EFFECT OF EARLY PATIENT TRANSFER TO FLOOR AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT SURGERY (TAVR)

by

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School of Nursing,
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DNP Capstone Project Approval Form

This is to certify that ____________________________
(Name of Student)

successfully defended his/her Capstone project entitled:

Effect of Early Patient Transfer to Floor After Transcatheter Aortic Valve Replacement Surgery (TAVR)

on ____________________________, 2018.
(Date)

Capstone Faculty Advisor
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__________________________
(Signature)

Committee Member 1*

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__________________________
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__________________________
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Committee Member 3*

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__________________________
(Signature)

*If applicable
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ABSTRACT

**Problem under investigation:** Transcatheter aortic valve replacement (TAVR) is a surgery for aortic stenosis in lieu of open-heart surgery. Early patient transfer to the step-down floor is a new policy at an urban hospital. Outcomes of this policy have not been evaluated.

**Objective:** Evaluate effectiveness of new policy in decreasing length of hospital stay (LOS).

**Background literature:** Literature is inconclusive regarding appropriate time to transfer patient.

**Theoretical Framework:** A Conceptual Model of Nursing and Health Policy provides guidelines for policy analysis and program evaluation. This study focused on the first level as this program evaluation helped in determining the effectiveness of the new policy on decreasing patient LOS and the outcomes of those involved in the procedure.

**Project Methods:** Quasi-experimental retrospective chart review. Data analysis included t-test comparing LOS pre and post-policy and analysis of covariance (ANCOVA) to control for age and number of comorbidities. A p-value of <0.05 was statistically significant.

**Results:** The mean for pre-policy group was 5.05 days with an SEM of ± 0.82. Mean for post-policy group was 3.05 with a SEM of ± 0.68, showing a significant difference between these values (p = 0.0478). The comparison of the corrected means utilizing ANCOVA to control for the variables indicated a significant difference (p = 0.029, F= 3.359, df=3).

**Significance:** Early patient transfer to the floor after a TAVR results in a decreased LOS. Limitations of this study include small sample size.

**Implications:** The findings of this study show the potential for future research and the positive effect of early transfer to the floor after TAVR on patient LOS.

**Key Words:** TAVR, valve replacement, aortic stenosis, patient transfer
Acknowledgements

I would like to thank all those who have helped me along the way with this capstone project, including my capstone advisor, Dr. Campbell-Heider who has shown me great patience and guidance throughout this research process.

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I would like to thank my parents, especially my mom, who has been such a wonderful support to me throughout my entire nursing education. She has been there for me through everything and has given me wonderful advice and guidance for staying focused, humble, and prayerful.

I would like to thank my wonderful husband, Dan, who has been a source of knowledge, insight, and direction for me throughout my nursing education. He has kept me grounded and calm throughout all the craziness of my education and nursing career.

I would like to thank my best friend, Chelsea Armstrong, who has journeyed alongside me throughout all of nursing school, and graduate school, and has helped tremendously in keeping me focused and on track.
Most importantly, I would like to thank God for the opportunity to serve His people through this line of work as a nurse, and now as a nurse practitioner. Thank you, Lord, for getting me through this program; I know that through You, all things are possible.

Philippians 4:13

“I can do all things through Christ who gives me strength.”
A Transcatheter Aortic Valve Replacement or TAVR is a minimally invasive surgical procedure for patients with severe aortic stenosis in which the old, damaged aortic valve is replaced with a new valve via catheter insertion through either the femoral artery (transfemoral approach), the subclavian artery (trans-subclavian approach), directly into the aorta, and the transapical approach. This procedure is an effective option for patients with severe aortic stenosis to help improve their quality of life, who are considered high or intermediate risk for a typical open-heart sternotomy and who may otherwise have restricted options for treatment (Zhang & Melander, 2014). This procedure is now accepted as the standard of care for patients with symptomatic aortic stenosis who are not candidates for open heart surgery (Zhang & Melander, 2014). Research has shown that transfer of these patients shortly after surgery to an intermediate cardiac nursing floor can positively influence outcomes when the focus “is on early mobilization, eating, toileting, and keeping families at the bedside”, as opposed to patient monitoring in an intensive care unit (ICU) post-TAVR (Harris, Dean, & Keegan, 2014, p. 376). This strategy also has demonstrated a decrease healthcare costs associated with TAVR. The purpose of this capstone project is to evaluate the length of hospital stay of patients that are transferred to the floor early after a TAVR, after a new policy was implemented at a hospital in Buffalo, NY. This policy states that post-TAVR patients will be transferred to the cardiovascular step-down floor six hours after surgery, as compared to length of hospital stay of TAVR patients before policy implementation, in which patients were sent to the Open-Heart Unit after surgery.

Transfer of the patient to the step-down floor after a TAVR has been practiced at several other hospitals in New York State and across the U.S., however this policy has just been implemented as of January 1st, 2018 in my practice setting in Western New York (WNY). To
evaluate the effectiveness of this new policy, a program evaluation was conducted as a retrospective quasi-experimental design through chart reviews to answer the following:

Is there a decreased length of hospital stay for adult TAVR patients that are transferred to a cardiac step-down unit same day as surgery per new hospital policy, as compared to the length of hospital stay for patients prior to policy implementation?

Background

Villablanca et al. (2018). performed a metaanalysis of 26 randomized controlled trials with 10,572 patients included in which outcomes such as hospital length of stay, and intensive care unit length of stay with the use of local anesthesia versus general anesthesia was evaluated. Findings from the metaanalysis suggested that the use of local anesthesia in TAVR patients is associated with a statistically significant (P<0.05) decrease in mortality, use of inotropic/vasopressor drugs, and hospital length of stay. The use of local anesthesia allows patients to be safely transferred to the floor, as opposed to the ICU, which significantly decreases the patient length of stay.

In a cohort study by Alkhalil et al. (2017), shorter length of stay with an early discharge strategy was shown to be safe and practicable in patients undergoing TAVR in a skilled and large-volume facility. The research found in the study by Alkhalil et al. (2017) also found that shorter length of stay may minimize complications in elderly patients, and also help to lessen high healthcare costs associated with an aortic valvular replacement surgery.

