Nursing Students Use of Teach-back to Improve Patients'
Knowledge and Satisfaction: A Quality Improvement Project

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Abstract

A unit within a proposed healthcare institution has an ineffective process for educating patients about their medications, thereby resulting in patient satisfaction scores below the benchmark. The purpose of this quality improvement project was to have nursing students implement the teach-back method to improve patient knowledge of medications and patient satisfaction in the “always” response in the HCAHPS survey (CMS, 2008). The specific aims included: (1) increase nursing students use of teach-back from the current state of 0% to 80% of their patient encounters on the unit; (2) ensure that 80% of their patients encountered can state the name, purpose and side effects of their current medications; and (3) have 80% of patients satisfied with their medication teaching. A quality improvement framework was utilized for this project. Three variables included the teach-back method for medication education, patient satisfaction, and patient knowledge. Two process measures ensured that teach-back was implemented and three outcome measures determined the impact of the teach-back method. During the “study” phase of the “Plan-Do-Study-Act” [PDSA] method descriptive statistics were used to analyze data from the process and outcome measures, and modifications to the intervention occurred during the “Act” phase followed by another PDSA cycle (Ogrinc et al., 2012). Specific Aim 1 was partially met as junior nursing students provided medication education to 60.5% of participants and senior nursing students educated 82.9% of participants. Specific aim 2 was not met. However, the participants’ knowledge of the purpose of their current medications improved from 16.4% to

58.2%, and knowledge of side effects improved from 1.8% to 50.9%. Specific aim 3 was partially met. Patients were 100% satisfied as measured by the One Minute Evaluation. However, HCAHPS survey “always” responses to questions in the category of “Communication about Medicines” did not reach the benchmark. Use of the translator phone presented challenges during the intervention. In conclusion, nursing students’ use of the teach-back improved patients’ knowledge of medications and patients were satisfied with their medication teaching. Nursing students can use the One Minute Evaluation and Patient Knowledge Tool to evaluate patient satisfaction and knowledge during patient teaching. Results of this project can be used as segue into further research of the dynamics of the nursing student and patient relationship and the impact of nursing students on patient knowledge, satisfaction and patient outcomes.

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Nursing Students' Use of Teach-back to Improve Patients'

Knowledge and Satisfaction: A Quality Improvement Project

Chapter I

Introduction

Since its inception, health care facilities acknowledge the Hospital Consumer Assessment of Healthcare Providers and Systems [HCAHPS] survey (CMS, 2008) results as an indicator for patient satisfaction and quality patient care. Previous studies have linked improved patient outcomes to patient satisfaction, and have found that the communication process between patients and nurses improves patient satisfaction (Wolosin, Ayala & Fulton, 2012). The care patients receive from nurses has the greatest influence on HCAHPS survey results (Wolosin, Ayala & Fulton, 2012). A decline in patient satisfaction scores may indicate a change in the nursing care delivery system. Barriers such as staffing, time constraints, and patient acuity level often affect nursing care delivery, especially patient education (Close, 1988; Marcum, Ridenour, Shaff, Hammons & Taylor, 2002; Mooney, 1987).

The hospital environment offers opportunities for nursing students to apply knowledge and skills, while learning the art of caring for patients. Nursing students are involved in the direct delivery of patient care, and are perceived as having a caring and therapeutic relationship with patients (Suikkala & Leino-Kilpi, 2000). Establishing a nursing student and patient relationship builds the foundation for effective patient teaching. Teach-back is an evidence-based teaching strategy that has been shown to improve patient understanding of health care needs, and patient

satisfaction (Agency for Healthcare Research and Quality [AHRQ], 2014; Schillinger et al., 2003; Tamura-Lis, 2013). The specific aims of this quality improvement project are to (1) increase nursing students use of teach-back from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit of Regan 3 South; (2) to ensure that 80% of their patients approached can state the name, purpose and side effects of their current medications; and (3) have 80% of patients satisfied with their medication teaching.

Background

Quality patient care and patient education are closely linked to patient satisfaction (Close, 1988; Kutney-Lee et al., 2009). The hospital Value-Based Purchasing program through the Centers for Medicare and Medicaid Services [CMS] (CMS, 2015a.) incentivizes health care facilities to achieve the highest quality of care, patient satisfaction, and hospital performance in order to receive a higher level of reimbursement. Reimbursement for patient satisfaction with hospital care is determined through the analysis of HCAHPS survey results (Kennedy, Craig, Wetsel, Reimels & Wright, 2013). The HCAHPS survey consists of several questions to evaluate the patient's view of his/her recent hospital experience and encompasses several categories, including the hospital environment, hospital staff, communication with care providers, pain management, communication about medications, discharge information, and rating and recommendation of the health care facility (CMS, 2008). In 2017 and 2018, Medicare's reimbursement will be adjusted in conjunction with a

greater emphasis on safety, and patient and caregiver experiences of care (CMS, 2015b.). Studies have indicated that HCAHPS questions referring to medication education receive one of the lowest ratings by patients (Jha, Orav, Zheng & Epstein, 2008; Kutney-Lee et al., 2009). A goal of health care institutions is to improve the method of delivery for educating patients, family members and/or caregivers about medications to improve the quality of patient care, patient satisfaction scores, and to increase reimbursement to hospitals.

