A Quality Improvement Initiative to Reduce Length of Stay for an Inpatient Stroke Rehabilitation Program Utilizing the RPG Methodology

Eileen Britt [1], Matthew Meyer [2,3], Heather McHale [4]

Stroke/Neurological Rehabilitation Program, Parkwood Hospital, St. Joseph's Health Care London[1], Department of Epidemiology, Schulich School of Medicine and Dentistry [2], Aging, Rehabilitation and Geriatric Care Research Center, Lawson Health Research Institute[3], UWO Quality Measurement and Clinical Decision Support, Parkwood Hospital, St. Joseph's Health Care London [4]

Abstract In Canada, no standardized benchmarks for length of stay have been established for post-acute stroke rehabilitation. This initiative describes the development and implementation of severity-specific benchmark targets for LOS at Parkwood Hospital's inpatient stroke rehabilitation unit (London, Ontario). *Methods*: Functional Independence Measure (FIM[TM]) gain and efficiency were retrospectively summarized by Rehabilitation Patient Group (RPG) using three years of patient data (April 2005-March 2008). Targets for median length of stay were then established for each RPG. To ensure reasonability, targets were compared to national FIM[TM] gain, FIM[TM] efficiency and LOS data. In 2009 fiscal quarter 3 (Q3), RPG specific LOS targets were incorporated into team rounds and used to establish target discharge dates for newly admitted patients. *Results*: Comparison between Q3 and Q4 2009 and the same period in 2008 indicate a significant 12 day reduction in mean LOS without significant reduction in overall FIM™ gain or discharge destination. Overall reduction in LOS was driven by patients in RPGs 1100 (78 to 51 days, p<0.05) and 1120 (42 to 34 days, p<0.01). *Conclusion*: Early results suggest that implementation of severity specific benchmark targets for LOS may reduce LOS without affecting patient outcomes. Continued evaluation is planned.

Objective

To develop a framework to guide discussions concerning inpatient stroke rehabilitation length of stay (LOS).

> ➢ rooted in sound evidence
> ➢ adjustable to different patient characteristics while maintaining patient outcomes
> ➢ built with existing data collection resources
> ➢ simple to operationalize and acceptable to staff
> ➢ capable of comparability between facilities for "like" strokes- "apples to apples"

Introduction

Under increased fiscal pressure, ongoing scrutiny of operational efficiency and a desire to demonstrate leadership in patient outcomes, Parkwood Hospital's inpatient stroke rehabilitation team required an appropriate method for program evaluation.

Traditional measures used to compare rehabilitation facilities have not reflected case-mix variation nor the ability to compare "apples to apples". The Parkwood team wanted to incorporate stroke severity determinants into their core set of assessment measures and establish a simple method for evaluating rehabilitation efficiency and patient outcomes. The Rehabilitation Patient Groups (RPG) were specifically designed to classify patients by predicted resource consumption within the Ontario context [1]. This helps adjust for patient severity at rehabilitation admission. For the purpose of program

evaluation, length of stay efficiency has been used internationally as a measure of rehabilitation unit performance [2]. However, LOS efficiency alone can be skewed by extremely long lengths of stay; which is common in Ontario facilities. Median benchmark strategies for LOS have therefore been proposed as more appropriate targets [3].
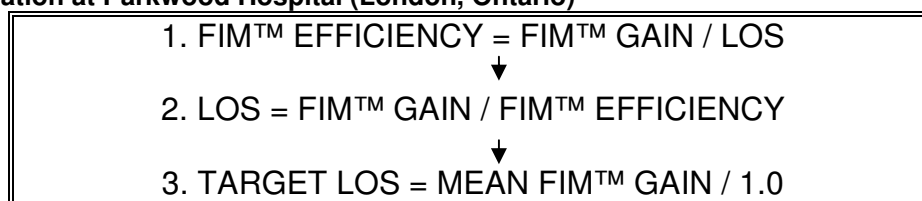
This project aimed to incorporate evidence from previous efforts into a benchmark development strategy for Parkwood Hospital's inpatient stroke rehabilitation unit. We felt that RPG specific median benchmarks for LOS could help facilitate discussion around patient discharge and would answer two key questions:

 I. **Can benchmark development reduce LOS without affecting patient outcomes?**
 II. **What are reasonable FIM gain and LOS targets for each RPG group in an Ontario inpatient stroke rehabilitation unit?**

Methods

Benchmark development - Data was accessed for all stroke patients admitted to Parkwood Hospital's inpatient stroke rehabilitation unit between April 1, 2005 and March 31, 2008 (n=643). Patients were retrospectively stratified by Rehabilitation Patient Group (RPG). Mean Functional Independence Measure (FIM™) gain, FIM™ efficiency and length of stay (LOS) were calculated for each RPG group. Median LOS targets were initially set by RPG assuming a FIM™ efficiency of 1.0 with no reduction in mean FIM™ gain (Figure 1). Input from team members and comparison to national averages was performed to ensure that targets were reasonable. Targets that were deemed to be unrealistic were recalculated using a target FIM™ efficiency of 0.75.