In a randomized controlled trial performed by Harris, Dean, & Keegan, (2014), 187 patients who underwent a TAVR were randomly assigned to either go to the floor status post-TAVR (110), or to the ICU post-TAVR (77). Of the patients transferred right to the floor, only
one person was sent back to the ICU, while the rest of the patients greatly benefited from the floor’s focus on early mobilization, eating, and toileting, and experienced decreased lengths of stay (Harris, Dean, & Keegan, 2014). Rathore, Latyshev, Emore, Rowe, and Foerst (2017) state in their research that the literature suggests that TAVR can be performed with minimal sedation and transthoracic echocardiographic guidance which has resulted in a shorter hospital stay.

**Demographics**

The policy was implemented locally, in a hospital located in Buffalo, NY, USA (LaManna, 2016). In the city of Buffalo, NY, there are 256,908 residents (City-Data, 2016). The median resident age of this community is 32.8 years old (City-Data, 2016). The estimated median household income in Buffalo, NY is $32,883 (City-Data, 2016). In this community, 43.2% of residents are of Caucasian descent (111,102), while 36.2% (93,100) are African American, 10.7% (27,604) are of Hispanic descent, 6.4% (16,518) are of Asian descent, and the other 3.29% of the population are of two or more races (City-Data, 2016). In this community, 83.9% of residents have completed a high school degree or higher, while 26.7% have completed a Bachelor’s degree or higher (City-Data, 2016).

**Stakeholders and Stakeholder Roles**

The program stakeholders are those that have implemented the program, have an interest in the program, or play a role in the program. These people include the system director of Cardiac Services, along with the providers, nurses, patients who undergo TAVR procedures, the caregivers and family members of the patients, and the hospital administrators and insurance companies.
The system director of Cardiac Services oversees creating the policy based off evidence-based research in the literature and feedback from experts (the providers that work in the hospital practicing TAVR). The providers are responsible for implementing the policy and following the policy recommendations when caring for this population of patients. The nurses are responsible for abiding by the policy orders, and for acting on the guidelines provided by the policy to care for this population of patients. The patient role in this program is to be subjected to the policy guidelines. The positive impacts associated with this policy implementation for patients, is that it will hopefully decrease their length of hospital stay, prevent complications associated with prolonged hospitalization, improve patient outcomes, and thus improve the patient experience. The negative impacts associated with this policy implementation for patients, is that with the direct transfer to the floor, the patient(s) may be subjected to less direct observation for adverse outcomes, as the patient to nurse ratio is greater on a step-down unit than an ICU. The caregivers play a supportive role to the patients in this program. The caregivers are impacted both positively and negatively in this policy implementation. Positively, the caregivers are able to take the patient(s) home sooner than before the policy implementation. Negatively, the caregivers may feel as though the patient(s) are being discharged prematurely and feel as though they are incapable of caring for the patient upon discharge.

The hospital administrators are responsible for evaluating the data collected from this policy implementation to determine if it helps improve patient outcomes and lessen healthcare costs associated with this policy change. This policy change will impact hospital administration positively, as it will increase patient satisfaction, and greatly decrease healthcare costs, as the patients will have a shorter length of hospital stay and no intensive care unit monitoring. This policy change may impact hospital administration and insurance companies negatively, if the
policy change does not yield positive outcomes (shorter length of hospital stay/higher healthcare costs) and leads to more adverse outcomes with early patient transfer to the floor. The insurance companies are responsible for reimbursement of healthcare costs and collecting money should the procedure and patient outcomes go well or go poorly (Centers for Medicare and Medicaid Services, 2016). This policy change will positively impact insurance companies, as a shorter length of hospital stay would greatly decrease healthcare costs.

The primary stakeholder that has acted as a data source in this program evaluation were the hospital administrators. The hospital administrators were responsible and in charge of allowing access to the patient’s medical records, as this evaluation took place retrospectively through chart reviews. The hospital administrators granted access to view the patient records after IRB approval through the school and hospital system. To share and disseminate the results from this program evaluation, a white paper will be given to the hospital administrators and providers in Cardiology to share this data.

**Gap in Knowledge**

Current literature has demonstrated positive benefits to early patient transfer to the floor to help promote a shorter length of stay. However, there is still a need for prospective studies to highlight the optimal timing of patient transfer and discharge (Sud et al., 2017). While some facilities practice early patient transfer to the floor status post-TAVR, many hospitals do not; therefore, limited research is available to show the optimal timing of patient transfer to the floor.

Even though the TAVR procedure is relatively new itself (within the last 7 years in the U.S.), patient outcomes have improved greatly through various technological advancements, surgical techniques, and procedural improvements, which have changed the post-operative
management of this patient population within the last few years to that of a less critical state (Rathore, Latyshev, Emore, Rowe, and Foerst, 2017).

One barrier to making early patient transfer to the floor after a TAVR as the standard of care is the risk factors that accompany this procedure. Some of these risk factors include stroke, third degree heart block, and various other complications which are easier to identify in an intensive care unit (Zhang & Melander, 2014). In an ICU, the patient ratio is often one to one, or two patients at most, with constant vital sign monitoring, serial lab monitoring, and frequent neurological checks and patient assessments. This allows for a closer observation and intervention time by nursing staff should there be a change in the patient status. While this barrier may be the reason holding various healthcare facilities back from transferring the patient to the floor after a TAVR, the literature has demonstrated the high and often unnecessary costs associated with transferring the patient to an ICU after a TAVR. This in turn prolongs the patient’s length of stay in the hospital (Alkhalil et al., 2017). Therefore, for early patient transfer to the floor to be the standard of care after a transfemorally performed TAVR, more conclusive data are needed about the benefits of early patient transfer to decrease the patient length of hospital stay.

**Significance of Problem to Clinical Site**

According to the clinical site, it is imperative for a program evaluation to take place now because a new policy was just implemented regarding the level of care assignment for the TAVR patients on postoperative day number one (LaManna, 2016). The primary outcome that the policymakers are looking to measure is decreased length of hospital stay (in days). Before this policy, patients were transferred to the Open-Heart Unit for close observation and post-operative
care and then transferred to the step-down unit 24 hours after surgery. This policy was created with the hopes of decreasing the patient length of stay, which in turn decreases healthcare costs.

**Role of the Advanced Practice Nurse**

As an advanced practice nurse working in the hospital, and with the adult-geriatric population, this program evaluation will address the gap in knowledge about the relationship between early patient transfer to the floor and its effect on patient length of stay. This study will help APN's to provide care that is geared towards optimizing patient outcomes by following the practices outlined in the literature that highlight the optimal time of patient transfer and discharge. Should this program evaluation yield positive outcomes (decreased length of hospital stay), the APN will be able to educate fellow staff on the clinical significance of this new policy and how it improves patient outcomes.