Patient education is one aspect of nursing practice to ensure that patients receive quality care and result in better patient outcomes. Educating a patient about one's illness and health care needs will enable the patient to attain an optimum state of well-being (Close, 1988; Stanton, 1983). Patient education during hospitalization includes providing information regarding the patient's medications and post-hospitalization interventions. The Institute of Medicine (2006) recommends that healthcare providers improve the method of patient education about medications and actively involve the patient, family member or caregiver in the education process. Educating patients, family members and caregivers regarding the patient's medications prior to discharge will increase patient compliance outside of the acute care setting (Cargill, 1992; Foust, Naylor, Bixby & Ratcliffe, 2012; Kerzman et al., 2004). The Joint Commission 2016 National Patient Safety Goals (2016) endorses medication education with patients and family members prior to discharge as an element of medication safety. In an inpatient hospital setting, medication education

that is begun prior to discharge, especially in the elderly population, will improve a patient's understanding of medications (Kimball et al, 2010).

Medication education is a component of patient education that has been observed as primarily conducted during medication administration. It can frequently be witnessed that nurses give medications to patients stating the name of the medication, without discussing the actions or side effects. Common methods for medication education include: verbal, written materials, repetition of information, pamphlets and audiovisual (Mooney, 1987). Nurses often utilize the same method of instruction for educating patients due to a lack of available time, patient workload, and lack of knowledge about the patient's learning capability (Albrecht et al., 2014; Mooney, 1987). Communication of medication instruction should be consistent with the use of clear and concise information; the avoidance of phrases to improve patient understanding and compliance after discharge; and be individualized to patient needs and cognitive ability (Albrecht et al., 2014; Foust et al., 2012; Kerzman et al., 2004; Kimball et al., 2010; Mooney, 1987; Nurit, Bella, Gila & Revital, 2009).

The teach-back method is an evidence-based technique for educating patients by verifying a patient's understanding of health care information by asking the patient, family member or caregiver to repeat the information provided in the recipient's own words (AHRQ, 2015; Kornburger, Gibson, Sadowski, Maletta & Klingbeil, 2013; Tamura-Lis, 2013). When using the teach-back method, information should be communicated slowly, clearly, in simple language, and in short phrases that

are age-appropriate to the individual patient (Kornburger et al., 2013; Tamura-Lis, 2013). Teach-back improves a patient's understanding of health information, level of trust, and patient satisfaction (AHRQ, 2015; Schillinger et al., 2003). Communication between the patient and healthcare member is enhanced with the teach-back method since it provides the patient an opportunity to comprehend health information and be evaluated in a non-judgmental fashion (Griffey et al., 2015; Tamura-Lis, 2013). Any healthcare member can utilize this learning method for any situation requiring patient education (Tamura-Lis, 2013).

Nursing students are active participants in patient's care within healthcare facilities. The Baccalaureate Essentials developed by the American Association of Colleges of Nursing [AACN] (2008) identifies the anticipated outcomes of students graduating from a baccalaureate program of nursing. Essential IX discusses the elements of general nursing practice upon the conclusion of a baccalaureate nursing program (AACN, 2008). Essential IX infers that students will have the competency to utilize patient teaching in practice to encourage the patient's involvement in care (AACN, 2008). Patient education is an important component of the providence of patient care. Patient teaching is an objective that students are expected to meet during clinical experiences. Previous research has explored the relationship between the student and the patient, and its effect on patient care.

The nursing student is a member of the healthcare team that is perceived by patients as positively influencing patient care (Suikkala, Leino-Kilpi & Katajisto,

2009; Marks & Koren, 2011). Patient satisfaction with the care received from nursing students has also been linked to overall patient satisfaction (Oskay, Gungor & Basgol, 2015). Suikkula, Leino-Kilpi & Katajisto (2009) conducted a study about the student-patient relationship and found that patients benefit from student involvement in patient care in the clinical setting. Patients report that nursing students are responsive to patient needs; provide individualized care; communicate well with other caregivers and patients; and are proficient in knowledge and skilled care (Oskay, Gungor & Basgol, 2015). A recent study by Soric, Glowczewski & Lerman (2016) focused on pharmacy students to teach medication information, purpose and side effects to patients on several units within a healthcare facility and the intervention resulted in a significant improvement in HCAHPS survey results pertaining to medication education.

