access to appropriate, quality stroke care in a timely manner.”

Guiding Principles:

- **Evidence-based:** The strategy builds on practices and care that are supported by scientific evidence or are considered best practice according to prevailing knowledge.
- **Comprehensive:** The strategy improves stroke services across the entire continuum of care, from prevention efforts to care in long-term care or community settings.
- **Integrated:** Essential services and providers function as a unified whole.
- **Province-wide:** Services are available to all Islanders.

Goals:

The PEI Stroke Strategy is designed to achieve progress towards the following goals:

- Reducing the incidence of stroke.
- Reducing deaths and disabilities due to stroke.
- Reducing the financial burden of stroke.
- Optimizing recovery and improving quality of life for stroke survivors.

PEI Integrated Stroke Strategy

WHAT IS A STROKE?

A stroke is the sudden loss of brain function caused by the interruption of blood flow to the brain. Over 80% of all strokes are ischemic, caused by a blood clot blocking a blood vessel to the brain. The remaining 20% are hemorrhagic, caused by the rupture of a blood vessel and uncontrolled bleeding into the brain. Without a constant supply of blood and oxygen, brain cells begin to die within a few minutes. Death of these brain cells results in loss of function in the regions of the body served by that area of the brain. The impacts of stroke vary widely depending on the location and severity of the stroke.

Factors which adversely affect the severity of stroke include extended duration of reduced blood supply, elevated temperature, elevated blood glucose and rapid reduction in blood pressure. The more cells which are irreversibly damaged, the greater the probability that the patient will have a severe disability.

“Strokes and TIAs are emergencies. Time is critical to minimizing their disabling impacts.”



Stroke is the fourth leading cause of death in Canada and each year, about 16,000 Canadians die from stroke.

Heart and Stroke Foundation of Canada

Conversely, the greater the number of healthy cells preserved, the better the functional outcome. This factor makes rapid intervention absolutely crucial in containing the long-term impacts of stroke. Therefore, stroke can be a treatable disease but time is critical. Patients need to go to hospital at the first sign of a stroke.

Transient Ischemic Attacks (TIAs or mini-strokes) occur when a blood clot temporarily clogs an artery and part of the brain doesn't get the blood it needs. The symptoms occur rapidly and last a relatively short time. Most TIAs last less than five minutes. They can be important precursors to full strokes. A person who has a TIA has an 8% risk of stroke in the following month, with the risk climbing to 12% within the first year, and accumulating to 30% risk within the next five years.³

The warning signs of a TIA are similar to the warning signs of stroke. The only difference is that the warning signs may go away after a few minutes or hours. It is very important to always treat the warning signs of a stroke or a TIA as a medical emergency.

With proper evaluation and treatment at the time of TIA, many strokes can be prevented. However, patients who experience TIAs often do not go to the emergency department or are not referred for further investigation in a timely manner, often resulting in a major stroke.

PEI Integrated Stroke Strategy

RISK FACTORS FOR STROKE

A risk factor is something in a person's physical condition, family history or lifestyle that increases the chance of developing an illness, such as a stroke. Many of the risk factors for stroke and heart disease are the same. Having more than one risk factor multiplies the risk of having a stroke. Stroke risk factors fall into two categories: Controllable and Non-Controllable.

Controllable:

High Blood Pressure

High blood pressure or hypertension triples or quadruples stroke risk, and is considered the most common and controllable of stroke risk factors. Over 40% of Canadians with high blood pressure are unaware they have it.⁴ This is likely because hypertension has no symptoms.

Physical Inactivity

Inactivity has been identified as one of the most significant risk factors for stroke, second only to hypertension. In addition to being a direct risk factor for stroke, inactivity also increases the risk of hypertension, obesity, diabetes, and heart disease. In late 1990s, as shown in **Chart 1**, the proportion of Islanders reporting that they were physically inactive dropped, but since 2001 that has increased again. National rates, meanwhile, continue to fall.⁵

Smoking

Tobacco use is a significant risk factor for both ischemic and hemorrhagic stroke. Men who smoke have a 40% greater chance of having a stroke than those who do not. Women who smoke have a 60% greater chance of having a stroke compared to non-smoking women. Women who smoke and take the birth control pill have an even higher risk for stroke. Cessation of smoking, however, leads to a prompt reduction of risk. As shown in **Chart 2**, the proportion of Islanders who smoke is dropping. Particularly encouraging progress is being made among teenagers, and in reducing exposure of children to secondhand smoke.⁶

Diabetes

People with diabetes have a 2 to 4 times greater risk of stroke. Diabetes is being diagnosed more frequently on PEI and the forecast for 2005 is that 65 new cases of diabetes will be diagnosed each month. At present, there are approximately 8,000 Islanders living with diabetes.

Obesity

Obesity is also a major risk factor for ischemic stroke, increasing its relative risk by 1.5 to two times. As weight increases, so does an individual's likelihood of high blood pressure, diabetes, and heart disease, all in themselves risk factors for stroke. However, 58% of Canadians think weight has little or no effect on their heart health.⁷

The 2004 Canadian Community Health Survey found that based on measured weights and heights, 26% of Islanders were obese and 40% were overweight, compared to national averages of 23% and 36% respectively.⁸ See **Chart 3**.

CHART 1. % Reporting Physical Inactivity

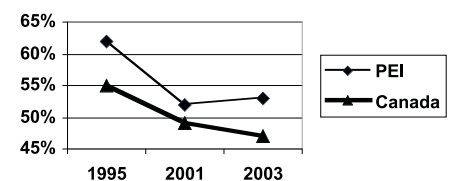


CHART 2. % of Islanders Smoking

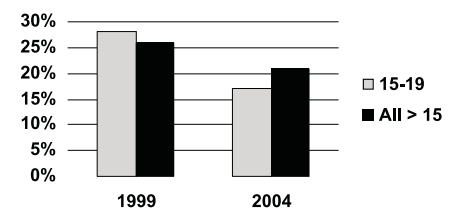
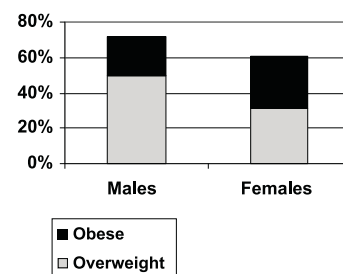


CHART 3. % of Islanders Above Healthy Weight, 2004



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RISK FACTORS FOR STROKE

Controllable (cont.):

High Blood Cholesterol

High blood cholesterol or hyperlipidemia contributes to the development of plaque build-up along the walls of the blood vessels (“hardening of the arteries”). This plaque increases the risk of stroke. People with untreated high blood cholesterol also triple or quadruple their risk of stroke.

Atrial Fibrillation (AF)

Atrial fibrillation is a heart rhythm disorder that increases the risk of blood clots forming which can lead to stroke. People with AF are at a 3-5 times greater risk of having an ischemic stroke.

High Alcohol Intake

Exceeding the low-risk drinking guidelines (more than 1-2 drinks per day, with weekly maximums of 14 for men and 9 for women) and binge drinking can double the risk of ischemic stroke and increase the risk of hemorrhagic stroke 2 to 3 times.

Coronary Heart Disease

Having coronary heart disease (CHD) doubles the risk of ischemic stroke. People with CHD experience hardening of the arteries which may affect the arteries to the brain. They are also at greater risk of developing blood clots that can lodge in the arteries to the brain and interrupt blood flow.

Non-Controllable:

Age

The older you are, the greater the risk of stroke. After age 55, a person’s risk of stroke doubles every ten years. PEI’s population of seniors will double over the next 25 years. By 2020, one Islander in five will be over age 65.

Gender

Men have a higher risk than women of having a stroke. However, as women tend to live longer than men – and the risk of dying from stroke increases with age – each year more women die from stroke than men.

Family History

The risk of having a stroke is higher if a parent or sibling had a stroke before the age of 65.

Ethnicity

Canadians of First Nations/Aboriginal Peoples, African, Hispanic, South Asian and Black descent have higher rates of high blood pressure and diabetes – conditions that can lead to stroke.

Prior Stroke or TIA

Up to a third of people who survive a first stroke have another stroke within 5 years.

