Use of Lean Six Sigma in a Primary Stroke Center: Improving the Time to Care

Patricia D. Giannelli

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USE OF LEAN SIX SIGMA IN A PRIMARY STROKE CENTER:
IMPROVING THE TIME TO CARE

A Practice Dissertation Presented to
the Faculty of the Department of Nursing, College of Health Professions
Sacred Heart University

In partial fulfillment of the requirements
For the degree of Doctor of Nursing Practice

By
Patricia D. Giannelli, DNP, APRN, FNP-BC, PMHCNS-BC, ACNS-BC

Approved: ________________, Member
______________, Member
______________, Chairperson
Date 4-26-13
USE OF LEAN SIX SIGMA IN A PRIMARY STROKE CENTER:

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Abstract of Practice Dissertation

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Abstract
Stroke is the fourth leading cause of death and the leading cause of severe long term disability among adults in the United States. The incidence of stroke is high, with a stroke related death occurring every 4 minutes. Each minute of brain ischemia can result in the destruction of millions of neurons, billions of synapses, and miles of myelinated fibers. In all instances it is critically important to evaluate signs and symptoms of stroke and initiate the prescribed treatment immediately. Critical time targets exist for the initial evaluation of suspected stroke patients (SSP) and are used as the benchmark for this dissertation. A retrospective audit of charts revealed time variation and inconsistency in meeting expected time targets warranting further evaluation. The research question used for this practice dissertation was: Does implementing redesigned work flow processes, identified by using Lean Six Sigma methodologies, improve upon meeting National Institute of Neurological Disorders and Stroke time target standards for the SSP? The purpose of this study was to identify time wasting work flow processes during the evaluation phase for the SSP and minimize and/or eliminate them. Lean Six Sigma methodologies were employed and a two day Kaizen Event intervention held to identify and reduce wastes, synchronize work flow processes and manage variability. This multidisciplinary process improvement team, fully empowered by the organization’s executive group, identified work flow time wasting processes, identified root causes, redesigned work flow, and devised communication and sustainability plans. The analysis included both descriptive and parametric statistics. The goal was to determine if there was a
statistically significant time reduction in meeting time targets following the implementation of the work flow process redesign. A quasi-experimental pretest posttest design was used with a non-probability, structured method of sampling to select all pre/post-intervention SSP presenting for evaluation. Study results clearly demonstrate that critically important time was saved and process variation decreased in all areas measured and for two parameters in a statistically significant way following a work flow redesign in the lab. A main effect of gender approached significance, showing a trend toward males being treated more quickly than females. In conclusion, work flow process redesign crafted and implemented by front line healthcare providers resulted in substantial time savings for both patients and staff. All providers attending to the SSP along the continuum of care can act as part of an interconnected and coordinated team having available all information needed within 45 minutes of emergency department arrival to devise the most appropriate treatment plan. Whether persons chose to receive the thrombolytic agent Alteplase (t-PA) as a treatment modality, each must be assured that time delays will not preclude them from this therapy option. Time efficient, value added activities for this patient translates into a greater chance to preserve brain tissue, function and quality of life.

Key Words: Lean, Six Sigma, stroke, time targets, work flow processes.
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Patricia Giannelli, Author
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Patricia Giannelli
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April 25, 2013
Dedication

To my husband

Glen Giannelli

For your never ending kindness, thoughtful ways, and unconditional love, I am truly grateful. You have always believed in me even when I doubted myself. For all this and so much more, just you and I will be always and forever!

In Appreciation

Heartfelt thanks to my mom, Pat, the first registered nurse and professional role model in my life – being a nurse really IS wonderful! To my sister Ann for always being my staunchest cheerleader; to my brother Paul for always encouraging me to push just a bit harder and to my brother Bob, for always managing to make me smile, I love you all dearly.

Anne Barker, EdD, RN, Michelle Godin, RN, EdD, Justin Montanye, MD, Susan D’Agostino, DNP, APRN, FNP-BC and Zachary Kunicki, MA who provided the encouragement, support and guidance needed for me to realize this personal and professional dream - much gratitude, respect and appreciation.
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