Local Background and Problem Description

In 2015, as part of a leadership course requirement in a baccalaureate nursing program, senior-level nursing students were asked to participate in a “Clinical Leadership Experience” on specific units within a 700-bed, non-profit healthcare facility in northern New Jersey. The “Clinical Leadership Experience” consisted of assigning senior-level nursing students to a designated unit on a scheduled clinical day to approach patients and facilitate discharge teaching about discharge instructions, medications and home care needs using a scripted teach-back method. Nursing students also conducted follow-up telephone calls to patients within 48 to 72

hours following discharge to verify patient understanding of discharge information. The program's objectives were in alignment with the objectives of the leadership course for senior-level nursing students. The "Clinical Leadership Experience" served a dual purpose by enabling students to focus on a quality improvement issue that would meet baccalaureate competencies, and to work closely with a clinical partnership program to assist the institution to meet their nursing outcomes. The impetus behind the development of the experience was due to the percentage of "always" responses in HCAHPS survey results below the benchmark in several hospital units pertaining to discharge and knowledge of medications, which affected the funding received by the hospital. During implementation of the "Clinical Leadership Experience" the "Explanation of New Medications" in the HCAHPS Survey (CMS, 2008) for all units improved from 78% in the first quarter of 2015 (pre-intervention) to 81.7% in the second quarter (during intervention) (M. Hozak, personal communication, June 8, 2016). Following the "Clinical Leadership Experience", the "always" responses in the HCAHPS survey (CMS, 2008) "Explanation of New Medications" decreased to 75.3% in the third quarter, and to 72.6% in the fourth quarter of 2015 (M. Hozak, personal communication, June 8, 2016).

The HCAHPS survey response results are below the benchmark in several categories. In particular, the HCAHPS survey results pertaining to medication education are below the benchmark for the state and industry almost every quarter.

The nursing administration at this healthcare facility recognizes that there is a need to change the current process of patient education in an effort to improve patient satisfaction results. A 37-bed geriatric unit within the healthcare facility was identified as one of the lowest scoring units in “always” responses to medication education in the HCAHPS survey. A fishbone diagram, Figure 1, was designed based upon the observation of six categories that are believed to contribute to the identified problem of an ineffective medication education process which results in poor patient satisfaction survey results.

Figure 1: Fishbone Diagram

The first category, People, consists of the RN's who commented that the staffing, time constraints and lack of training in patient education have contributed to ineffective medication education. Other healthcare professionals assisting RN's with patient care include the Patient Care Assistants (PCA's), and nursing students two to

four days per week, from two to three nursing programs, ten out of twelve months during the year. PCA's are unable to assist with educating patients about medications. Nursing students assist with medication education, if it aligns with the student's learning objectives to assist with discharge teaching and address medications. There is no system in place to ensure that nursing students use teach-back to educate the patients and no mechanism to have student involvement with other patients on the unit going home. The second category is observations on the unit that revealed inconsistencies in methods of educating patients and caregivers; closed-ended questions were used to verify patient understanding; and in some situations, there was no verification of patient or caregiver understanding of medications. Staff nurses were questioned regarding the process used for educating patients about their medications and stated that patients are provided with information about medications on admission with medication reconciliation and new medications, during administration of medications, and at the time of discharge. Nurses stated that patients and family members, if present, are given information about medication actions and side effects, and are asked to repeat back to the nurse the information about the medications. The third category is the equipment that contributes to the process. The only piece of equipment used is the Translator phone for translating information to patients when a bilingual nurse is unavailable. The translator phone is used frequently since Spanish and Arabic are the second and third most common languages understood by patients on that unit, and a translator is not available at all times. An issue with the translator phone is that information is not always translated properly to relay the appropriate

information. A fourth category is the materials in which Micromedex is used to obtain information about prescribed medications. The Micromedex medication information sheet is the only media used for medication education. Nurses reported that the Micromedex medication information sheets are provided to patients for new medications and for medications upon discharge. However, it was observed that not all nurses use the Micromedex medication information. A fifth category is the Environment in which the unit specialty is Geriatrics with a 37-bed capacity. There are usually 7 RN's on the 7 am to 7 pm shift and 6 RN's on the 7 pm to 7 am shift. The RN to patient ratio is, 1 RN to 5-6 patients. The unit may have up to ten discharges in a day and most transfers take place after 7 pm. The average length of hospital stay for patients ranges from 3-5 days. The "churn" of the unit can have a negative impact on the process of medication education. Nurses must rely on nurses' documentation of patient teaching of medications to ensure that the patient has been educated about new and current medications. A "patient education" screen was recently implemented on all units for nurses to document patient teaching. However, no data are available on its use or effectiveness.

Management on the unit is the last category that contributes to the identified problem. The management consists of a Charge RN and a Unit Manager. The Charge RN's responsibilities consist of having a patient assignment and to assist with the daily management of the unit. The Unit Manager's responsibilities consist of attending several meetings off of the unit, daily, and to intermittently assess the unit

and assist with any unresolved problems. There was no process in place for managers to evaluate if medication education was taking place. However, a new “patient education” screen was recently implemented on the unit that will enable the manager to track patient education. At this time no data are available regarding the effectiveness of the new documentation screen. All of the issues identified within each category point to the reasons for an ineffective medication education process. The ineffective medication education process has resulted in low “always” HCAHPS survey responses to questions regarding medications.

The purpose of this quality improvement project is to have students implement the teach-back method to improve patient knowledge of medications and patient satisfaction in the “Always” responses in the HCAHPS survey (CMS, 2008).