**Literature Review**

A systematic literature search was conducted by employing PubMed, CINAHL, and Cochrane database. Included terms in the search are as follows: *transcatheter aortic valve replacement* OR TAVR, AND *aortic stenosis*, OR *aortic valve replacement AND patient transfer*. Search criteria were limited to English language only and research articles published from 2013-2018. Exclusion criteria included patients that had to convert from a planned TAVR to an emergent open-heart surgery or if the articles did not focus on TAVR. Articles selected from the literature search are highlighted in the literature matrix within Appendix A.

Recent studies have demonstrated that TAVR can be performed in a minimal approach (trans-femorally) with local anesthesia, requiring less critical monitoring post-operatively. The literature also identified several studies in which fast-track protocols aimed at streamlining care
for post-op TAVR patients were initiated in order to decrease the patient length of hospital stay. This was done by bypassing patient recovery in the intensive care unit, and by going straight to the cardiovascular step-down unit based off of fast-track hospital protocols constructed by the hospital cardiology team members. In a quasi-experimental study by Galper et al. (2018), length of stay for all patients was reduced from 3.2 to 1.9 days with the initiation of the fast-track protocol. Similarly, Marcantuono et al. (2014) performed a quasi-experimental study in which 99 patients (n=39-fast track to cardiovascular step-down, n=60 to ICU post TAVR) were evaluated in relation to their length of stay after initiation of the fast-track protocol. Patients on the fast track had shorter ICU stays (28 vs. 45 hours) (P<0.0001), post-operative length of stay (4.4 vs 5.3 days) (P<0.0001), and incurred lower direct costs ($44,923 vs. $56,339) (P<0.001) (Marcantuono et al., 2014).

In a cohort study by Lauck et al. (2016), a fast-track clinical pathway protocol was initiated in 393 TAVR patients in which the nurse-led protocol emphasized rapid reconditioning to baseline status by implementing early mobilization, hydration, nutrition, and toileting on the cardiovascular step-down unit. The study demonstrated shorter lengths of stay for the TAVR patients with the initiation of the nurse-driven protocol, in which the median length of stay was one day for early discharge, and three days for other patients not subjected to the protocol (Lauck et al., 2016).

Villablanca et al. (2018). performed a metaanalysis of 26 randomized controlled trials with 10,572 patients included in which outcomes such as hospital length of stay, and intensive care unit length of stay with the use of local anesthesia versus general anesthesia were evaluated. Findings from the meta-analysis suggested that the use of local anesthesia in TAVR patients is associated with a statistically significant (P<0.05) decrease in mortality, use of
inotropic/vasopressor drugs, and hospital length of stay. The use of local anesthesia allows patients to be safely transferred to the floor, as opposed to the ICU, which significantly decreases the patient length of stay (Frohlich et al., 2014). Durand et al. (2015) found in their research that “in an uncomplicated and planned transfemoral TAVR procedure using Edwards SAPIEN-XT valve and local anesthesia, early discharge is feasible and safe in selected patients”.

In a cohort study by Jensen et al. (2015), in 151 patients that had undergone a transfemoral transcatheter aortic valve replacement (TAVR), results from the study indicate that this procedure can be safely done with little to no ICU support, which may lead to a shorter hospital stay, and improved allocation of resources. The new minimalist TAVR approach avoids general anesthesia which may result in quicker ambulation, recovery, and discharge (Jensen et al., 2015).

Findings from the literature review highlight the need for further research regarding appropriate patient transfer status post TAVR to determine if early transfer to the cardiac step-down floor is associated with a shorter length of hospital stay in patients that have undergone a TAVR.

**Theoretical Framework**

Nursing theories and frameworks serve as an organizing resource to guide clinical practice, or evidence-based projects (Bonnel & Smith, 2014). The conceptual model of nursing and health policy “was designed to extend substantive knowledge of health policy within the discipline of nursing” (Fawcett & Russell, 2001, p. 108). The three types of inquiry that were deemed as appropriate were policy analysis, policy or program evaluation, and health services research. Each type of inquiry supports the understanding of the major components of health policies. The revised model provides a “framework for analysis and evaluation of public,
organizational, and professional policies influencing the quality, cost, and access to nursing and other health care services, as well as for nursing-discipline specific and health services research at any one of the five interacting levels” (Russell & Fawcett, 2005, p. 319).

Level one of the model focuses on the usefulness of nursing models on the outcomes of the health of individuals, families, and communities (Russell & Fawcett, 2005). Level two is focused on the effectiveness of nursing practice delivery systems (Russell & Fawcett, 2005). Level three of the model focuses on the proficiency and competence of the delivery of health care delivery systems. Level four is focused on the equality of access to these nursing practice processes and practice delivery systems, while level five is solely focused on social justice (Russell & Fawcett, 2005). This study will focus on the first level, as this program evaluation will help in determining the effectiveness of the new policy on decreasing patient length of hospital stay and the outcomes of those involved in the procedure.

This theory states that nurses are active participants in the creation, application, and evaluation of policies that are geared towards improving health outcomes of individuals, communities, and those in various healthcare settings. The model provides guidelines for policy analysis and program evaluation research. This capstone project was a program evaluation to evaluate the effectiveness of a new policy at a hospital in WNY, and how it effects patient length of hospital stay. This theory helped the principal researcher to understand how this policy effects human beings, the environment in which is it implemented, the health of those involved in the policy, the various health care systems effected, and how the policy positively benefits those effected by the implementation. Since the goal of this policy is to decrease patient length of hospital stay to improve patient outcomes, this model helped in determining the efficacy and effectiveness of the program.
Methods

Study Design

This proposed study was a retrospective quasi-experimental retrospective chart review to evaluate the outcomes of length of stay of patients before and after a new policy implementation. Specifically, early patient transfer to a cardiac step-down unit versus previous transfer to the ICU was evaluated in relation to length of stay. This study utilized a retrospective chart review, which provided the data needed for this project. A timeline of the capstone project is referenced in Appendix B. The setting that this study was completed in was an urban 387 bed-hospital located in Buffalo, NY. The study included a total of 42 patients; 21 patients in the experimental group (patients transferred to the floor early after TAVR), and 21 patients in control group (patients not transferred early to the floor after TAVR).