TIAs or Transient Ischemic Attacks are commonly referred to as ‘mini strokes’. TIAs cause only brief symptoms, and have traditionally been viewed as causing little damage. In addition, recent research suggests strokes that occur ‘silently’ often go undetected, and that these strokes are a major cause of memory loss, confusion, personality changes and other symptoms of dementia.⁹

Moreover, TIAs are an important precursor of a major stroke. Stroke risk is approximately 8% during the first month after a TIA, 12% during the following year and about 30% within the following five years.¹⁰

PEI Integrated Stroke Strategy

EFFECTS OF STROKE

Stroke is about loss - the sudden loss of a fully functioning body and mind which we have always taken for granted. While stroke does not affect any two people in exactly the same way, some of the most common effects of stroke are as shown in the following table.

EFFECTS OF STROKE ON THE INDIVIDUAL

- **Paralysis or weakness of one side of the body.**
- **Vision problems:** May lose partial vision in one or both eyes. If the stroke occurred in the brain stem, the result may be double vision.
- **Aphasia:** May have difficulty in speaking, reading, writing or understanding language. Swallowing problems and choking are concerns.
- **Perceptual challenges:** A stroke may change the brain's ability to interpret what is seen or felt. May not recognize familiar objects or know how to use them.
- **Fatigue.**
- **Incontinence:** May have trouble controlling bowels or bladder.
- **Depression:** It is common for stroke survivors to feel sad or overwhelmed by the changes in their lives. As well, they may feel isolated and scared – their image of themselves may be shaken.
- **Emotional changes:** Emotional responses may become exaggerated or inappropriate. This can include outbursts of anger, moaning, laughing or crying uncontrollably for little or no reason.
- **Cognitive changes:** May have memory and problem-solving challenges.
- **Personality changes.**
- **Changing leisure and activity pursuits.**



EFFECTS OF STROKE ON THE CAREGIVER

- At risk of suffering from depression.
- A great need for support, i.e. social and emotional respite
- Caregivers often neglect or give up their own friends. As a result, social life shrinks and there is a feeling of isolation and loneliness.
- Feeling of being overwhelmed.
- Dealing with financial worries.
- Discovering their abilities to manage their energy and to multi-task.
- Dealing with the loss of anticipated and/or prepared future plans.

EFFECTS OF STROKE ON THE COMMUNITY

- The partial or full loss of an active employed individual.
- The partial or full loss of an active social individual.
- Businesses need to accommodate a stroke survivor.
- Communities need to accommodate a stroke survivor.

PEI Integrated Stroke Strategy

CURRENT STATUS ON PRINCE EDWARD ISLAND

Prevention/Health Promotion of Stroke

Evidence shows that a comprehensive approach to healthy living has the most impact on reducing the incidence of stroke. Prince Edward Island has a Healthy Living Strategy which encourages Islanders to improve their quality of life by reducing risk factors that contribute to chronic diseases. The various alliances of the Healthy Living Strategy are: Active Living Alliance, Tobacco Reduction Alliance and the Healthy Eating Alliance. These alliances work collaboratively to promote healthy living based on extensive research and consultation with Islanders. The Heart and Stroke Foundation of Prince Edward Island and the PEI Department of Health are members of the Healthy Living Strategy Steering Committee.

However, on PEI, there is no comprehensive or co-ordinated approach to specifically address stroke prevention. As risk factors for stroke and heart disease overlap to a large extent, the Heart and Stroke Foundation of PEI distributes numerous materials to the public on these two chronic diseases. However, it is neither feasible nor desirable to launch risk reduction strategies for each chronic disease when the risk factors are, in many cases, the same. Integration of all chronic disease prevention programs will avoid development of “disease silos”. These broad campaigns need to be complemented by public awareness of the warning signs of stroke and the appropriate actions to take.

To fully address risk factors for stroke and other chronic diseases requires major systemic and social change. These are beyond the reach of any single government department or health partner. Major opportunities exist to improve patient outcomes by strengthening and integrating primary and secondary prevention in PEI.

At the clinical level primary prevention is carried out by identifying high-risk patients and treating their risk factors. On PEI, there are no standardized assessment tools to do an assessment of people at risk for stroke. Providers of primary prevention include physicians, nurses, dietitians, mental health therapists and others. The risk factors usually addressed are: smoking, high blood pressure, high blood cholesterol and diabetes. Many of these involve secondary prevention.

High blood pressure or hypertension is the most significant risk factor for stroke and is the most controllable risk factor. Evidence shows that 65% of all strokes are associated with high blood pressure.¹¹

PEI Integrated Stroke Strategy

CURRENT STATUS ON PRINCE EDWARD ISLAND

Prevention/Health Promotion of Stroke (con't.)

Meta-analysis indicates that reducing the diastolic blood pressure of a population by 5-6 mm Hg can cause the number of strokes to fall by 42% in just three years,¹² and that treating high blood pressure can prevent strokes in both older and younger adults.¹³

Diagnosis is the first and most critical step in the treatment of high blood pressure. However, there is little health promotion programming in PEI which focuses on prevention, detection or management of high blood pressure.

Persons who are candidates for secondary prevention include patients at very high risk of stroke, with and without symptoms of a stroke-related problem. Transient ischemic attacks (TIAs) are an important warning sign of stroke; however, on PEI, the number of TIAs is unknown. Awareness needs to be improved among both patients and care providers of the importance of TIAs and the urgency of taking action. No protocols exist to guide the care of those patients who seek medical attention from their family physician or at an emergency department.

The situation is similar for the other risk factors. Awareness is low and health care professionals do not have standardized assessment tools to identify candidates for secondary prevention.

Every ten minutes in Canada, someone dies or is disabled by stroke-- and the numbers are rising.

Heart and Stroke Foundation of Canada

PEI Integrated Stroke Strategy

CURRENT STATUS ON PRINCE EDWARD ISLAND

Emergency and Acute Care of Stroke

Establishing an organized system of stroke care would improve timely emergency and acute care of stroke patients on Prince Edward Island.

Presently, ambulance services transport patients with a suspected stroke to the nearest hospital, whether or not it is equipped with a CT scanner. Consequently, all seven PEI hospitals care for adults with stroke, with the majority of PEI's 200 stroke patients a year being managed by the Queen Elizabeth Hospital in Charlottetown and the Prince County Hospital in Summerside. These are the only Island hospitals equipped with CT scanners.

In 2003-2004, separations (hospital discharges) of stroke patients ranged from 2 to 114 per PEI hospital. Five hospitals each recorded fewer than 22 stroke patient separations (hospital discharges) during this period. Accommodating stroke patients in a more localized area allows staff to build expertise, and develop a team from a variety of disciplines to share best practices.

Thrombolytic therapy for stroke involves dissolving the blood clot that is causing the acute ischemic stroke with a medication called rt-PA. This treatment of acute stroke is not used in Prince Edward Island. Most stroke patients in the province are treated on general medical wards by a family physician, at times in consultation with an internist. There are no stroke units and there is only one full time neurologist practicing in PEI. Other health professionals like occupational therapists, physiotherapists, social workers, and speech-language pathologists are not consistently available in all seven hospitals, nor are any dedicated to stroke care rehabilitation.

A TIA is a serious warning sign of an increased risk of stroke. However, there is little recognition by patients, the public or health care providers that a TIA is as much of a medical emergency as an ischemic stroke.

Stroke costs the Canadian economy
\$2.7 billion a year in direct costs.

