THE IMPACT OF MOVING TO STROKE REHABILITATION BEST PRACTICES IN ONTARIO

EXECUTIVE SUMMARY

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9/10/2012

Executive Summary

Background

Ontario's Ministry of Health and Long-Term Care is actively seeking strategies to reduce the burden of "ER/ALC" on Ontario's healthcare system. As part of this initiative, the Rehabilitation and Complex Continuing Care Expert Panel (RCCCEP) was established in 2010 to explore the potential impact of rehabilitation on system efficiency and reducing hospitalization. The RCCCEP focused on four rehabilitation sub-groups: stroke, hip fracture, hip and knee replacement, and acquired brain injury. Of these four groups, stroke patients are the main cause of Alternate Level of Care (ALC) days and consume the largest number of rehabilitation resources annually. As the provincial agency responsible for stroke prevention and care, the Ontario Stroke Network (OSN) was engaged to support the RCCCEP in recommending stroke rehabilitation best practices and established the Stroke Reference Group (SRG) consisting of rehabilitation experts and stakeholders from across the province. The SRG recommended stroke rehabilitation[a] and patient-flow best practices in support of the mandate of the RCCCEP. In November 2011, the RCCCEP, in accordance with the Ontario Stroke Network's SRG, accepted the following recommendations pertaining to stroke rehabilitation in Ontario:

- ✓ Timely transfer of appropriate patients from acute facilities to rehabilitation
  - Ischemic strokes to rehabilitation by day 5 on average
  - Hemorrhagic strokes to rehabilitation by day 7 on average
- ✓ Provision of greater intensity therapy in inpatient rehabilitation
  - 3 hours of therapy per day
  - 7-day a week therapy
- ✓ Timely access to outpatient/community-based rehabilitation for appropriate patients
  - Early Supported Discharge with engagement of CCAC allied health professionals
  - Mechanisms to support and sustain funding for outpatient and/or community-based rehabilitation
  - 2-3 outpatient or Community-based allied health professional visits/ week (per required discipline) for 8-12 weeks
  - In-home rehabilitation provided as necessary
- ✓ Ensure that all rehabilitation candidates have equitable access to the rehabilitation they need

Objective

The purpose of this report is to estimate the potential economic impact of adopting the proposed stroke rehabilitation best-practice recommendations in Ontario. The report is designed to build a high-level, and conservative, case for promotion of best-practice and to broadly demonstrate the potential economic impact from an Ontario-wide perspective.

[a] Based on the Canadian Best Practice Recommendations for Stroke Care

Chapter 1 – Acute Care

The OSN's Stroke Reference Group (SRG) recommends that patients in need of post-stroke rehabilitation (or with sufficient independence to return home) be transferred to the appropriate setting by day 5 if they have experienced an ischemic stroke (or TIA) and day 7 if a hemorrhagic stroke. In 2010, 9591 patients with ischemic stroke (or TIA) and 1072 patients with hemorrhagic stroke were discharged from acute care to inpatient rehabilitation or home. Collectively, these 10,663 patients occupied 90,590 acute bed days, 43% of which (18,605 ALC bed days and 20,256 additional bed days) are in excess of the recommended target day for transfer. Had these patients been transferred from acute care by day 5 or 7 (as recommended), approximately $22M of acute care costs could be avoided. These savings could then be applied to support stroke rehabilitation best practices and other facets of recovery (e.g. prevention, community reintegration, caregiver support, transportation).

The OSN's SRG also recommends that patients currently admitted to "slow-stream" rehabilitation (in Complex Continuing Care (CCC) or other programs) be transferred to inpatient rehabilitation, where the appropriate intensity of service can be provided. In 2010, 355 patients with stroke were discharged from acute care to CCC and ultimately home. Assuming that these patients could have been discharged to inpatient rehabilitation by day 7 on average, an additional 6,000 acute bed days and $3.5M could have been made available.