In this study, the independent variable was early transfer to the floor for patients that have undergone a TAVR post policy implementation. The independent variable was measured at the nominal level, as nominal data is based on classification (Polit, 2013). The dependent variable in this study was the average hospital length of stay in number of days post-TAVR. The dependent variable was measured at the interval level, since the variable here is length of hospital stay in days (Polit, 2013). This study compared patient length of hospital stay of patients that were transferred to the floor after policy implementation, and length of hospital stay in days prior to policy implementation.

In addition, two variables from the Society of Thoracic Surgeons (STS) 30-Day Predicted Risk of Mortality Score were used as controls in a secondary analysis. These variables identified by the Society of Thoracic Surgeons (STS) are “well-validated predictors of 30-day mortality
after cardiac procedures” and is used when determining a patient’s eligibility for TAVR (Puskas et al., 2012, p. 26). To perform the secondary analysis, the analysis of covariance (ANCOVA) was used in relation to LOS in the pre- and post- policy implementation groups. The variables used in the ANCOVA analysis were age and number of comorbidities (Polit, 2013). Major comorbidities were defined as: aortic stenosis, congestive heart failure, chronic lung disease, cerebrovascular accident, diabetes, dyslipidemia, hypertension, myocardial infarction, peripheral vascular disease, renal failure with dialysis, cardiogenic shock, smoker, and triple-vessel disease (Puskas et al., 2012). Age was defined in years, being that it is also defined in years by the STS risk scoring tool (Puskas et al., 2012).

**Data Collection**

For data collection to take place, the principal investigator performed patient chart reviews at the hospital facility to gather information and extract data regarding patient outcomes. Data collected by the principal investigator was printed and locked in the personal office of the principal investigator when not with the principal investigator. The key to the office was with the principal investigator at all times. Patients in the study were given a deidentified number of 1-21 for the pre-policy group, and 1-21 for the post-policy group. Information was then transcribed into Microsoft Excel to house the data, and then input to a computer software program used for editing and analyzing data, Statistical Package for the Social Sciences (SPSS) (SPSS Tutorials, 2018). This program allowed for data collection, data storage, and statistical analysis to determine outcomes. SPSS can run t-tests, as well as ANCOVA for data analysis in this study to occur. A data collection sheet from SPSS was utilized to house the data for the data analysis as shown in Table 1.
Table 1

*Descriptive Data by Policy Implementation Groups*

<table>
<thead>
<tr>
<th>Patient (ID code)</th>
<th>Policy in effect (Pre- or Post-)</th>
<th>Age</th>
<th>Number of Comorbidities</th>
<th>Hospital Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<td>3</td>
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</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data Analysis**

Data analysis was completed by using both the t-test and the analysis of covariance (ANCOVA) which was performed in SPSS. The t-test was used in the primary analysis to compare the average length of stay pre- and post-policy implementation. Length of stay was collected in days to increase the precision of measurement for this variable. The analysis of covariance (ANCOVA) was used in the secondary analysis to account for other variables that may have affected the dependent variable (average length of stay). The secondary analysis answered the following: what is the impact of early patient transfer to the floor after a TAVR when controlling for number of comorbidities, and age?

**Ethical Considerations**

In order to protect the identities, welfare, and rights of all patients recognized through the retrospective chart reviews, approval for the research were submitted to the International Review Board (IRB) before the chart review will even take place to ensure confidentiality, privacy, dignity, and protection of those individuals. The IRB is, “charged with the responsibility of reviewing, prior to its initiation, all research (whether funded or not) involving human
participants, and has the authority to approve, disapprove, monitor, and require modifications in all research activities that fall within its jurisdiction as specified by both the federal regulations and institutional policy” (Oregon State University, 2018). IRB approval was attained by both the University at Buffalo and by Catholic Health Systems prior to data collection. All policies by IRB were followed and met in order to protect patient information.

**Statistical Analysis**

An independent t-test was utilized to compare patient length of hospital stay pre-and post-policy implementation. Mean averages were calculated for both groups to determine the statistical significance between both groups. In this study, a p-value of <0.05 was considered to be statistically significant.

The analysis of covariance (ANCOVA) was performed as a secondary analysis to control for other variables that may have impacted the patient length of hospital stay. The variables included in the secondary analysis included patient age (in years) and number of major comorbidities according to the STS risk scoring tool (Puskas et al., 2012). This was completed by calculating and comparing the pre-and post-policy implementation groups by the length of stay and age for both groups, and then the length of stay and number of comorbidities for both groups. All data was collected in Microsoft Excel and collected and analyzed in SPSS version 24 for accurate data analysis.

**Results**

A total of 42 patients were included in this study; 21 patients in the experimental group (patients transferred to the floor early after TAVR), and 21 patients in control group (patients not transferred early to the floor after TAVR). The information collected for each patient by policy
implementation group is identified in Appendices C and D. Age, number of comorbidities and length of hospital stay were identified for each patient in this study. The average age of the pre-policy implementation group was 81.04, while the average age of the post-policy implementation group was calculated to be 80.3. The average number of comorbidities of the pre-policy implementation group was calculated to be 4.52, while the average number of comorbidities of the post-policy implementation group was calculated to be 3.57.

When comparing the average length of hospital stay per policy implementation group, the mean length of stay for group 1 (pre-policy) was 5.05 days with a standard error of the mean (SEM) of ± 0.82, as shown in Table 2, while the mean average length of stay for group 2 (post-policy) was 3.05 with a SEM of ± 0.68. Based on t-testing, there is a significant difference between these values ($p = 0.0478$). This data supports the hypothesis which states that there is a significant difference between the length of hospital stay between the pre-policy implementation group and the post-policy implementation group. This means that patients transferred right to the floor (group 2) had a decreased length of hospital stay after a TAVR.

Table 2

*Length of stay for Pre- and Post-Policy Implementation Groups*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Length of Stay (pre)</td>
<td>5.05</td>
<td>21</td>
<td>3.761</td>
<td>.821</td>
<td>.216</td>
<td>.0478</td>
</tr>
<tr>
<td>Hospital Length of Stay (post)</td>
<td>3.05</td>
<td>21</td>
<td>3.138</td>
<td>.685</td>
<td>.216</td>
<td>.0478</td>
</tr>
</tbody>
</table>
When controlling for the variables age and number of comorbidities in the secondary analysis, the analysis of covariance (ANCOVA) was utilized. When the contributions from these variables were statistically controlled, the comparison of the corrected means indicated a significant difference. More specifically, the length of stay post policy was significantly shorter than the length of stay pre-policy (p = 0.029, F= 3.359, df=3), as displayed in Table 3. ANCOVA gave a clear picture of the overall pattern indicating that the policy did have a significant effect on length of hospital stay when the effects of age and comorbidities were taken out of consideration.