Specific Aims

The specific aims of this quality improvement project are to:

- (1) increase nursing students use of teach-back from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit of Regan 3 South;
- (2) ensure that 80% of the patients approached can state the name, purpose and side effects of their current medications as measured by the “Patient Knowledge Tool” in Appendix 3 by December 31, 2016;

(3) have 80% of the patients satisfied with their medication teaching as measured by the One Minute Evaluation (Appendix 4) and the HCAHPS survey (CMS, 2008) “Always” responses to questions pertaining to medication education will be at or above the benchmark of each quarter by December 31, 2016.

Project Model and Rationale

The first row in the project model (Figure 2), in green, shows the theory that the nursing implementation of an evidence-based intervention (process) will have an affect on patient outcomes. Based on the findings from previous research, nursing

students' involvement has a positive influence on patient care (Austria, Baraki and Doig, 2013; Marks & Koren, 2011; Oskay, Gungor & Basgol, 2015). Therefore, nursing students' implementation of evidence-based interventions will have positive impact on the quality of patient care and will result in improved patient outcomes.

The second level, in blue, illustrates the variables in the project model and consists of the teach-back method for medication education, and its relationship with patient satisfaction and patient knowledge. In this project model it is expected that the teach-back method will improve patient satisfaction and patient knowledge of medications. The teach-back method is evidence-based and improves patient satisfaction and patient knowledge of medications (Dantic, 2014; Griffey et al., 2015; Tamura-Lis, 2013; Negarandeh et al., 2013). The teach-back method is an evidence-based technique that nursing students will use to improve patient understanding by asking patients to repeat back the information learned in their own words (AHRQ, 2015).

The third level, in red, illustrates the measures in the project model. A Teach-back Observation Tool (AHRQ, 2016), Appendix 1, will be used to measure a nursing student's knowledge of use of teach-back for medication education after being trained on the teach-back method. The Nursing Student Perception of Teach-back Effectiveness Survey, Appendix 2, will be completed by nursing students at the end of each clinical day to measure the student's perception of the effectiveness of the teach-back method when educating patients about their medications. The One Minute

Evaluation (Appendix 4) completed by the patient and/or caregiver after the medication education intervention will measure patient satisfaction with the teaching session. The HCAHPS survey (CMS, 2008) “Always” responses to questions pertaining to medication education will be measured for evaluating patient satisfaction. Patient knowledge will be measured by data gathered on the Patient Knowledge Tool, Appendix 3. For each patient instructed about medications, nursing students will be expected to answer questions regarding the patient’s knowledge of medications before and after the medication education intervention. As a balancing measure, patient complaints or dissatisfaction with the medication education provided by students will be measured. The charge nurse will keep a log, as in Appendix 5, of the number of complaints made by patients pertaining to the teach-back instruction about medications that was provided by nursing students. The charge nurse can also record any comments made by patients regarding the medication education.

Quality Improvement Framework

Figure 3: The Model for Improvement (Ogrinc et al., 2012)

The Model for Improvement using the Plan-Do-Study-Act [PDSA] method (Ogrinc, Headrick, Moore, Barton, Dolansky, & Madigosky, 2012) will be used to test the changes to be made to the current system for educating patients about medications. The Model for Improvement (Figure 3) framework (Ogrinc et al., 2012), consisting of a 4-phase cycle will be used as the framework for this project. Prior to initiating the 4-phase cycle, three questions need to be addressed. The first question asks, "What are we trying to accomplish?" (Ogrinc et al., 2012). In order to answer the first question, three components need to be considered. First, an area needing improvement needs to be identified (Ogrinc et al., 2012). The data collected from HealthStream's Expanded HCAHPS Survey (HealthStream, nd) (Appendix 4) results of "always" responses to questions pertaining to medication education are below the benchmark on the identified unit indicating an opportunity for improvement. The second component is to "narrow the focus" (Ogrinc et al., 2012) for the area of improvement. Although there are several categories with low HCAHPS "always" responses, the questions pertaining to medication education are below the benchmark each quarter on several hospital units. A geriatric unit with low HCAHPS "always" responses to medication education questions was identified as the unit of choice for implementation of the quality improvement project. The third component is to develop a specific aim(s) statement that will guide the project (Ogrinc et al., 2012). The first aim of this quality improvement project are to (1) increase nursing students use of teach-back, from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit, Regan 3 South; (2) to ensure that

80% of the patients approached can state the name, purpose and side effects of their current medications as measured by the “Patient Knowledge Tool” in Appendix 3 by December 31, 2016; and (3) have 80% of patients satisfied with their medication teaching as measured by the One Minute Evaluation (Appendix 4) and the HCAHPS survey (CMS, 2008) “Always” responses to questions pertaining to medication education will be at or above the benchmark performance of each quarter by December 31, 2016.

The second question, “How will we know that a change is an improvement?” will be answered by data obtained from the Patient Knowledge Tool (Appendix 3), data obtained from the One Minute Evaluation (Appendix 4), and the “always” responses to medication education questions in the category of “Communication about Medicines” in the HCAHPS Survey (CMS, 2008). The third question, “What changes can we make that will result in improvement?” will be addressed by having the nursing students implement the teach-back method for medication education during a patient’s hospitalization. The teach-back method is an evidence-based technique that has been shown to improve patient knowledge about medications (Dantic, 2014; Kornburger et al., 2013; Negarandeh et al., 2013).