Summary
Estimates suggest that better application of stroke best-practice related to earlier transfer to rehabilitation holds the potential to make nearly 45,000 acute bed days available annually and free up nearly $26M annually to support stroke patients to reintegrate into the community and improve chronic disease management.

Chapter 2 – Inpatient Rehabilitation

According to best practice, the SRG recommends that inpatient rehabilitation facilities intensify rehabilitation to provide 3 hours of therapy per day, 7-days a week with the goal of improving patient outcomes and reducing time spent in rehabilitation.

To evaluate the potential economic impact of better application of best practice in the inpatient rehabilitation sector, the following factors were accounted for (based on best-evidence when possible and expert opinion otherwise):

- Earlier transfer from acute care (by day 5 or 7) could lead to patients requiring a longer Length of Stay (LOS) in inpatient rehabilitation
- Admitting patients to inpatient rehabilitation in lieu of CCC would contribute to more severely disabled patients in inpatient rehabilitation, but the LOS of patients in inpatient rehabilitation would be less than what is currently experienced in CCC

- Many patients with milder impairment could have their inpatient rehabilitation LOS reduced or eliminated altogether through better access to outpatient and community-based rehabilitation
- Greater therapy intensity (3-hours daily and weekend therapy) would lead to more rapid recovery during rehabilitation and reduced LOS
- Additional therapy staff (PT, OT, SLP) would need to be hired to facilitate greater therapy intensity

Based on 2010 data from the National Rehabilitation Reporting System (NRS), it is estimated that 16,927 inpatient rehabilitation bed days could be made available by eliminating or reducing LOS through enhancing outpatient/community rehabilitation and greater therapy intensity. However, these bed day savings will be offset by admitting severe stroke patients currently served in CCC to inpatient rehabilitation. This would require 17,998 inpatient rehabilitation bed days, but allow for the elimination of approximately 29,962 CCC bed days annually. The net economic impact of this shift in patient flow is estimated to lead to ~$16M in annual savings.

In order to accommodate the need for greater therapy intensity in inpatient rehabilitation, estimates suggest that 123 additional therapy staff members would need to be hired across the province (including PT, OT, SLP and assistants). Estimates suggest that this would require an investment of approximately $11M annually.

Summary

Application of best-practice in Ontario's inpatient rehabilitation sector would result in essentially no change in the number of inpatient rehabilitation beds required annually; however, approximately 30,000 CCC bed days would be eliminated. This would lead to a net annual savings of approximately $5M.

Chapter 3 - The Impact of Inpatient Rehabilitation on CCC and LTC admissions, mortality and costs 2-years post stroke

The purpose of this chapter was to estimate the potential impact of providing inpatient rehabilitation to eligible stroke patients who are currently not admitted to inpatient rehabilitation. Estimates were derived by comparing the outcomes of patients admitted to inpatient rehabilitation with those of clinically similar patients who were not admitted to inpatient rehabilitation.

Among the mildest patients with a Modified Rankin Scale (mRS) of 0-2, inpatient rehabilitation had no beneficial effect on any of the outcomes explored and was demonstrated to cost the system significantly more money over the 2-year period (an average of $33,056 more over the 2 years in total and $63 more per day survived). These findings support the SRG recommendation that mildly disabled stroke patients should be cared for in outpatient/community settings. Among patients with mRS scores of 3, significantly fewer deaths

were noted in the rehabilitation group, but total healthcare costs were significantly greater (an average of $22,394 more over the two years in total and $5 more per day in those that survived). However, among patients with mRS 4 or 5 (the most severely impaired patients) mortality and CCC/LTC admission were significantly lower in patients admitted to rehabilitation and no statistically significant difference in health system cost was noted between groups (rehabilitation costs an average of $6,607 *less* over the 2-years and $29 *less* per day in those that survived). In fact, these results suggest a trend towards lower costs among patients admitted to rehabilitation.