Heart and Stroke Foundation of Canada

PEI Integrated Stroke Strategy

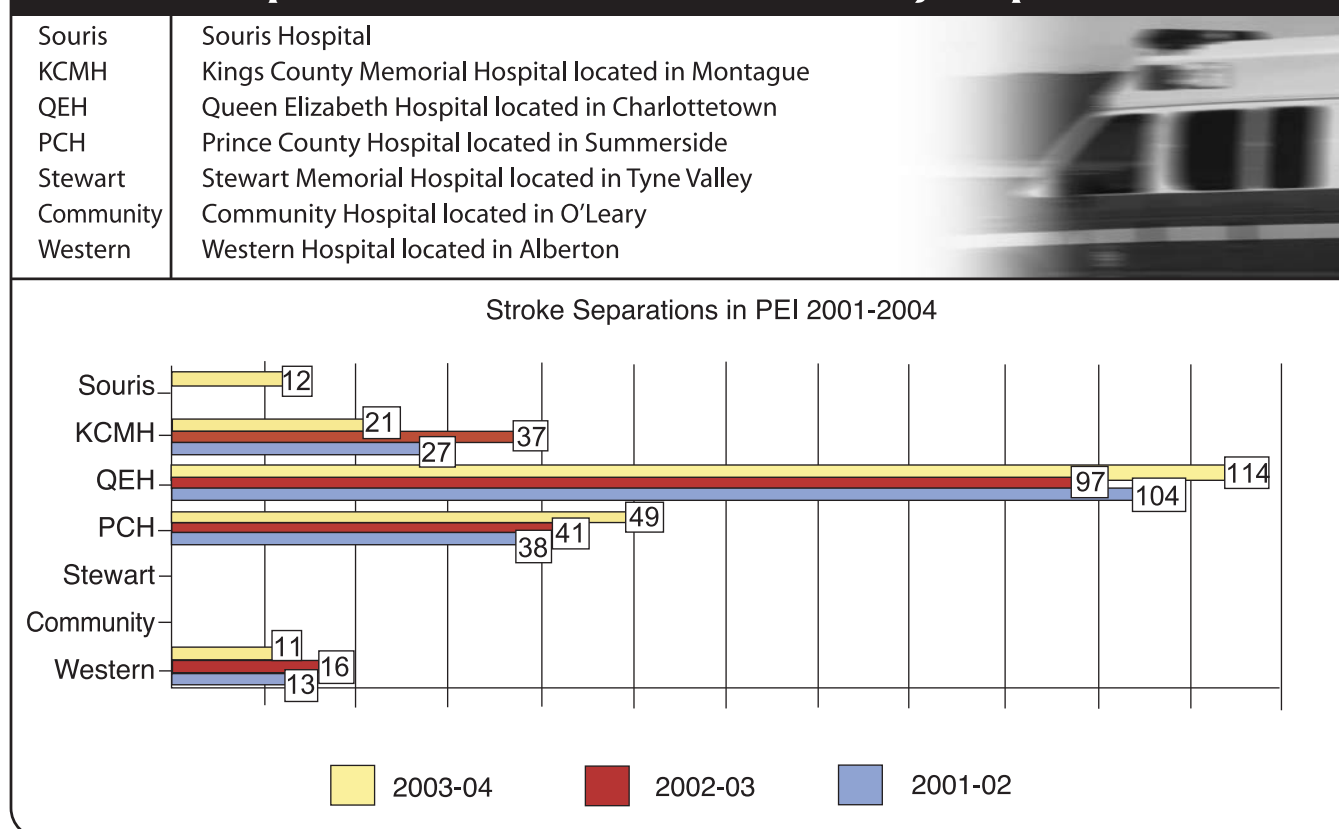
CURRENT STATUS ON PRINCE EDWARD ISLAND

Emergency and Acute Care of Stroke (con't.)

The following table shows Inpatient Separations (hospital discharges) with Most Responsible Diagnosis of Stroke for 2001/02, 2002/03, 2003/04 for each PEI hospital. The information is based on ICD-9 and ICD-10 codes from the CIHI data.

Please note that some data was suppressed due to low numbers.

Stroke Separations in PEI 2001-2004 - Listed by Hospital Location



	Souris	KCMH	QEH	PCH	Stewart	Community	Western
2003-04	12	21	114	49	-	-	11
2002-03	-	37	97	41	-	-	16
2001-02	-	27	104	38	-	-	13

TOTAL FOR 2003 – 04 207 TOTAL FOR 2002 – 03 191 TOTAL FOR 2001 – 02 182

Note: Due to the limitations and restrictions in gathering data, these numbers may be underestimated.

PEI Integrated Stroke Strategy

CURRENT STATUS ON PRINCE EDWARD ISLAND

Rehabilitation and Community Re-Integration of Stroke Survivors

A provincial stroke rehabilitation service is available at the Queen Elizabeth Hospital (QEH). It offers orthotic services, and has inpatient staffing ratios for nursing, occupational therapy, physiotherapy, and psychiatry approaching recommended levels. However, the staffing ratio for speech language pathology needs additional support, as well as clinical and neuropsychology, recreational therapy, and vocational counseling services.

Outside the QEH, a restorative care unit exists at the Prince County Hospital, and restorative care beds have been established at the Prince Edward Home. Elsewhere in the province, health care providers work with a mix of inpatient, outpatient, and home-based stroke survivors. The specialized rehabilitation services described above are insufficient and more resources are needed to provide the intense therapy needed for effective rehabilitation to those inpatient, out patient and home-based stroke survivors.

Resources for outpatient rehabilitative care are minimal at all hospitals in PEI. Outpatient services tend to consist of consultation and monitoring of a home program, rather than the several sessions of therapy a week necessary for intensive and effective rehabilitation. Wait times vary widely, from one to four weeks for occupational therapy, one to four months for physiotherapy, and one to ten months for speech language therapy. Wait times are much longer for chronic patients needing to re-access the system. The need for more dedicated resources for outpatient rehabilitation makes early supported discharge programs very difficult, and impedes the effectiveness of rehabilitation all along the continuum. Effective in-home rehabilitation is also not feasible with existing resources. It currently consists of the consultative and monitoring services provided by the Home Care system.

Secondary prevention education is an important part of stroke rehabilitation. The Provincial Rehabilitation Unit at the QEH provides weekly educational sessions for patients and families, while the Heart and Stroke Foundation of PEI distributes written educational information on stroke to stroke survivors. Due to the absence of a registry of stroke survivors in PEI, it is likely that this information is not reaching everyone who needs it.

Community-based rehabilitation resources that promote community re-integration and provide social and emotional support for stroke survivors and caregivers are also limited. Fortunately, stroke clubs are being established by the Heart and Stroke Foundation of PEI. In most parts of the province, however, the lack of accessible transportation makes it difficult for many stroke survivors to access health services and participate in community activities. Public facilities and recreation programs are not always accessible to people in wheelchairs, limiting access to services that could assist in maintaining mobility and functional skills, and providing peer support.

Over one-quarter of all strokes happen to people between 45 and 65 years of age. Without effective rehabilitation services, many of these people are unable to resume their previous roles in the workforce and community. Vocational rehabilitation is a complex process, and PEI's current continuum of care needs more resources to enable stroke survivors to make the transition from the health care system back to the labour force.

PEI Integrated Stroke Strategy

CURRENT STATUS ON PRINCE EDWARD ISLAND

Monitoring and Evaluation of Stroke

Prince Edward Island does not have any ongoing evaluation and monitoring systems specific to stroke. The only data system being applied to the stroke population in Prince Edward Island is the Canadian Institute of Health Information (CIHI) Discharge Abstract Database (DAD) on inpatient hospital services. This system includes basic demographic information (e.g. age, gender, region) and a limited number of outcomes (e.g. length of stay, discharge disposition, mortality).

PEI's population of seniors will double over the next 25 years. By 2020, one Islander in five will be over age 65.

Economics, Statistics, and Federal Fiscal Relations Division, PEI Provincial Treasury. Population Projections, 2003 (2005 - 19606/140990, 13.9%; 2020 - 28989/143153, 20.3%; 2030 - 37582/138641, 27.1%)

This system is not sufficiently comprehensive to serve the needs of stroke monitoring. It has no measures of impairment, disability or quality of life, and no ability to look at outcomes post-discharge -- constraining the scope to compare outcomes both within PEI and with other centers in Canada. The reliability of the data is limited by a lack of consistent diagnostic coding criteria by health care providers. The relevance of the data is also limited by the complete absence of a provincial data set for emergency and ambulatory care, and by the inability of the system to evaluate separate outcomes at each stage of the continuum of care (acute, rehabilitation, and convalescent). The data is not integrated with resource utilization and costing databases. Information is only periodically reported, and no group has the responsibility of analyzing the data for the stroke population. It is very difficult to modify the dataset to address identified needs, such as controllability.