Table 3

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: LOS</td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Type III Sum of Squares</td>
</tr>
<tr>
<td>Corrected Model</td>
<td>109.382²</td>
</tr>
<tr>
<td>Intercept</td>
<td>20.818</td>
</tr>
<tr>
<td>Error</td>
<td>412.523</td>
</tr>
<tr>
<td>Total</td>
<td>1210.000</td>
</tr>
<tr>
<td>Corrected Total</td>
<td>521.905</td>
</tr>
</tbody>
</table>

a. R Squared = .210 (Adjusted R Squared = .147)

Discussion and Recommendations

This policy was created with the hopes of decreasing the patient length of stay, which in turn decreases healthcare costs. The mean length of stay for group 1 (pre-policy) was 5.05 days while the mean average length of stay for group 2 (post-policy) was 3.05 days, with a significance level of (p = 0.0478) as shown below in Table 6. The results from the t-test indicate a statistically significant difference in the patient length of hospital stay pre- and post-policy.
implementation. This research study has displayed that the new policy in effect decreases patient length of stay, which in turn may decrease healthcare costs. The need for this evaluation has been shown to be evident as it has displayed the positive effects of early patient transfer to the floor.

While the t-test results indicate the positive effects of early patient transfer to the floor, the secondary analysis performed by ANCOVA has also indicated the significance of age and comorbidities as factors that play a role in the patient’s length of hospital stay. The pre-policy group had an average of 4.52 comorbidities while the post-policy group had an average of 3.57 comorbidities. So, while the post-policy group had a shorter mean LOS, it also had a smaller number of comorbidities. The results from ANCOVA indicate that if the pre- and post-policy groups had each started off with the same mean number of comorbidities, then the difference between the mean LOS for each group would not have quite reached significance. While the results from ANCOVA are also statistically significant, there were outliers in both the pre- and post-policy groups, so perhaps the larger sample sizes may have absorbed their impact, allowing for a clearer big-picture pattern to emerge which might more closely resemble the results shown in the t-test.

Extraneous variables such as gender were not examined in this study, and perhaps may have influenced the patient’s length of hospital stay. Future research should examine the effects of gender on patient length of hospital stay to determine if this plays a role in the LOS. This analysis also does not consider the type or severity of the comorbidities. This analysis suggests that having fewer comorbidities is linked with a shorter LOS. There are other ways to look at the strength of the effect that comorbidities and age may have on patient outcomes—a problem that may be solved using ANOVA while analyzing interaction effects. This may give more
information as far as determining whether the more/fewer comorbidities a person has, the greater/lesser effect the new policy has on patient LOS.

Outcomes from this study have shown that early transfer to the floor after a TAVR results in a decreased length of hospital stay. Results from this study are similar to the results found in a quasi-experimental study by Galper et al. (2018), in which length of stay for all patients was reduced from 3.2 to 1.9 days with the initiation of the fast-track protocol. Similarly, Marcantuono et al. (2014) performed a quasi-experimental study in which 99 patients (n=39-fast track to cardiovascular step-down, n=60 to ICU post TAVR) were evaluated in relation to their length of stay after initiation of the fast-track protocol. Patients on the fast track had shorter ICU stays (28 vs. 45 hours) (P<0.0001), post-operative length of stay (4.4 vs 5.3 days) (P<0.0001) and incurred lower direct costs ($44,923 vs. $56,339) (P<0.001) (Marcantuono et al., 2014).

Evaluation of early patient transfer to the floor after TAVR was also studied by Lauck et al. (2016), in which a fast-track clinical pathway protocol was initiated in 393 TAVR patients where the nurse-led protocol emphasized rapid reconditioning to baseline status by implementing early mobilization, hydration, nutrition, and toileting on the cardiovascular step-down unit. The study demonstrated shorter lengths of stay for the TAVR patients with the initiation of the nurse-driven protocol, in which the median length of stay was one day for early discharge, and three days for other patients not subjected to the protocol (Lauck et al., 2016).

While the results from this study show similar results in which early patient transfer to the floor after TAVR has shown to decrease the patient’s length of hospital stay, the literature does not consider the various ages, populations, and demographics of those in the study to determine if these factors play a role in the patient’s length of hospital stay. Future research
should focus on extraneous variables to determine their role in a patient’s length of hospital stay after a TAVR.

While more research in this area should be conducted to support the claim of this study, advanced practice nurses should follow the guidelines and practices outlined in the literature that highlight the optimal time of patient transfer and discharge. Advanced practice nurses should also educate fellow staff on the clinical significance of early patient transfer to the floor after TAVR and how this impacts patient length of hospital stay.

The outcomes from this study have shown that early patient transfer to the floor after a TAVR results in a decreased length of hospital stay. While some of the literature supports early patient transfer to the floor after TAVR, there are no established guidelines or practice protocols on this matter, leaving a gap in the practice. Future research in this area is recommended to determine optimal time to transfer the patient to the floor after a TAVR.

**Strengths and Limitations**

This research study has both strengths and limitations. One strength of this study is the ease at which reviewing patient records and performing statistical analysis took place due to the small number of subjects enrolled in the study. The research question could be addressed in a short amount of time, as data collection and data analysis were able to be completed quickly. Another strength of this study was the ease at which obtaining institutional IRB approval and facility-based IRB approval took place, due to the nature of the study (retrospective chart review).

One limitation of this study is the small sample size. The small sample size of those enrolled in the study (n=42) can make for difficulty with interpretation of the results, particularly
the confidence intervals and p-values. Small studies can produce “false-positive results, or they
can over-estimate the magnitude of an association” (Hackshaw, 2008, p. 1142). Another
limitation of this study is the singular hospital used in this study. This study was only performed
at one hospital in one location of Western New York (WNY). The population studied was that of
only one cardiac step-down unit in WNY. This research study also did not consider gender into
the statistical analysis, which may have played a role in the patient’s length of hospital stay.