The 4-phase cycle begins with the “Plan” phase. The “Plan” phase will consist of identifying stakeholders; developing a project team; and training the nursing students and clinical faculty on the intervention. In the “Do” phase, the nursing students will implement the teach-back method on the unit for the patients going

home. The results of the Patient Knowledge Tool (Appendix 3), patient complaints and observations will be analyzed in the “Study” phase. In the final “Act” phase, modifications will be made to the proposed medication education process based on the analysis of weekly results, followed by another “PDSA” cycle.

Significance for Nursing

Teaching by nurses' dates back to the 1800's when Florence Nightingale promoted the use of nurses to educate patients on how to improve their state of health (Bastable, 2006). Patient education is intended to improve a patient's understanding of their health care issues in an effort for the patient to achieve an optimum level of well-being (Close, 1988; Stanton, 1983). Patient outcomes and satisfaction, along with health care costs, are positively affected by patient education (Marcum et al., 2002). Previous studies have shown that the use of teach-back with patient education aids in the improvement of patient compliance with medications, and in the reduction of readmission rates (Darcy, Murphy & DeSanto-Madeya, 2014; Green, Dearmon & Taggart, 2015; Knox & Mischke, 1999; Li, Morrow-Howell, Proctor, 2004; Peter et al., 2015). Implementation of a quality improvement project with a focus on utilizing the teach-back method to improve the process of patient education of medications can ultimately result in a decrease of readmission rates on the identified patient care unit.

The current process of medication education on the identified unit lacks formality, continuity, and effectiveness in medication teaching techniques. An ineffective medication education process was detected by administration after low

HCAHPS survey (CMS, 2008) results at this healthcare facility prompted an inquiry into areas that needed improvement in the quality of care being provided to patients. Studies indicate that HCAHPS questions referring to “Communication about Medicines” (CMS, 2008) receive one of the lowest ratings by patients (Jha, Orav, Zheng & Epstein, 2008; Kutney-Lee et al., 2009). Health care facilities need to closely examine the process of medication education currently in place and consider options to improve the manner in which patients receive instructions about medications in an effort to improve the quality of patient care being provided. Research has shown that the care patients receive from nursing students improves patient satisfaction (Oskay, Gungor & Basgol, 2015). Improved patient satisfaction will have a positive effect on patient care and lead to improved patient outcomes (Austria, Baraki & Doig, 2013; Marks & Koren, 2011; Oskay, Gungor & Basgol, 2015). The purpose of this quality improvement project is to have nursing students use a scripted teach-back method to improve patient knowledge of medications and patient satisfaction as demonstrated by the “Always” responses in the HCAHPS Survey (CMS, 2008).

Chapter II

Literature Review

Healthcare institutions strive to achieve above the benchmark in all categories of the Hospital Consumer Assessment of Healthcare Providers and Systems [HCAHPS] survey results in order to meet one of the guideline measures for

receiving incentive payments through the Medicare's Hospital Value-based Purchasing Program (CMS, 2015a). Research has shown that there is a relationship between nursing care and patient satisfaction scores on the HCAHPS (Wolosin, Ayala & Fulton, 2012). A decrease in HCAHPS survey results regarding medication education has prompted the development of a quality improvement project to improve the current process of patient education about medications within this healthcare facility. The specific aims of this quality improvement project are to (1) increase nursing students use of teach-back from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit of Regan 3 South; (2) to ensure that 80% of their patients approached can state the name, purpose and side effects of their current medications; and (3) have 80% of patients satisfied with their medication teaching.

A review of the literature included database searches of CINAHL and PubMed using key terms: nursing student/student nurses, patient care, patient satisfaction, patient perspective, nurse-patient relationship, HCAHPS, patient instruction/education/teaching, discharge instruction/education/teaching, discharge medication, medication instruction/education/teaching, patient outcomes and teach-back. The search included studies from 1983 to the present and reflected quantitative and qualitative studies in healthcare, medicine, nursing, pharmacy, and social work journals. The literature review is organized into six sections, including Patient Satisfaction and HCAHPS; Patient Education; Barriers to Patient Education; The

Teach-back Method; Medication Education; and the Role of Nursing Students and Patient Outcomes.

Patient Satisfaction and HCAHPS

In 2006, the Centers for Medicare and Medicaid Services [CMS], and the Agency for Healthcare Research and Quality developed a survey instrument called the Hospital Consumer Assessment of Healthcare Providers and Systems [HCAHPS] survey to evaluate a patient's experience during a hospital stay (CMS, 2008). It was decided that a fraction of the HCAHPS survey results would be imbedded into the percentage reimbursed through the Hospital's Value-Based Purchasing Program, and would affect the reimbursement monies withheld through Diagnosis Related Groups (CMS, 2008). Medicare's decision to decrease reimbursement rates in 2017 has resulted in hospital initiatives to improve patient satisfaction scores by focusing on categories within the HCAHPS survey, such as care provided by nurses, communication, pain control, and education about medications (Kennedy et al., 2013). Research indicates that HCAHPS survey questions in the category of communication about medications consistently receives low patient ratings (Jha, Orav, Zheng & Epstein, 2008). Kerzman, Baron-Epel and Toren (2004) noted patients lack knowledge about medications following discharge. In an effort to improve the quality of patient care and patient satisfaction and receive a higher reimbursement from Medicare, health care facilities need to examine the effectiveness of their methods of patient education.