The Department of Physical Medicine at the Queen Elizabeth Hospital in Charlottetown proposes the inclusion of the Provincial Rehabilitation Unit in the National Rehabilitation Data Set (NRS), which provides outcome measures and "benchmarking" for the majority of rehabilitation units involved in stroke rehabilitation in Canada. This initiative, currently awaiting approval from the QEH administration, would provide data on rehabilitation inpatient length of stay, discharge disposition, human resource use, functional disability, and impairment. Furthermore, complications post-discharge, disability and quality of life would be obtained three months after discharge. The Provincial Rehabilitation Unit has also been included as one of seven pilot sites for a national knowledge transfer study for stroke rehabilitation, Stroke Canada Optimization of Rehabilitation through Evidence (SCORE).



PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

The strategic recommendations set out below call for integrated, coordinated application of evidence-based best practices to the three domains of stroke care – prevention and health promotion, emergency and acute care, and rehabilitation and community re-integration. These domains must be supported and linked by systems of evaluation and monitoring, governance, communications, and human resource development. The recommendations emerge from ISSAC's gap analysis, are guided by its principles, and are aimed at fulfilling its vision and goals.

Stroke Prevention and Health Promotion

1) SUPPORT AND ASSIST EFFORTS BY ALL HEALTH PARTNERS TO ADDRESS POPULATION RISK FACTORS AND TO PROMOTE HEALTHY LIFESTYLES.

Chronic disease is a major health burden in PEI. Our systems are organized to focus on acute care. Prevention and community services lack adequate resources, but the recent emphasis on primary health care is raising awareness of this deficit.

Primary Prevention

The first link in the chain of prevention is public awareness of the risk factors for stroke, followed by an individual commitment towards healthier living, and empowered by supportive public policies and health promotion approaches.

Health partners working together to promote healthy lifestyles to Islanders can enhance the impact, effectiveness and clarity of messages, and save valuable resources by avoiding duplication of effort.

This support could take various forms:

- Provide information to health partners to assist them in incorporating stroke prevention messages and measures into their work.
- Encourage and facilitate health partners to incorporate assessments of stroke-related risk factors into their own work.
- Reinforce the importance of risk factor reduction and healthy living.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Stroke Prevention and Health Promotion (con't.)

2) DEVELOP AND IMPLEMENT A STRATEGY TO IDENTIFY AND REDUCE HYPERTENSION.

The strategy should include the following elements:

- Develop and implement a public awareness campaign on:
 - the stroke risk caused by high blood pressure;
 - the importance of checking blood pressure and maintaining it at a healthy level;
 - the importance of healthy living in preventing or reducing high blood pressure; and
 - the importance of complying with pharmacological management of hypertension.
- Provide complementary education to health care providers including physicians, nurses, dietitians, and pharmacists.
- Develop a partnership including pharmacies, health care providers, and community organizations to expand access to self-checking of blood pressure.

3) DEVELOP AND IMPLEMENT A COORDINATED PROVINCE-WIDE PUBLIC EDUCATION PROGRAM ON STROKE AWARENESS.

The awareness program should include messages and information specifically related to stroke awareness, including:

- the seriousness of stroke-related mortality and disability;
- the warning signs of stroke; and
- the need to treat stroke-related symptoms as an emergency and obtain care as soon as possible.

77% of Islanders can identify at least 2 stroke warning signs. Meanwhile the Canadian average is 59%.

Environics Omnibus 2005 Survey Results,
Heart and Stroke Foundation of Canada

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Stroke Prevention and Health Promotion (con't.)

4) ESTABLISH A PROVINCIAL STROKE PREVENTION CLINIC TO PROVIDE AN INDIVIDUALIZED, COMPREHENSIVE, INTERPROFESSIONAL APPROACH TO PRIMARY AND SECONDARY STROKE PREVENTION.

Secondary Prevention

The health promotion measures previously outlined must be complemented by more intensive prevention measures aimed at high-risk individuals. Secondary stroke prevention involves the early detection of disease, either when it produces symptoms or even before symptoms are noticed. The goal of secondary prevention is to prevent the disease from progressing to a stroke or to prevent another stroke (recurrence).¹⁴

Patients at high risk for stroke and those who have already had a stroke require specific approaches to disease management and care. A Stroke Prevention Clinic works with those people who have had a stroke or TIA or who have multiple risk factors for stroke. The goal of the Clinic is to provide early access to multidisciplinary assessment, treatment and referral. By implementing standard assessment tool (s) for primary and secondary prevention, those individuals at high risk would be identified through various means including Family Physicians/General Practitioners' offices visits, hospital admissions, emergency room visits, and rehabilitation programs. Referral protocols would be established to ensure that the Clinic's capabilities are targeted to those who are most likely to benefit from them, and to ensure effective collaboration between the Clinic and other resources such as diabetes services. Members of the Clinic team include:

- Advanced care nurses in stroke management
- Physicians interested in vascular disease prevention
- Physicians specializing in Neurology; and
- Other allied health professionals such as occupational therapists, speech language therapists, dietitians, etc.

In addition to providing counseling and therapies to referred patients, an adequately resourced Clinic may provide education about stroke to family members, healthcare providers, and related community and health organizations.

When someone is having a stroke, 41% of Islanders know to dial 911.

Environics Omnibus 2005 Survey Results,
Heart and Stroke Foundation of Canada

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Emergency and Acute Care

5) PROVIDE EMERGENCY STROKE CARE AT DESIGNATED HOSPITALS WHICH POSSESS THE FOLLOWING CHARACTERISTICS:

- 24/7 capabilities for CT scanning (Computerized Tomography),
- 24/7 capabilities for a radiologist interpretation of the CT scan, and
- 24/7 emergency department.

Currently, the Queen Elizabeth Hospital and the Prince County Hospital fulfill these characteristics.

6) ESTABLISH POLICIES AND PROTOCOLS GOVERNING PRE-HOSPITAL CARE. THIS INCLUDES THE ROLE OF PARAMEDICS IN ASSESSING ACUTE STROKE PATIENTS AND TRANSPORTING THEM TO THE NEAREST DESIGNATED HOSPITAL.

As noted earlier in this report, stroke is an emergency, and the more quickly optimal care is provided, the better the outcome. Optimal care today may include access to rt-PA (tissue plasminogen activator) therapy or “clot-buster drug,”¹⁵⁻²¹ and in future may include new time-dependent therapies currently still under development.

7) OFFER INTRAVENOUS rt-PA THERAPY FOR ACUTE ISCHEMIC STROKE TO THOSE WHO QUALIFY FOR SUCH CARE ACCORDING TO SPECIFIC rt-PA PROTOCOLS, AT DESIGNATED HOSPITALS IF DEEMED CLINICALLY APPROPRIATE AND SAFE BY THE TREATING PHYSICIAN.

Despite its potential adverse effects, thrombolysis (dissolving blood clots with medication, i.e. rt-PA) is the only emergency therapy for acute ischemic stroke currently available that may reverse the impact of stroke. While rt-PA has been used within Canada, there is still some controversy regarding its use and therefore it is not considered standard care in PEI, but rather an option for treatment of acute ischemic stroke.

The development and implementation of policies and protocols for pre-hospital and emergency care allows thrombolysis to be offered as a treatment option for stroke in PEI. Such care should be provided at the discretion of the attending physician, and only to patients who satisfy all inclusion criteria and do not have any exclusion criteria, preferably after consultation with a neurologist.

Up to about 10 years ago, nothing could be done about strokes, so there was no hurry to do anything. But we know now that “Time Is Brain”.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Emergency and Acute Care (con't.)

8) ESTABLISH AN ACUTE STROKE UNIT ON A SINGLE DESIGNATED MEDICAL UNIT AT THE QUEEN ELIZABETH HOSPITAL, RESPONSIBLE FOR PROVIDING PATIENTS FROM ALL OVER PEI WITH EQUAL ACCESS TO ACUTE STROKE CARE. THIS UNIT IS TO BE RESOURCED IN KEEPING WITH NATIONAL BEST PRACTICES.