**Conclusions**

Patients that underwent a TAVR from January 2018-June 2018 experienced a significantly
decreased length of hospital stay due to the early patient transfer to the floor after surgery. Future
research should be conducted on this topic to strengthen the support for early patient transfer to
the floor after a TAVR, as this study is limited to one hospital in WNY. Advance practice nurses
can use their research findings to advise their clinical practice, and to aid in the post-operative
management of TAVR patients to decrease their length of hospital stay, while performing care
that is patient-centered and evidence based.
References


LaManna, J. (2016). Level of care assignments [Hospital policy and procedure]. Catholic Health System, Buffalo, NY.


EFFECT OF EARLY PATIENT TRANSFER


## Appendix A

### Literature Review Matrix

<table>
<thead>
<tr>
<th>Article Citation</th>
<th>Type of Study</th>
<th>Method, Description, Tools</th>
<th>Results &amp; Key Findings</th>
<th>Relevance to Proposed Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villablanca et al. (2018).</td>
<td>Meta-analysis</td>
<td>Analysis of 26 randomized controlled trials with 10,572 patients included in the meta-analysis in which outcomes such as hospital length of stay, and intensive care unit length of stay with the use of local anesthesia versus general anesthesia was evaluated.</td>
<td>Use of local anesthesia in TAVR patients is associated with a statistically significant (P&lt;0.05) decrease in mortality, use of inotropic/vasopressor drugs, and hospital length of stay.</td>
<td>When local anesthesia is used, as compared to general anesthesia in TAVR patients, patients can be safely transferred to the floor, as opposed to the ICU, which significantly decreases the patient length of stay.</td>
</tr>
<tr>
<td>Galper et al. (2018)</td>
<td>Quasi-Experimental Study</td>
<td>73 patients from Virginia Hospital Center, VA, USA, were studied before (n=38), and after (n=35) the initiation of a fast-track protocol aimed at streamlining hospital care of post-TAVR patients.</td>
<td>Rates of permanent pacemaker (25.7% vs. 13.1%), stroke (5.7% vs. 2.6%) and 30-day mortality (8.5% vs 2.6%) were lower after the initiation of the protocol. Length of stay for all patients was reduced from 3.2 to 1.9 days with the initiation of the protocol.</td>
<td>The initiation of a fast-track protocol can lead to a decreased length of stay with frequent next day discharge after TAVR.</td>
</tr>
<tr>
<td>Alkhalil et al. (2017)</td>
<td>Cohort Study</td>
<td>268 patients were studied who underwent TAVR, where shorter length of stay patients (163 patients), and prolonged length of stay patients (105 patients) were analyzed for 30-day mortality, 30-day rehospitalization, and long-term survival data.</td>
<td>In appropriately selected patients, shorter length of hospital stay following TAVR in an experienced and high-volume center is feasible and safe.</td>
<td>Shorter length of stay may minimize complications in elderly patients undergoing TAVR due to a longer hospital stay, and will also help to lessen high healthcare costs.</td>
</tr>
<tr>
<td>Rathore, Latyshev, Emore, Rowe, and Foerst, (2017)</td>
<td>Randomized Controlled Trial (RCT)</td>
<td>100 transfemoral TAVR patients were assessed in terms of eligibility for next day discharge and were followed in-hospital, and in their 30-day follow-up.</td>
<td>Carefully selected patients without complications following a transfemoral TAVR can be discharged safely next day.</td>
<td>TAVR can be performed safely with minimal sedation and transthoracic echocardiographic guidance which leads to early transfer to the floor, and subsequently a shorter hospital stay for patients.</td>
</tr>
<tr>
<td>Lauck et al. (2016)</td>
<td>Cohort Study</td>
<td>393 patients from May 2012 to October 2014 were retrospectively reviewed where 150 patients (38.2%) were discharged early after implementation of a TAVR clinical pathway to facilitate safe discharge home at the earliest time.</td>
<td>Median length of stay was 1 day for early discharge, and 3 days for other patients; 97.7% were discharged home. There were no differences in 30-day mortality, disabling stroke, or readmission.</td>
<td>The implementation of the Vancouver TAVR clinical pathway demonstrates that shorter length of stay and excellent outcomes can be achieved by conducting preop-procedure risk stratification planning, shifting to a default practice of local anesthesia,</td>
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<td>Study</td>
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<td>Details</td>
<td>Conclusion</td>
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<td>Durand et al. (2015)</td>
<td>Quasi-Experimental Study</td>
<td>From 2009 to 2013, 337 patients underwent transfemoral TAVR with the Edwards SAPIEN-XT prosthesis using local anesthesia and were discharged home either early (≤3 days, n=121) or after 3 days (n=216).</td>
<td>In an uncomplicated and planned transfemoral TAVR procedure using Edwards SAPIEN-XT valve and local anesthesia, early discharge is feasible and safe in selected patients.</td>
<td></td>
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<tr>
<td>Jensen et al. (2015)</td>
<td>Cohort Study</td>
<td>151 patients who underwent a minimalist approach TAVR, where patient characteristics and early outcomes were compared using Valve Academic Research Consortium.</td>
<td>Minimalist TAVR can be done with less or no ICU support, leading to improved resource use. Clinical outcomes from the study showed that patients transferred right to the floor were deemed eligible for early discharge (within 48 hours of the procedure).</td>
<td></td>
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<tr>
<td>Frohlich et al. (2014)</td>
<td>Systematic Review and Meta-Analysis</td>
<td>1,542 patients were included in this analysis from January 2005 to January 2013 comparing monitored anesthesia care (MAC) versus general anesthesia (GA) in patients undergoing transfemoral TAVR to assess 30-day overall mortality, cardiac/procedure-related mortality, stroke, myocardial infarction, sepsis, acute kidney injury, procedure time and duration of hospital stay.</td>
<td>Compared to GA, MAC was associated with a shorter hospital stay (−3.0 days (−5.0 to −1.0); P = 0.004) and a shorter procedure time (MD −36.3 minutes (−58.0 to −15.0 minutes); P &lt;0.001). Monitored anesthesia care (MAC) may be associated with reduced procedural time and shorter hospital stay.</td>
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<tr>
<td>Harris, Dean, &amp; Keegan, (2014)</td>
<td>Randomized controlled trial</td>
<td>187 patients who underwent a TAVR were randomly assigned to go to the floor versus the ICU after having a TAVR in the cardiac cath lab, 110 of those who went to the floor.</td>
<td>New clinical guidelines for select TAVR patients have created a safe option outside of the critical care unit by fully utilizing the specialized training, skills, and knowledge of the nursing staff of an intermediate cardiac nursing care floor, as this nursing care can positively influence outcomes when the focus is</td>
<td></td>
</tr>
<tr>
<td>Marcantuono et al. (2014)</td>
<td>Quasi-Experimental Study</td>
<td>99 patients undergoing a transfemoral TAVR were assigned based on eligibility criteria for either the fast track transition of care to a PACU immediately after surgery then the cardiac step-down unit 2 hours after surgery (n=39), or the traditional track of transfer to the ICU post-TAVR (n=60).</td>
<td>Patients on the fast track had shorter ICU stays (28 vs. 45 hours) (P&lt;0.0001), post-operative length of stay (4.4 vs 5.3 days) (P&lt;0.0001), and incurred lower direct costs ($44,923 vs. $56,339) (P&lt;0.001).</td>
<td>It is feasible to identify a large percentage of suitable patients pre-procedure who are eligible for a FT post-procedure care pathway.</td>
</tr>
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Appendix B