Summary

Analyses suggest that in Ontario, provision of post-stroke inpatient rehabilitation to appropriate patients can have a meaningful impact on patient outcomes and resource utilization. Results of this section support the SRG recommendation that moderate-to-severely impaired patients benefit the most from inpatient rehabilitation and can actually reduce healthcare spending. Results also support the recommendation that mild stroke patients should be cared for in outpatient or community-based programs that are more cost-effective than inpatient rehabilitation.

Chapter 4 - Outpatient and Community-Based Rehabilitation

This sector offers the greatest opportunity for improving patient flow and requires the largest investment through re-allocation of existing resources. It is also the sector with the least information available. The SRG recommends that patients requiring outpatient or community-based rehabilitation have timely access to early supported discharge with engagement of Community Care Access Centers (CCAC). It is recommended that appropriate patients receive a rehabilitation program that usually includes 2-3 Physiotherapy (PT), Occupational Therapy (OT), and Speech Language Pathology (SLP) visits per week for 8-12 weeks. These rehabilitation programs could be through outpatient rehabilitation, CCAC, or other community-based rehabilitation providers as appropriate. These resources are not currently widely available in the province.

The estimated investment required in outpatient and community-based rehabilitation programs was based on the following information and SRG expert opinion when data was not available:

- Based on Canadian research[b,c] it is estimated that approximately 13% of patients discharged directly home from acute care require some form of rehabilitation.

[b] Mayo NE, Wood-Dauphinee S, Cote R, Gayton D, Carlton J, Buttery J, Tamblyn R. There's no place like home : an evaluation of early supported discharge for stroke. *Stroke* 2000 May;31(5):1016-23.

[c] Willems D, Bryant D, O'Callaghan C. Are stroke survivors getting the rehabilitation services they need? Stroke 42[3], e337. 2011.

- All patients discharged home from inpatient rehabilitation require outpatient or community-based rehabilitation
- Among patients in need of outpatient or community-based rehabilitation, 100% will require PT and OT, and 50% will require SLP
- Current outpatient rehabilitation resources are sufficient to meet the needs of 50% of patients being discharged home from inpatient rehabilitation
- Currently, most CCAC services would not qualify as home-based rehabilitation programs as recommended by the SRG.
- A thirty-minute driving distance is reasonable for accessing an outpatient rehabilitation program. Patients with a travel distances beyond this should receive other community-based rehabilitation services.

Data from the Canadian Institute for Health Information's Discharge Abstract Database (DAD) and NRS suggest that approximately 88% of Ontario patients discharged home from hospital after stroke live within a 30 minute drive of an outpatient rehabilitation program. Assuming the same is true for patients requiring post-discharge rehabilitation, resources to provide outpatient rehabilitation to an additional 1502 patients annually and community-based rehabilitation to an additional 204 patients annually would need to be established. In addition, investment in transportation will be necessary to ensure patients have access to these services in a timely manner.

Summary

Estimates suggest 1,706 additional stroke patients will need outpatient and community-based rehabilitation across Ontario annually, requiring a resource re-investment of approximately $11M annually.

Chapter 5 – Bringing it all together

Evaluation of the potential impact of best-practice on Ontario's stroke system suggests the following:

- ~45,000 acute bed days (123 beds) could be made available annually freeing up ~$26M for re-investment annually
- ~30,000 CCC bed days (82 beds) could be eliminated annually freeing up ~$17M annually
- ~1100 additional inpatient rehabilitation bed days would be required annually (~3 beds) with staffing sufficient to meet best-practice recommendations (~$12M net re-investment)
- ~1700 additional outpatient or community-based rehabilitation patients should be cared for annually requiring ~$11M in re-investment

Full attainment of the OSN Stroke Reference Group recommendations would result in:

- Improved patient outcomes for Ontario residents who experience stroke

and

- ~$20M made available annually which could be used to help stroke patients and their families remain in their homes and become re-engaged in their communities

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