A core element of organized stroke care is the establishment of dedicated stroke units, and provision of all stroke care only in those units. Evidence suggests that stroke patients who receive organized inpatient care in stroke units are more likely to be alive, independent, and living at home one year after a stroke than those who don't receive such care.²²⁻²³

Prince Edward Island's current incidence of stroke suggests that eight beds are required to meet the province's needs for acute care of stroke patients. This number provides a level of utilization that maintains clinical skills at a high level and maximizes the quality and cost-effectiveness of acute stroke care in PEI.²⁴

An Acute Stroke Unit requires the same capabilities as emergency care:

- written care protocols for pre-hospital and emergency services
- 24/7 emergency department services,
- 24/7 access to CT scanners and their interpretation.

Access to a neurologist is also a vital asset for a Stroke Unit. Currently, PEI's only neurologist is based at the Queen Elizabeth Hospital. As well, the QEH already cares for over half of all stroke patients in PEI. These factors make the location of an Acute Stroke Unit on an already existing medical unit at the QEH, the most suitable location to serve the province.

Table 1 outlines a three-level system for the acute and emergency care of stroke patients which encompasses the recommendations set forth by the Emergency and Acute Care task group.

Stroke Unit: a geographical location within a hospital designated for stroke patients who are in need of acute and rehabilitation care provided by the skilled professionals associated with the unit.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Emergency and Acute Care (con't.)

TABLE 1: THREE-LEVEL ACUTE STROKE AND EMERGENCY CARE SYSTEM

SETTING	LOCALE	TYPE OF PATIENT	RESOURCES NEEDED
COMMUNITY	Ambulance services within the community Community hospitals	Ambulance Services and community hospitals receiving *patients and **"walk in" patients would ensure the emergency transport of all stroke patients to designated hospitals	<ul style="list-style-type: none"> - Policies and direct transport for ambulances - Protocols for community hospitals to ensure emergency transfer of all stroke patients to the closest designated hospital (QEH or PCH) - Education for paramedics on recognizing the signs of an acute stroke
PROVINCIAL	Queen Elizabeth Hospital and Prince County Hospital as the designated hospitals	Those patients with acute stroke, whether or not eligible for thrombolytic therapy, but not in need of neurosurgery	<ul style="list-style-type: none"> - Stroke protocols for emergency departments, and acute care - Ability to offer rt-PA to suitable candidates at the discretion of the treating physician, resources needed are: <ul style="list-style-type: none"> - 24/7 CT Scanner - 24/7 Radiologist interpretation - 24/7 Emergency Department - Mechanism in place for immediate consultation with a neurologist - Transfer protocols to the Acute Stroke Unit at QEH
REGIONAL	Outside PEI	All acute stroke patients who may require neurosurgery transfer outside PEI to a tertiary care facility	<ul style="list-style-type: none"> - Protocols and policies for patients to transfer outside the province

* Patients: Patients who are airway compromised should be taken to the closest acute care facility for stabilization and then transported to the closest designated hospital.

** "Walk in's" are patients who "walk in" or transport themselves.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Emergency and Acute Care (con't.)

9) DEVELOP, ADOPT AND COMMUNICATE DOCTORS' ORDERS/CARE PLANS/PATHWAYS/ PROTOCOLS ON DEALING WITH MANAGEMENT OF TRANSIENT ISCHEMIC ATTACKS (TIAS OR "MINI-STROKES") AND ACUTE STROKE, IN THE EMERGENCY AND ACUTE CARE SETTING.

Best practice guidelines recommend establishment of protocols for investigation and management of stroke and TIA patients. Clinical practice stroke care guidelines are evidence- based.²⁵

Incorporating measurement of Canadian quality-of-care indicators into protocols and care plans will improve stroke care and provide parameters for ongoing monitoring of stroke care.²⁶⁻²⁷

10) CLEARLY DEFINE THE ROLES AND RESPONSIBILITIES OF KEY PERSONNEL INVOLVED IN EMERGENCY, ACUTE AND REHABILITATIVE CARE FOR STROKE PATIENTS.

Established protocols will address the quality of care administered to the stroke patient from first contact with health care providers, through the emergency department, acute care hospitalization, rehabilitation and re-integration into the community. Compliance with written protocols ensures that stroke care is organized, current, integrated throughout the province, and incorporates principles based on best practice.

Every year about 15,000 Canadians have a Transient Ischemic Attack (TIA), also known as a mini-stroke. However, because many TIAs go undetected, and therefore unreported, this is likely an underestimate.

www.heartandstroke.ca

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Rehabilitation and Community Re-Integration

Stroke is the leading cause of acquired adult disability. Early, organized, coordinated, interprofessional rehabilitation significantly reduces death, disability, length of stay, dependency, and institutionalization after stroke.²⁸⁻²⁹

Long term follow-up indicates improved outcomes and quality of life for years after stroke.³⁰

Generally, outcomes are optimized when stroke patients begin intensive rehabilitation within one to two weeks of stroke onset.³¹

While virtually all stroke survivors benefit from early supportive care and rehabilitation, those with only mild disabilities could have their needs met at the community level if appropriate resources were available. Those with moderate or severe disabilities respond particularly well to the intensive rehabilitation and care provided by specialized stroke rehabilitation units.³²⁻³⁵

11) ADEQUATELY STAFF AND RESOURCE A COORDINATED MULTI-LEVEL SYSTEM OF STROKE REHABILITATION AND COMMUNITY RE-INTEGRATION FOR PEI, INCLUDING DEDICATED BEDS ON THE PROVINCIAL REHABILITATION UNIT, PLUS OUTPATIENT AND IN-HOME SERVICES FOR STROKE REHABILITATION.

An organized, multi-level stroke rehabilitation structure -- with stroke rehabilitation professionals, in-patient rehabilitation beds, and ambulatory and in-home rehabilitation services -- is essential to optimal stroke rehabilitation in Prince Edward Island. Ontario, Alberta, and Nova Scotia have set up varying forms of three-level rehabilitation systems. Given PEI's size and demographics, a three-level rehabilitation system is envisaged as set out in **Table 2**.

We can and must do a better job of preventing strokes, treating them effectively, and reintegrating people back into their communities.

Charlotte Comrie, Executive Director
Heart and Stroke Foundation of PEI

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Rehabilitation and Community Re-Integration (con't.)

TABLE 2: THREE-LEVEL STROKE REHABILITATION CARE SYSTEM

SETTING	TYPE OF PATIENT	RESOURCES NEEDED	ADDITIONAL REQUIREMENTS
COMMUNITY	Stroke survivors living at home, in long-term care settings and in other community settings	<ul style="list-style-type: none"> - Expertise in local hospital-based outpatient services - Multidisciplinary Home Care services - Access to therapists in long-term care facilities 	Outpatient services such as: <ul style="list-style-type: none"> - adult day programs - support groups - adapted housing - programs to overcome social isolation/mental health issues - appropriate physical fitness programs and facilities - return to work programs
PROVINCIAL	Patients who require inpatient and/or outpatient rehabilitation programming	<ul style="list-style-type: none"> - Specialized rehabilitation expertise - Minimum of 6 stroke rehabilitation beds - Interprofessional stroke team - Physiatrist - Neurologist (consulting) 	Inpatient and Outpatient Programs <ul style="list-style-type: none"> - Outreach and expert consultation with providers in other services/programs, ie: home, long-term care, etc. - Links with acute care services - Transfer protocols and guidelines for care
REGIONAL	Those stroke patients requiring highly specialized tertiary rehabilitation available outside PEI	<ul style="list-style-type: none"> - Specialized rehabilitation expertise - Interprofessional stroke team - Minimum of 15 stroke rehabilitation beds - Stroke rehabilitation physiatrist - Neurologist (consulting) 	<ul style="list-style-type: none"> - Protocols and policies in place for the transfer of patients - University Affiliation - Stroke Researchers - Knowledge Transfer Initiatives - Educational support - Collaborative Capacity - Patient Care Navigation Protocols - Telehealth Capacity

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Rehabilitation and Community Re-Integration (con't.)

This model provides all the components of stroke rehabilitation care proven to improve patient outcomes. Research and experience elsewhere indicates that this system provides reasonable access over time, in addition to optimal quality of care, and would not lead to a net increase in health care costs. The cost of the resources would be offset by savings from improved outcomes and from reduced convalescent and institutional care. An integrated stroke rehabilitation and community re-integration system includes:

- resources for stroke rehabilitation, including in-patient beds and outpatient and in-home services;
- appropriate and adequate staffing along the continuum of rehabilitation and community re-integration;
- a provincial triage and referral system that is evidence-based, clear, and transparent;
- multiple, easily identified access points into the rehabilitation system that are clearly communicated and promoted to the public and to health and social service providers;
- education and support to family and caregivers to empower and support them; and
- provision for re-entry to rehabilitation if required.