Patient Education

An association can be made between patient satisfaction and quality of patient care (Kutney-Lee et al., 2009; Wolosin, Ayala & Fulton, 2012). Patient education is one aspect within a nurse's scope of practice to ensure that the patient is being provided safe and quality care. Providing patients with information about medications is endorsed by the Joint Commission's National Patient Safety Goals (2016). The 2016 guidelines recommend that the patient or family member receives written communication of current medications prior to discharge from the hospital (Joint Commission, 2016). Evidence supports the practice of providing patients and family members with written and verbal instructions about medications prior to discharge (Albrecht et al., 2014; Berry, Cunningham, Eisenberg, Wickline, Hamme & Berg, 2014; Nurit et al., 2009). The involvement of caregivers or family members with the education process has been found to improve the patient's compliance with the medication regime after discharge (Cargill, 1992; Foust et al., 2012; Kerzman et al., 2004). There is an inconsistency between patients' and nurses' preference regarding the timing of patient teaching. Patients prefer to begin patient teaching at the beginning of a hospital stay, and nurses prefer to educate patients closer to discharge (Tilley, Grieger & Thiessen, 1987). Kimball et al. (2010) learned that patients' knowledge about medications increases when the patient's education begins at the time of admission. Several studies examined the effect of a structured education approach during hospitalization and its impact on reducing readmission rates (Peter et

al, 2015; Green, Dearmon & Taggart, 2015). However, there are factors that could impede the nurse's intent to educate patients earlier in their hospitalization (Marcum, Ridenour, Shaff, Hammons & Taylor, 2002).

Barriers to Patient Education

There are a variety of potential barriers affecting patient education. The first type of barrier would be environmental factors, such as the hospital setting, patient's acuity level, length of hospital stay, inadequate staffing, and time constraints (Beagley, 2011; Close, 1988; Marcum et al., 2002). A second type of barrier would be patient-related, including a patient's age, and visual and auditory deficits (Beagley, 2011; Burkhart, 2008). Nurses must also consider the patient's attitude, behavior, anxiety and pain level during hospitalization in order to provide effective healthcare education (Burkhart, 2008 Marcum et al., 2002). A patient's low literacy level, lack of interest, and language and cultural beliefs can impact the education process (Beagley, 2011; Burkhart, 2008; Marcum et al., 2002). Patient education needs to be modified through the use of a translator, cultural competency and the development of learning materials at or below a 5th grade literacy level in order to accommodate the individual patient's needs (Beagley, 2011; Burkhart, 2008).

A third type of potential barrier to patient education could be nurse-related. Certain characteristics of nurses could affect the quality of patient education provided, such as attitude, bias, and insufficient knowledge regarding learning styles and teaching strategies (Beagley, 2011; Close, 1988; Marcum et al., 2002).

Inadequate support from management for patient education can act as a barrier to patient education (Nurit et al., 2009). To overcome barriers nurses must be aware of and conquer one's prejudice, and utilize various teaching methodologies to address different learning styles (Beagley, 2011).

The Teach-back Method

Teach-back is an evidence-based educational strategy that can be used to educate patients about health care information, and to evaluate the patient's understanding of the information taught (Agency for Healthcare Research and Quality [AHRQ], 2015; Tamura-Lis, 2013). The teach-back method involves communicating information slowly and clearly, use short and simple phrases in a non-judgmental manner before having the patient repeat back information learned in the patient's own words (Kornburger et al., 2013; Tamura-Lis, 2013). The teach-back technique offers the health care provider the opportunity to re-teach the information if the provider assesses that the patient did not understand the information (Kornburger et al., 2013; Peter et al., 2015; Tamura-Lis, 2013).

Teach-back is an effective method to improve the patient's understanding of health information when used in frequent episodes throughout the patient's hospitalization (Caplin & Saunders, 2015; Kornburger et al., 2013). Several studies have been conducted using the teach-back method with patients with low health literacy and resulted in improved patient outcomes. For example, a study in which low health literacy patients with diabetes were educated by their health care providers

using teach-back, and resulted in patients achieving improved glycemic control (Schillinger et al., 2003). A randomized controlled trial by Griffey et al., (2015) found that teach-back resulted in improved medication compliancy for adult patients with low health literacy following emergency room discharges.