Timeline of Study

**Timeline**

- **Spring, Summer, Fall 2017**: Begin brainstorming capstone topic ideas and research various gaps in literature
- **January 2018**: Finalize capstone topic/develop PICO research question and statement of evidence-based support for proposed topic
- **February 2018**: Construct problem statement and background for capstone project. Continue literature review on research topic.
- **March 2018**: Apply nursing theory/conceptual framework to capstone project idea. Begin statistical preliminary data plan and complete statistical consultation meeting with Ms. Hillman. Continue literature review.
- **April 2018**: Construction problem/gap in practice, expanded literature review, theoretical basis for capstone project, design and methods, data analysis, and discussion of ethical issues/protection of human subjects
- **May 2018**: Apply for IRB approval, complete final draft of capstone paper
- **June 2018**: After receiving IRB approval, begin collecting data through chart reviews
- **July 2018**: Complete data collection, analyze data and interpret findings. Compare findings from data collection and analysis to evidence-based findings from literature to determine conclusions
- **August 2018**: Defend capstone project and adjust capstone project if advised
## Appendix C

### Descriptive Data by Implementation Groups (Pre-)

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Appendix C continued

| 21 | Pre | 76 | 11 | 3 |
Appendix D

Descriptive Data by Implementation Groups (Post-)

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Appendix E

University at Buffalo IRB Approval

University at Buffalo Institutional Review Board (UBIRB)
Office of Research Compliance | Clinical and Translational Research Center Room 5018
875 Ellicott St. | Buffalo, NY 14203
UB Federalwide Assurance ID#: FWA00008824

STUDY EXEMPTION

June 1, 2018

Dear VICTORIA DRAGO,

On 6/1/2018, the University at Buffalo IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
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<tr>
<td>Title of Study:</td>
<td>Effect of Early Patient Transfer to Floor After Transcatheter Aortic Valve Replacement Surgery (TAVR)</td>
</tr>
<tr>
<td>Investigator:</td>
<td>VICTORIA DRAGO</td>
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<tr>
<td>IRB ID:</td>
<td>STUDY00002518</td>
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<td>Funding:</td>
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<td>IND, IDE, or HDE:</td>
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<tr>
<td>Documents Reviewed:</td>
<td>• Victoria Howard, Category: IRB Protocol; • Victoria Howard, Category: Other;</td>
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</table>

The University at Buffalo Institutional Review Board has considered the submission for the project referenced above on 6/1/2018 and determined it to be Exempt.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the Click system.

UBIRB exemption is given with the understanding that the most recently approved procedures will be followed and the most recently approved consenting documents will be used. If modifications are needed that may change the exemption determination, please contact the UB IRB Office. Also, see the Worksheet: Exempt Determination (HRP-312) for information on exemption criteria and categories.

As principal investigator for this study involving human participants, you have responsibilities to the SUNY University at Buffalo IRB (UBIRB) as follows:
Appendix E continued

1. Ensuring that no subjects are enrolled prior to the IRB approval date.

2. Ensuring that the UBIRB is notified of:
   • All Reportable Information in accordance with the Reportable New Information Smart Form.
   • Project closure/completion by submitting a Continuing Review/Modification/Study Closure Smart Form in Click.

3. Ensuring that the protocol is followed as approved by UBIRB unless minor changes that do not impact the exempt determination are made.

4. Ensuring that the study is conducted in compliance with all UBIRB decisions, conditions, and requirements.

5. Bearing responsibility for all actions of the staff and sub-investigators with regard to the protocol.

6. Bearing responsibility for securing any other required approvals before research begins.

If you have any questions, please contact the UBIRB at 716-888-4888 or ubirb@buffalo.edu.
Appendix F

Catholic Health Systems Official IRB Approval Letter

July 2, 2018

Victoria Howard
University at Buffalo School of Nursing/Research
3435 Main Street
Wende Hall
Buffalo, New York 14214

RE: CHS/IRB/1822: 00002518: Effect of Early Patient Transfer to Floor after Transcatheter Aortic Valve Replacement Surgery (TAVR)

Ms. Howard:

Thank you for submitting the documentation necessary to inform the Catholic Health System IRB that you will be using our facilities for the UBIRB approved research, mentioned above.

Following administrative review by our board chair on June 20, 2018, you have approval to proceed with the above mentioned study for one year at Catholic Health.

The Board expects a progress report from the principal investigator every twelve months or at the end of this study, whichever comes first. There are to be no changes made in the procedures being followed. In the event of any adverse events or mishaps, these must be reported to the IRB within 5 business days. The IRB members may request you to appear at the next scheduled IRB meeting to discuss the incidence. Please take note that you must submit a follow-up report and request for continuation of the study before the expiration date noted above or your study will be terminated.

Please quote the Catholic Health System IRB protocol number, cited above, in any further correspondence, and send it to:

Legal Services Department
Institutional Review Board
Ph: (716) 821-4477
Fax: (716) 821-4465
Appendix F continued

Attention: Catholic Health System IRB
Administrative and Regional Training Center
Legal Services-6th floor
c/o Katherine DeWitt
144 Genesee Street, Buffalo, New York, 14203

If you have any questions or concerns, please feel free to contact me at Sisters Hospital Medical Staff Office or Katherine DeWitt at 716-821-4477 or kdewitt@chsbuffalo.org.