Research indicates that a Stroke Rehab Unit should consist of at least six beds, the minimum size required to provide the staffing and utilization levels for optimal patient outcomes. The most suitable site is the Provincial Rehabilitation Unit at the Queen Elizabeth Hospital. This site would serve a target population of stroke survivors who are medically stable, able to tolerate one to three hours of daily therapy, and require treatment by two or more rehabilitation disciplines.

Rehabilitation care staff includes a core team of physicians, nurses, physiotherapists, occupational therapists, speech language pathologists, and social workers. Access to an extended team including clinical dietitians, clinical psychologists, recreation therapists, psychiatrists, pharmacists, chaplains, and the Heart and Stroke Foundation of PEI is also needed. These resources need to be available at both the provincial and community levels.

Community level stroke rehabilitation services serve a diverse population of stroke survivors, including those who are only mildly disabled, those who have recently been discharged from in-patient care, and those with multiple medical issues who are best served by low intensity, long duration, “slow stream” services rather than intensive rehabilitation. These services would be provided through a variety of channels, including in-home care, institutions including outpatient departments, long term care facilities, and primary care settings.

12) DEVELOP A SYSTEM WITH GUIDELINES TO HELP PATIENTS AND THEIR FAMILIES NAVIGATE MORE SMOOTHLY ALONG THE CONTINUUM OF STROKE CARE.

Evidence-based clinical guidelines, navigation points and policies are needed to facilitate easy movement through the levels and care points for stroke rehabilitation and community integration. A stroke coordinator working with community, provincial, and Regional centres would develop these protocols.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Rehabilitation and Community Re-Integration (con't.)

13) MANDATE PROVINCIAL USE OF OBJECTIVE ASSESSMENT TOOLS FOR REHABILITATION WHICH ARE SENSITIVE TO THE ISSUE OF STROKE PATIENTS.

A province-wide stroke rehabilitation information system, integrated into the provincial health information system, is necessary to evaluate effectiveness, efficiency, accessibility, acceptability, quality assurance and outcome measurement. Use of objective assessment tools enables continuous quality improvement, increases accountability and facilitates planning. Various well-recognized, reliable and valid tools exist to support such a system, including the Functional Independence Measure and the Re-Integration to Normal Living Index. Data should be monitored by a provincial monitoring group and reported to both system decision-makers and other stakeholders on a regular basis.

14) DEVELOP DEMONSTRATION PROJECTS TO IDENTIFY, APPLY, AND ADAPT BEST PRACTICES IN PEI FOR STROKE REHABILITATION AT HOME AND IN LONG-TERM CARE FACILITIES.

More research is needed to identify best practices for both in-home rehabilitation and co-ordination of stroke rehabilitation in the transition from hospital to community, particularly in rural settings. Research of this kind leads to better stroke care both directly through use and refinement of best practices, and indirectly by enhancing professional development and retention of expertise among physicians and other health care providers.

Each stroke is different. How well you recover from a stroke depends upon many factors including how much and what parts of the brain were damaged, and your health prior to the stroke. The work you do with your rehab team and support from family and friends are also important to your recovery.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Evaluation and Monitoring

The development of integrated, comprehensive clinical and administrative databases to monitor outcomes and progress are significant to an effective health care system. Increasingly, accountability is an expectation in healthcare delivery. Therefore a strategy for evaluation and monitoring is essential. The outcomes of the evaluation process will shape PEI's stroke care strategies through interpretation of outcome measures, their regular communication to key stakeholders and subsequent system refinement.

15) ESTABLISH A BROADLY REPRESENTATIVE STROKE MONITORING AND EVALUATION IMPLEMENTATION TEAM TO CARRY OUT THE DETAILED DESIGN OF PEI'S STROKE MONITORING AND EVALUATION SYSTEM.

Systems for monitoring and evaluating stroke care are complex and evolving rapidly. These factors, in conjunction with the need to ensure a comprehensive, integrated system across the continuum of care, point to a need for an ongoing, representative mechanism to carry this aspect of the Stroke Strategy to the next stage of development. A team including information technologists, program evaluation experts, clinical and community representatives from all aspects of stroke care (prevention, acute care and rehabilitation), and the Department of Health is recommended. Responsibilities include:

- Develop *key indicators supported by appropriate data sets.
- Ensure timely review and interpretation of data.
- Establish formal reporting policies to ensure accountability.
- Identify opportunities for research and quality monitoring.
- Ensure health care providers can access relevant data.
- Develop efficient and cost-effective processes for data collection and dissemination.
- Make recommendations for changes in the monitoring system.
- Make recommendations for stroke care indicator evaluation and development of new indicators for quality improvement initiatives.

** The Canadian Stroke Strategy (CSS) has developed core indicators that cover the stroke continuum of care, i.e. public awareness through to community re-engagement, which PEI may use.*

Canadians spend a total of 3 million days in hospital a year because of stroke.

Heart and Stroke Foundation of Canada

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Evaluation and Monitoring (con't.)

16) ESTABLISH AN EVALUATION FRAMEWORK FOR THE STROKE STRATEGY INITIATIVE.

Pending establishment of a Provincial Monitoring and Evaluation Implementation Team, there will be a need to develop performance indicators for the implementation process. These may utilize qualitative (e.g. focus groups, structured interviews) and quantitative research methodologies.

17) ESTABLISH A PEI STROKE RESEARCH INTEREST AND KNOWLEDGE EVALUATION GROUP (STRIKE GROUP) TO FOSTER REGIONAL AND NATIONAL COLLABORATION.

A number of researchers both within and outside PEI are investigating various aspects of stroke prevention and care. Development of a network among these researchers would facilitate and encourage effective collaboration. It may also significantly enhance the level of funded research projects in PEI.

Research synergies created by partnerships can lead to major advances in stroke prevention, treatment and recovery. Ultimately, this innovative approach could improve the quality of life for stroke survivors and their families.

PEI Integrated Stroke Strategy

RECOMMENDATIONS AND RATIONALE

Governance and Implementation

18) MAKE THE IMPLEMENTATION OF THIS STRATEGY A HEALTH PRIORITY.

As outlined in this strategy, stroke is an emergency often leading to death or long-term disability, which exacts an enormous human, social and economic cost. Unless action is taken, that cost will grow as the population ages and as risk factors increase. Research and best practice show great promise for better outcomes, clearly demonstrating that Prince Edward Island can:

- i. reduce the incidence of stroke
- ii. reduce the mortality rate of stroke
- iii. reduce long-term institutional care of stroke
- iv. reduce in-patient length of stay of stroke
- v. improve the functional outcomes of stroke
- vi. and improve the quality of life for stroke survivors and caregivers.

These outcomes are attainable – but they can only be achieved through coordinated action, grounded in a comprehensive, integrated strategy and backed by the commitment of all partners.

19) MANDATE A MULTIDISCIPLINARY BODY OF STROKE HEALTH PARTNERS TO ADVISE ON THE IMPLEMENTATION OF THE RECOMMENDATIONS.

Continued leadership by a comprehensive body representing stakeholders is vital in order to advance the strategy. The Integrated Stroke Strategy Advisory Committee (ISSAC) believes that its current structure and membership have been effective in bringing a broad range of expertise and knowledge to the development of this strategy to improve stroke care in PEI.

There are opportunities to close the ‘gap’ between best practice and what is currently being done.

PEI Integrated Stroke Strategy

AND NOW...

The belief that stroke is not preventable nor treatable is not true. Research shows that many strokes can be prevented, and of those that do happen, many can be effectively treated.

Despite the sophistication of our medical facilities and the best efforts of our health care providers here on PEI, with a few exceptions our current health care system is at risk of falling behind national standards for stroke care. Research indicates there are short-term and long-term benefits to patients when their care is integrated and organized.