Teach-back has been found to be an effective teaching strategy for instructing patients in other aspects of healthcare management. Dantic (2014) used the teach-back method to educate patients with chronic obstructive pulmonary disease in the correct use of respiratory inhalers and to overcome barriers to proper use of the inhalation device. A study by Kripalani et al. (2008) found the teach-back method to be helpful in improving patient understanding of informed consent and privacy information prior to participants' involvement in a coronary heart disease study for medication compliance. Utilizing the teach-back method to educate patients and family members about medication instruction and medical information has been shown to improve patient outcomes and reduce readmission rates (Caplin & Saunders, 2015; Negarandeh et al., 2013; Peter et al., 2015; Schillinger et al., 2003). Research demonstrates that the teach-back method is an effective teaching strategy for many areas in patient care.

Medication Education

Medication education is an important component of ensuring patients receive quality patient care. Regulatory agencies, such as the Joint Commission, recognize the importance of medication education to ensure quality patient care and patient

safety. The Hospital National Patient Safety Goals [NPSG] of 2016 addresses ways to improve medication safety. NPSG.03.06.01 recommends that the patient receive correct information about medications, including information about current and new medications, and when to take medications (Joint Commission, 2016). Many times during hospitalization the patient's medications are adjusted or changed and the information is not clearly received by the patient or family member, which can lead to misunderstanding or confusion about prescribed medications (Foust et al., 2012). This communication problem emphasizes the need for medication education to consistently take place during hospitalization, at the time of discharge, and when the patient returns home (Foust et al., 2012). Patient comprehension and medication compliance has shown to improve when patients and family members are provided written and verbal instructions about medications (AHRQ, 2015; Berry et al., 2014; Nurit et al., 2009). The involvement of family members or caregivers with the education process during hospitalization has been found to improve the patient's compliance with the medication regime after discharge (Cargill, 1992; Foust et al., 2012; Kerzman et al., 2004).

The process of medication education should attend to individual patient needs, level of literacy and confidence (Mooney, 1987; Kimball et al., 2010). Often nurses will use the same format to teach every patient because of barriers faced during daily nursing routines, such as insufficient time, workload and staffing issues, and insufficient knowledge about the patient's ability to learn health information

(Albrecht et al., 2014; Mooney, 1987). Instruction should be consistent and contain clear and succinct information about medications to improve patient understanding and compliance following discharge (Foust et al., 2012). The medication education patients receive as an inpatient may ultimately have an effect on readmission rates and adverse events (Hayes, 2005). Studies by Berry et al. (2014) and Gargill (1992) verify that follow-up telephone calls to patients or family members after discharge improves patient knowledge and compliance with medication regime. Medication education benefits the patient in several ways and ultimately leads to improved patient outcomes.

The Role of the Nursing Student and Patient Outcomes

The nurse is viewed as the primary health care member responsible for providing patient teaching (Close, 1988). The nursing student is considered to be an extension of the nurse's role at the patient's bedside and patients identify the care received by the student nurse to align with the nurse's practice and to positively influence their care (Marks & Koren, 2011; Suikkala, Leino-Kilpi & Katajisto, 2009). Mukumbang and Adejumo (2014) studied patients' experiences with nursing students and found that patients viewed the students as supportive, helpful and comforting, and as demonstrating skill, knowledge and competence. Oskay, Gungor & Basgol (2014) assessed whether patients were satisfied with the quality of care provided by nursing students on a perinatology unit. Patients in the study reported that nursing students on a perinatology unit were knowledgeable, communicated well with patients and

providers, provided skilled care, and met individual patient needs (Oskay, Gungor & Basgol, 2014). Overall, patients acknowledged the care provided by the nursing students as a positive influence on patient satisfaction (Oskay, Gungor & Basgol, 2014).

Soric, Glowczewski & Lerman (2016) studied the effectiveness of a practice model using pharmacy students to expand and improve pharmacy services, to improve cost reduction, and to increase patient satisfaction in a community hospital. In this study, medication education was provided by students and resulted in a considerable improvement in the “always” response to questions on the HCAHPS survey regarding medication instruction, and the purpose and side effects of medications (Soric, Glowczewski & Lerman, 2016). As a result of the students providing medication education to patients, patient satisfaction improved, patient outcomes improved, and expenses decreased for the health care facility (Soric, Glowczewski & Lerman, 2016).

Summary

A goal for health care institutions is to provide the highest quality of patient care. The HCAHPS survey is completed by patients shortly after discharge and consists of several categories that focus on the quality of health care provided during a hospitalization (CMS, 2015). Patient satisfaction is associated with quality of patient care (Kutney-Lee et al., 2009; Wolosin, Ayala & Fulton, 2012). Results from the HCAHPS survey are collected quarterly and the results are used by health care

facilities to measure patient satisfaction (CMS, 2015). Medicare has incentivized health care facilities by awarding maximum reimbursement for achieving benchmarks for categories within the HCAHPS survey (CMS, 2015). The category of medication education in the HCAHPS survey often receives an unsatisfactory number of “always” responses indicating a need for improvement (Jha, Orav, Zheng & Epstein, 2008). Hence, health care institutions are directed to consider ways to improve patient satisfaction and “always” responses within the HCAHPS survey.

