A Retrospective Study: Do Hospital Length of Stay, Direct Variable Cost, and 30-Day Readmission Differ With the Implementation of the Rothman Index?

Karen M. Banoff

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A Retrospective Study: Do Hospital Length of Stay, Direct Variable Cost, and 30-Day Readmission Differ With the Implementation of the Rothman Index?

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

Karen M. Banoff, MPA, RN

Approved: John Simon, DNP, RN, Member
          (Signature) (Signature) (Date)

Member
Chairperson

Date 3/26/13
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Approved: John Roman, DLH, RN, Member
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           Chairperson
Date 3/26/13
Abstract

The trend of an acutely ill patient's general condition is not always clearly evident. Medical errors, misjudgments, use of inappropriate resources and preventable deaths can occur. Clinical decision-making in acute care is difficult due to increasing acuity, many involved clinicians, and massive quantities of patient data and information. Clinical decisions have financial implications for hospitals. The Rothman Index (RI) is a new general measure of a patient’s condition and aids in clinical decision-making. A critical input into the RI is the body system nursing assessment. The RI could serve as a tool to improve nursing practice.

The purpose of this study was to determine if there is a difference in length of stay (LOS), direct variable costs (DVC) and 30-day readmission, for fee-for-service Medicare-insured heart failure patients, before and after the implementation of the RI. These three outcomes are commonly monitored financially related metrics.

A retrospective analysis of hospital administrative data was conducted. Results three months post RI-implementation were compared to the same 3-months prior to the implementation. Independent t-tests between groups for mean LOS and DVC in the pre- and post- RI implementation groups were conducted. Readmission within 30 days was analyzed using Chi Square to measure the association to the RI in the pre- and post- RI implementation groups. Regression analysis was done to control for age, race, gender, marital status and pre- or post-RI timeframes. Multiple linear regression analysis was used to evaluate the relationship between the RI and
LOS and DVC and logistic regression modeling was used for the presence or absence of 30-day readmission.

Direct variable cost and LOS increased in the post-RI implementation group although independent t-tests between groups revealed no significant difference between mean LOS ($p = .337$) and mean DVC ($p = .530$). Readmission within 30 days for a principal diagnosis of heart failure increased in the post-RI implementation group but not significantly ($\chi^2 = .033$, $df = 1$, $p = .856$). Readmission within 30 days for a principal diagnosis other than heart failure declined in the post-RI implementation group but not significantly ($\chi^2 = .064$, $df = 1$, $p = .800$). Regression analysis showed significant predictors of DVC were age ($p < .01$) and gender ($p = .036$). Age ($p < .01$) was the only significant predictor for LOS. None of the demographic variables were significant predictors of 30-day readmission.

This study showed no difference in LOS, DVC and 30-day readmission before and after implementation of the RI. Despite the results of this study, the RI is a tool that offers clinicians a simple view of trends in patient condition and requires further study to measure the benefits. Recommendations include: repeating the study after clinicians have more experience using the RI; measuring use of the RI; establishing institutional policies that address proper use; ensuring accurate nursing assessment documentation; and repeating the study with other patient populations and other study sites. Studying the specific RI score and the relationship to LOS, DVC, and 30-day readmission may also be more informative.
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SACRED HEART UNIVERSITY

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March 2013
Dedication

To my parents, Harriet and Murray Merl,

I have been blessed with the most wonderful parents. They have instilled within me the tremendous importance of hard work, education, professionalism, and caring. Without their support throughout my life, I would not have achieved this tremendous accomplishment.
Acknowledgements

I am very appreciative of my husband, Andrew, my daughter, Rebecca, and my son, Benjamin. You have all been supportive and patient as I sacrificed time with all of you to pursue this personal goal. I will be forever grateful for that—you have given me a special gift. I am very blessed to have such a special family. I also want to thank my siblings, Jacqueline Merl and John Bamman and Rayna and Scott Havelock, for always offering words of encouragement, asking about my progress, and showing their love.

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