Sincerely,

IRB Meeting Date: Administrative 6/20/2018
Agenda Item: 9.2

Sateesh Satchidanand, M.D., Chair
Catholic Health System, Institutional Review Board

SS/kmd
EFFECT OF EARLY PATIENT TRANSFER TO FLOOR AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT SURGERY (TAVR)

By: Victoria Howard, BSN, RN, AGNP-S,

Trans Catheter Aortic Valve Replacement (TAVR) - surgical procedure for patients with severe aortic stenosis

- Standard of care for patients with severe symptomatic aortic stenosis who are not candidates for open heart surgery
- Early transfer to floor improves outcomes and decreases length of hospital stay
  - (Zhang & Melander, 2014)

Background

Evaluate the effectiveness of a new policy regarding early patient transfer to the floor after a TAVR.

Purpose of capstone project

Among adult patients that undergo a trans-femoral Transcatheter Aortic Valve Replacement (TAVR), is there a decreased length of hospital stay for patients that are transferred to a cardiac step-down unit same day as surgery per new hospital policy, as compared to the length of hospital stay for patients prior to policy implementation?

Capstone Question
Current Literature

- Fast-track protocols designed to streamline care to decrease length of stay
- Early initiation of mobilization, hydration, nutrition, and toileting on step-down unit to decrease length of stay

Significance/Gap in Knowledge

- Limited research available regarding TAVR patients and outcomes (Sud et al., 2017)
- Risk factors with TAVR: stroke, third-degree heart block, retroperitoneal bleed which makes providers hesitant to transfer these patients to floor early (Lauck et al., 2016)
- Significance: decreases patient length of stay/decreases healthcare costs (Alkhalil et al., 2017)

Theoretical Framework


Justification for Conceptual Model

- Nurses are “active participants in the formulation, implementation, and evaluation of public policy directed toward the improvement of health of individuals, families, and communities” (Russell & Fawcett, 2005, page 320).
- Model provides guidelines for policy analysis and program evaluation research
Gaps in Practice Policy

To help close the gap in practice regarding the optimal time to transfer patients to the floor after TAVR.

Create standard of care for optimal timing to transfer patient to floor after TAVR.

Methodology

- Quasi-experimental Retrospective Program Evaluation
- Study was completed as a chart review
- Setting: Hospital in Buffalo, NY
- Sample: 42 patients
  - 21 patients in experimental group (patients transferred to the floor early after TAVR)
  - 21 patients in control group (patients not transferred early to the floor after TAVR)

Data collection

- Data collection took place by chart review at the hospital to extract data regarding patient outcomes.
- Data collection sheet to house data
- SPSS for data collection, storage, and statistical analysis to determine outcomes

Data Analysis

Data analysis using a t-test and the analysis of covariance (ANCOVA). (Polit, 2013)
Scope of Practice

- Closing gap in practice
- Will allow APNs to provide care geared towards optimizing patient outcomes by following evidence-based guidelines
- Education to staff on benefits of early patient transfer

Ethics

- IRB submission, review, and approval

Statistical Analysis

- T-Test to compare pre-and post-policy length of stay
- A p-value of <0.05 was considered to be statistically significant.

Statistical Analysis cont.

- ANCOVA-to control for patient age (in years) and number of major comorbidities
Results

- A total of 42 patients were included in this study;
  - 21 patients in the experimental group (patients transferred to the floor early after TAVR)
  - 21 patients in control group (patients not transferred early to the floor after TAVR)

Descriptive Data by Policy Implementation Groups

<table>
<thead>
<tr>
<th>Patient ID code</th>
<th>Policy in effect (Pre- or Post-)</th>
<th>Age</th>
<th>Number of Comorbidities</th>
<th>Hospital Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Study Sample-Age

- Average age of the pre-policy implementation group-81.04 years
- Average age of the post-policy implementation group-80.3 years.

Study Sample-Comorbidities

- Average number of comorbidities of the pre-policy implementation group-4.52
- Average number of comorbidities of the post-policy implementation group-3.57.
T-Test Results

• Mean for group 1 (pre-policy) was 5.05 with a standard error of the mean (SEM) of ± 0.82.
• Mean average for group 2 (post-policy) was 3.05 with a SEM of ± 0.68.
• There is a significant difference between these values (p = 0.0478).

Interpretation of T-Test Results

• There is a significant difference between the length of hospital stay between the pre-policy implementation group and the post-policy implementation group.
• Patients transferred right to the floor (group 2) had a decreased length of hospital stay after a TAVR.

Analysis of Covariance (ANCOVA)

• ANCOVA was utilized to control for age and number of comorbidities.
• LOS post policy was significantly shorter than the length of stay pre-policy (p = 0.029, F= 3.359, df=3).
### ANCOVA Results Table

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>109.382*</td>
<td>3</td>
<td>36.461</td>
<td>3.359</td>
<td>.029</td>
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<tr>
<td>Intercept</td>
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<td>1</td>
<td>20.818</td>
<td>1.918</td>
<td>.174</td>
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<td>AgeSubset</td>
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<td>3.294</td>
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<tr>
<td>ComorbSubset</td>
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<td>2.780</td>
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<tr>
<td>Error</td>
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<td>38</td>
<td>10.856</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total 1210.000 42
Corrected Total 521.905 41

* R Squared = .210 (Adjusted R Squared = .147)

**Table 7**

### Interpretation of ANCOVA Results

ANCOVA gave a clear picture of the overall pattern indicating that the policy did have a significant effect on length of hospital stay when the effects of age and comorbidities were taken out of consideration.

### Discussion

- This research study has displayed that the new policy in effect decreases patient length of stay.

- The secondary analysis performed by ANCOVA has also indicated the significance of age and comorbidities as factors that play a role in the patient's length of hospital stay.

- No established guidelines or practice protocols in the practice. Future research in this area is recommended to determine optimal time to transfer the patient to the floor after a TAVR.

### Limitations

- Small sample size

- One hospital in one location of WNY

- Limited amount of time
Strengths

• Ease at which reviewing patient records and performing statistical analysis took place due to the small number of subjects enrolled in the study.

• The research question could be addressed in a short amount of time, as data collection and data analysis were able to be completed quickly.

• Ease at which obtaining institutional IRB approval and facility-based IRB approval took place, due to the nature of the study (retrospective chart review).

Role of the APN

• APN’s should follow guidelines and practices outlined in the literature regarding optimal time of patient transfer

• Educate fellow staff

Conclusions

• Post-policy group had a significantly decreased length of hospital stay

• Future research should be conducted to support the practice of patient transfer to the floor after TAVR

References


References


LaManna, J. (2016). Level of care assignments [Hospital policy and procedure]. Catholic Health System, Buffalo, NY.