A new era in stroke prevention, treatment and recovery is possible. With cooperation and collaboration among clinicians, policy makers, and the health care system, we can create a much needed, improved system for stroke prevention and care on PEI.

REFERENCES

1. <http://ww2.heartandstroke.pe.ca/>
2. Goldstein LB, Adams R, Becker K, Furberg CD, Gorelick PB, Hademenos G, Hill M, Howard G, Howard V, Jacobs B, Levine SR, Mosca L, Sacco RL, Sherman DG, Wolf PA, del Zoppo GJ. Primary prevention of ischemic stroke: A statement for healthcare professionals from the stroke council of the American Heart Association. *Stroke*, 2001; 32:280-299.
3. Sacco RL. Identifying patient populations at high risk for stroke. *Neurology* 1998;51 (suppl 3):S27-S30
4. <http://ww2.heartandstroke.pe.ca/>
5. Linda van Til, *Prince Edward Island's Second Report on Common Health Indicators*, PEI Health and Social Services, December 2004, p. 62
6. *Annual Results, 1999-2004*, Canadian Tobacco Use Monitoring Survey. Health Canada. http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/research-recherche/stat/ctums-esutc/prevalence/prevalence_e.html
7. Heart and Stroke Foundation Survey – Annual Report on Canadians Health. Released Feb. 2006.
8. Tjepkema, M. and Shields, M., *Measured Obesity: Adult Obesity in Canada*, Statistics Canada, Cat. No. 82-620-MWE2005001, July 2005.
9. "‘Silent’ strokes lead to dementia," *BRAINwaves*, newsletter of the Canadian Stroke Network, June 2005, p. 3
10. Sacco RL. Identifying patient populations at high risk for stroke. *Neurology* 1998;51 (suppl 3):S27-S30
11. <http://ww2.heartandstroke.pe.ca/>
12. Colin R, Peto R, MacMahon S, et al. Blood pressure, stroke and coronary heart disease. Part 2, Short-term reduction in blood pressure: Overview of randomized drug trials in their epidemiological context. *Lancet* 1990; 335:827-838.
13. SHEP Cooperative Research Group. Prevention of Stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: Final results of the Systolic Hypertension in the Elderly Program. *JAMA* 1991;265:3255-3264.
14. *A Guide to Developing Stroke Prevention Clinics*, Heart and Stroke Foundation of Ontario, 2001.p. 7
15. National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. Tissue plasminogen activator for acute ischemic stroke. *N Engl J Med* 1995;333:1581-7;
16. Hacke W, Kaste M, Fieschi C, Toni D, Lesaffre E, von Kummer R, et al. Intravenous thrombolysis with recombinant tissue plasminogen activator for acute hemispheric stroke. European Cooperative Acute Stroke Study (ECASS). *JAMA* 1995;274:1017-25;
17. Hacke W, Kaste M, Fieschi C, von Kummer R, Davalos A, Meier D, et al. Randomized double-blind placebo-controlled trial of thrombolytic therapy with intravenous alteplase in acute ischemic stroke (ECASS II). Second European-Australasian Acute Stroke Study Investigators. *Lancet* 1998;352:1245-51;
18. Albers GW, Clark WM, Madden KP, Hamilton SA. ATLANTIS trial: results for patients treated within 3 hours of stroke onset. Alteplase Thrombolysis for Acute Noninterventional Therapy in Ischemic Stroke. *Stroke* 2002;33:493-5;

REFERENCES

19. Clark WM, Wissman S, Albers GW, Jhamandas JH, Madden KP, Hamilton S. Recombinant tissue-type plasminogen activator (alteplase) for ischemic stroke 3 to 5 hours after symptom onset. The ATLANTIS Study: a randomized controlled trial. Alteplase Thrombolysis for Acute Noninterventional Therapy in Ischemic Stroke. *JAMA* 1999;282:2019-26;
20. Marler JR, Tilley BC, Lu M, Brott TG, Lyden PC, Grotta JC, et al. Early stroke treatment associated with better outcome: the NINDS rt-PA Stroke Study. *Neurology* 2000;55:1649-55;
21. Hacke W, Donnan G, Fieschi C, Kaste M, von Kummer R, Broderick JP, et al; ATLANTIS Trials Investigators; ECASS Trials Investigators; NINDS rt-PA Study Group Investigators. Association of outcome with early stroke treatment: pooled analysis of ATLANTIS, ECASS, and NINDS rt-PA stroke trials. *Lancet* 2004;363:768-74.
22. Rudd A.G., Hoffman A, Irwin P, Lowe D, and Pearson M. G. Stroke Unit Care and Outcome: Results from the 2001 National Sentinel Audit of Stroke (England, Wales, and Northern Ireland) *Stroke* 2005 36: 103 – 106.
23. Stroke Unit Trialists' Collaboration. Organized inpatient (stroke unit) care for stroke Cochrane Database of Systemic Reviews 2001, Issue 3. Art. No.: CD000197.DOI:10.1002/14651858.CD000197
24. Langhorne P, Dennis M. *Stroke Units: An evidence based approach*. London: BMJ Books 1997
25. Best practice guidelines for stroke care: A resource for implementing optimal stroke care. Heart and Stroke Foundation of Ontario 2003
26. The Canadian Stroke Quality of Care Study: establishing indicators for optimal acute stroke care *CMAJ* Lindsay et al. 172: 363
27. M. Patrice Lindsay, Moira K. Kapral, David Gladstone, Robert Holloway, Jack V. Tu, Andreas Laupacis, and Jeremy M. Grimshaw. The Canadian Stroke Quality of Care Study: establishing indicators for optimal acute stroke care *CMAJ* 2005 172: 363-365; doi:10.1503/cmaj.045310
28. Teasell R, Doherty J. How does rehabilitation compare to other stroke therapies? Presented, Canadian Assn of Physical Medicine and Rehabilitation, Halifax, June 2001.
29. Bagg S, Pombo AP, Hopman W. Effect of age on functional outcomes after stroke. *Stroke* 2002; 33: 179-185
30. Indredavik B, Bakke F, Slordahl SA, Rokseth R, Haheim LL. Stroke Unit unit treatment improves long-term quality of life. A randomized controlled trial. *Stroke* 1998; 29:895-899
31. Langhorne P, Dennis M. *Stroke Units: An evidence based approach*. London: BMJ Books 1997
32. Kalra L. The influence of stroke unit rehabilitation on functional recovery from stroke. *Stroke* 1994; 25: 821-825.
33. Stineman M, Granger CV. Outcome, efficiency and time-trend pattern analysis for stroke rehabilitation. *Am J Phys Med & Rehabil* 1998; 77:193-201.
34. Alexander M. Stroke rehabilitation outcome: A potential use of predictive values to establish levels of stroke. *Stroke* 1994; 25:128-134
35. Oczkowski WJ, Barreca S. The functional independence measure: its use to identify rehabilitation needs in stroke survivors. *Arch Phys Med Rehabil* 1993; 74:1291-4

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MARILYN BARRETT

Director of Acute and Continuing Care,
Kings Health Region

NOLLAIG BONAR

Occupational Therapist, Home Care and Support,
Queens Region Home Care

RICK BURGER

Speech Pathologist, QEH

JUDI GOSBEE

Rehab Physiotherapist, QEH

DR. EDMUND HARRISON

Physiatrist, Dept of Physical Medicine, QEH

RACHELLE HUGHES

Rehab Occupational Therapist, QEH

THERESA KENNY

Stroke Survivor, Mt. Stewart

MARION MACDONALD

Nurse, Unit #7 Rehab Unit, QEH

MELVA O'CONNOR-RAFUSE

Social Worker, QEH

TRALLAWNY O'MEARA

Restorative Care Physiotherapist, PCH

ANET WILLIAMSON

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EVALUATION AND MONITORING TASK GROUP

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Project Coordinator, Atlantic Health Promotion
Research Centre, Dalhousie University

DR. KIM CRITCHLEY

Dean of Nursing, School of Nursing, University of PEI

CATHERINE WALSH

Director of Utilization, Provincial Health Services
Authority, Charlottetown

APPENDIX ONE

ACUTE TREATMENT SUB-COMMITTEE OF THE ACUTE TASK GROUP

Contact Person

MARIDEE GARNHUM

Nurse Manager, Medical Unit # 8, QEH

Membership

RICK BURGER

Speech Language Pathologist, QEH

MARY HARRIS

Nurse Manager, Medical Unit, PCH

DR. REG HUTCHINGS

Neurologist, Charlottetown

DR. MIKE IRVINE

Internist, PCH

DR. DAVID STEWART

Family Practitioner, Cornwall

EMERGENCY MANAGEMENT SUB-COMMITTEE OF THE ACUTE TASK GROUP

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ESTHER CURRIE

Nurse Clinical Educator, Emergency Dept., QEH

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DR. GORDON BECK

Emergency Room Physician, QEH

JANE MACDONALD,

Nurse Manager, Emergency Dept., PCH

DR. STEVEN MACNEILL

Emergency Room Physician, PCH

PRE-HOSPITAL SUB-COMMITTEE OF THE ACUTE TASK GROUP

Contact Person

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Clinical Educator, Emergency Dept., QEH

GERARD HOLLAND

Representative for PEI Ambulance Operators Association

CLAUDE GAVIN

Vice-Chair, Emergency Medical Services Board

Representative for Emergency Medical

Services (EMS) Board

DOUG MACDONALD

Alternate (EMS) rep.