Figure 1. Formulae used to derive median LOS benchmarks for inpatient stroke rehabilitation at Parkwood Hospital (London, Ontario)

$$1.\ \text{FIM™ EFFICIENCY} = \text{FIM™ GAIN} / \text{LOS}$$
$$\downarrow$$
$$2.\ \text{LOS} = \text{FIM™ GAIN} / \text{FIM™ EFFICIENCY}$$
$$\downarrow$$
$$3.\ \text{TARGET LOS} = \text{MEAN FIM™ GAIN} / 1.0$$

Implementation and evaluation - In October 2009, LOS targets were incorporated into team rounds to establish target discharge dates for newly admitted patients. **As median targets, discharge dates served as discussion points regarding patient recovery, not fixed end dates.** Data from 2009 Q3 and Q4 (October-March) were compared to 2008 Q3 and Q4 for changes in mean LOS, FIM™ gain, and discharge destination.

Results

Table 1. Median LOS benchmarks by Rehabilitation Patient Group (RPG) for inpatient stroke rehabilitation at Parkwood Hospital (London, Ontario)

	RPG						
	1100	1110	1120	1130	1140	1150	1160
Median LOS Benchmark (days)	48*	37*	32	24*	16	20	10*

*Target established using 0.75 FIM™ efficiency

Table 2. Patient demographic comparison between Q3 and Q4 of fiscal years (FY) 2008 (retrospective control) and 2009 (quality improvement initiated)

	FY 2008	**FY 2009**
Patient N	97	111
Age (± SD)	67 ± 15	68 ± 14
Female N (%)	46 (47%)	45 (41%)
Hemorrhagic N (%)	13 (13%)	12 (14%)

*No statistically significant differences were noted between groups

Table 3. Comparison of rehabilitation indicators between Q3 and Q4 of fiscal years (FY) 2008 (retrospective control) and 2009 (quality improvement initiated)

	FIM™ Gain (mean, sd)						LOS (mean, sd)						Discharge Home (n, %)			
	FY 2008			**FY 2009**			**FY 2008**			**FY 2009**			**FY 2008**		**FY 2009**	
	n	mean	SD	n	mean	SD	n	mean	SD	n	mean	SD	n	%	n	%
1100	23	38	18	16	31	20	23	**78**	**49**	16	**51***	**15**	20	91%	12	75%
1110	24	16	17	25	20	17	24	51	17	25	50	23	7	**29%**	15	**60%***
1120	13	37	11	23	31	11	13	**42**	**22**	23	**34†**	**9**	10	77%	22	96%
1130	14	14	17	15	20	11	14	35	12	15	29	15	13	93%	14	93%
1140	8	18	9	11	15	8	8	**22**	**12**	11	**23***	**6**	8	100%	11	100%
1150	9	22	4	8	16	5	9	23	11	8	22	6	9	100%	7	88%
1160	6	10	5	13	7	9	6	15	5	13	13	4	6	100%	13	100%
Total	97	24	18	111	22	15	97	**47**	**34**	111	**35†**	**19**	73	76%	94	85%

* Statistically significant at $p<0.05$
† Statistically significant at $p<0.01$

Conclusion

Establishing a median benchmark strategy based on RPG patient divisions and LOS efficiency was felt to be an appropriate framework with which to evaluate rehabilitative care. Utilizing data already routinely collected, the costs of development were negligible and implementation was relatively quick and easy.

After only 6-months, a significant reduction in overall LOS was noted without a decrease in mean FIM™ gain or discharge destination compared to the same period one year prior. As expected, results varied across RPG groups with the most meaningful reductions in LOS seen in RPGs 1100 and 1120.

Setting target dates for LOS helped facilitate discussion around individual patient discharge; especially for patients exceeding this date. Although administrative and rehabilitative staff did not always see eye to eye, discussion allowed for improved discharge planning and focused attention on patient needs. Ultimately, staff were forced to identify ways to help patients achieve their goals effectively and efficiently.

Limitations

Despite early success, this QI initiative has only been ongoing for 6 months making conclusions difficult to draw. Also, during 2008 Q4, a mobile community stroke team was implemented at Parkwood Hospital which may have contributed to decreased inpatient LOS. Trends in patient data will continue to be monitored in order to further assess the impact of this quality improvement initiative. Qualitative assessment is also planned.

Reference List

(1) Sutherland JM, Walker J. Challenges of rehabilitation case mix measurement in Ontario hospitals. Health Policy 2008; 85(3):336-348.

(2) Conroy BE, DeJong G, Horn SD. Hospital-Based Stroke Rehabilitation in the United States. Top Stroke Rehabil. In press 2009.

(3) Australasian Rehabilitation Outcomes Centre (AROC) - Outcome Targets for Stroke. 2009.
     Ref Type: Personal Communication

Function scores noted are based on data collected using the FIM™ instrument. The 18-item FIM™ Instrument is the property of the Uniform Data System for Medical Rehabilitation, a division of U B Foundation Activities, Inc.