Representative for Emergency Medical Services Board

TED MACPHERSON

Paramedic, Charlottetown

LITERATURE SEARCH SUB-COMMITTEE OF THE REHABILITATION AND COMMUNITY RE-INTEGRATION TASK GROUP

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RACHELLE HUGHES

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MELVA O'CONNOR-RAFUSE

Social Worker, QEH

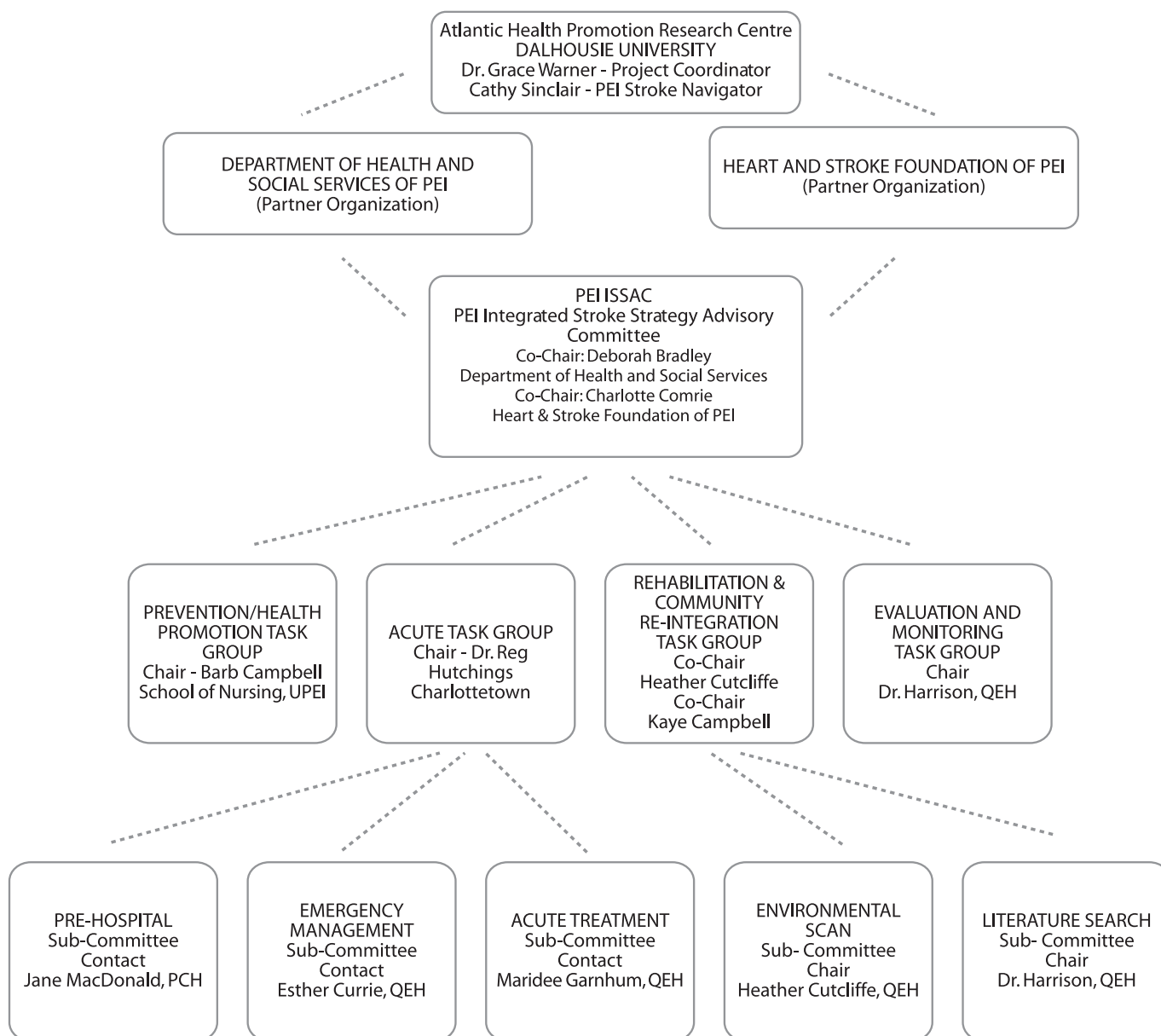
TRALLAWNY O'MEARA

Restorative Care Physiotherapist, PCH

ANET WILLIAMSON

Stroke Survivor, Charlottetown

ISSAC ORGANIZATION CHART



REHABILITATION AND COMMUNITY RE-INTEGRATION ENVIRONMENTAL SCAN

	Hospitals (6)	Rehab & Restorative Care (2)	QEH & PCH OT & PT Outpt Service (4)	Home Care (3)	Private Practice (5)	Longterm Care (6)	Other (5)
Provide Service	Yes - 100%	Yes - 100%	Yes - 100%	Yes – 100%	Yes - 100%	Yes - 100%	Yes - 80%
Dedicated	No - 100%	No - 100%	No - 100%	No - 100%	No - 100%	No - 100%	No - 100%
Staffing	nsg adequate, lack of rehab clinicians		No outpt rehab program	Lack of rehab clinicians, SW	support staff	Lack of rehab clinicians,	minimal # rehab clinicians
Service Delivery	Team - 100%	Team - 100%	Single service	Team - 100%	Single service	Team	Yes - 80%
Service	Mainly assessment & education, minimal programming, some consultation	Provide full service - assessment, education, programming, caregiver support, etc	Mainly assessment, education, and home program	Mainly assessment, education and consultation	Mainly assessment, education, and home program	Mainly assessment, consultation and activities	80% do assessment, some education and programming
Guidelines/ protocols	No - 100%	No - 100%	No - 100%	No - 100%	No - 80%	No - 100%	No - 80%
# of Referrals	Data incomplete	65 ;10	10 - 18	Data incomplete	10-15 x 2; <4 x 3	Data incomplete	
Age Range	35-80+x2; 65+x4	*Average age: 69.6; 80	80% 50-80; 12+	40-89	40-75	mainly 65+	48+
Referral Sources (not #, who)	Dr. - 100%	Dr. -100%	Dr - 100%; self & other 50%	Dr. , self, other - 100%	Dr. & self - 80%	Dr. 100%	Dr. & other - 80%; self –100%
Access Criteria	No - 100%	Yes - 100%	Yes - 100%	Yes – 100%	Yes - 60%	Yes - 100%	Yes - 80%
Waiting List	No - 100%	Yes - 100%	Yes - 100%	No - 66%	No - 80%	Yes - 66%	No - 80%
Limits to Rx	staffing & time	staffing	staffing & frequency	staffing & frequency	\$. time, space	Staffing	No - 60%
Adequate Info	Yes - 66%	Yes - 80%	Yes -50%	No - 66%	Yes - 75%	Yes - 80%	Yes - 80%
Transition	Yes - 100%	Yes - 66%	Yes - 50%	Yes - 66%	Yes - 100%	Yes - 66%	Yes - 85%

NOTES