Effective patient education results in quality patient care and safety, and will ultimately improve patient satisfaction (Tamura-Lis, 2013). Patient education is an important element of patient care and has been proven to be more effectual if begun at the time of admission (Kimball et al., 2010). Research has shown that patients are more compliant with medications after discharge if family or caregivers are involved in the education process (Cargill, 1992; Foust et al., 2012; Kerzman, Baron-Epel & Toren, 2004). However, there are several barriers that could interfere with patient education, such as staffing, time allocated to teaching, support from management, and the nurses' knowledge of teaching strategies (Beagley, 2011; Close, 1988; Marcum et al., 2002; Nurit et al., 2009). Other potential barriers are patient-related, such as age, level of pain and anxiety (Beagley, 2011; Burkhart, 2008; Marcum et al., 2002). Certain barriers may resolve or be altered during hospitalization, and other barriers require teaching strategies to be individualized to enable teaching to be effective for individual patients (Beagley, 2011; Burkhart, 2008).

The teach-back method is an evidence-based technique to instruct patients about health care information which allows the educator to evaluate the patient's understanding and re-teach information (Kornburger et al., 2013; Peter et al., 2015; Tamura-Lis, 2013). The teach-back method has been linked to improved patient outcomes and reduced readmission rates when used to instruct the patient and family about medical issues and medications (Caplin & Saunders, 2015; Negarandeh et al., 2013; Peter et al., 2015; Schillinger et al., 2003). The teaching strategy promotes medication safety by clarifying medication information and supports safe and quality patient care (Kornburger et al., 2013). Teach-back is also an effective technique for improving medication compliancy (Griffey et al., 2015).

Studies have shown that patients are lacking adequate medication education (Nurit et al., 2009). In order for the process of medication education to be successful, the patient educator needs to address patients' individualized needs, include family members, and encourage the patient to be actively involved in their plan of care (Mooney, 1987; Kimball et al., 2010). Patient's family members or caregivers involved in medication education will positively affect the patient's compliancy with the medication regime after discharge, and could help prevent readmission (Cargill, 1992; Foust et al., 2012; Kerzman, Baron-Epel & Toren, 2004). Delivering information regarding medications is an essential component of patient education, and to providing quality patient care that can result in improved patient outcomes.

The nursing student is a member of the health care team who is perceived by patients as a positive influence on patient care and patient satisfaction (Marks & Koren, 2011; Oskay, Gungor & Basgol, 2014; Suikkala, Leino-Kilpi & Katajisto, 2009). Research has shown that nursing students demonstrated knowledge and skill in providing patient care, and were supportive, caring and able to meet patient needs (Mukumbang & Adejumo, 2014; Oskay, Gungor & Basgol, 2014). Students have also proven to be effective in educating patients about medications and resulted in an improvement in patient satisfaction and “always” responses to questions in the HCAHPS survey regarding medication education (Soric, Glowczewski & Lerman, 2016). Ultimately, students’ involvement in medication education improved patient satisfaction and patient outcomes (Marks & Koren, 2011; Oskay, Gungor & Basgol, 2014; Soric, Glowczewski & Lerman, 2016; Suikkala, Leino-Kilpi & Katajisto, 2009).

Chapter III

Methods

A non-profit, health care facility in northern New Jersey has identified that an existing process for educating patients about their medications is ineffective, thereby resulting in the HCAHPS survey responses pertaining to medication education to be below the benchmark for the state and industry. A quality improvement project was implemented on one of the hospital units that consistently received a low percentage

of “Always” responses to questions in the category of “Communication about Medicines” in the HCAHPS survey (CMS, 2008).

The specific aims of this quality improvement project are to (1) increase nursing students use of teach-back, from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit, Regan 3 South; (2) to ensure that 80% of the patients approached can state the name, purpose and side effects of their current medications as measured by the “Patient Knowledge Tool” in Appendix 3 by December 31, 2016; and (3) have 80% of patients satisfied with their medication teaching as measured by the “One Minute Evaluation” (Appendix 4) and the HCAHPS survey “Always” responses to questions pertaining to medication education in the category of “Communication about Medicines” (CMS, 2008) will be at or above the benchmark performance of each quarter by December 31, 2016.

There are three variables in the project model (Figure 2) including the teach-back method for medication education, patient satisfaction and patient knowledge. The expectation of this project is that patient satisfaction and patient knowledge of medications will improve by nursing students using the teach-back method to instruct patients about their medications.

Measurement to ensure that the teach-back method is implemented (process measures) consists of the Teach-back Observation Tool (Appendix 1), and The Nursing Student Perception of Teach-back Effectiveness Tool (Appendix 2).

Measurements of the impact of the implementation of the teach-back method (outcome measures) are the Patient Knowledge Tool (Appendix 3), the One Minute Evaluation (Appendix 4), and HCAHPS survey (CMS, 2008) “Always” responses to “Communication about Medicines”.

The Teach-back Observation Tool (AHRQ, 2016) (Appendix 1) evaluated the nursing students' knowledge of the use of the teach-back method for medication education during the training session. Each week during the project, nursing students completed The Nursing Student Perception of Teach-back Effectiveness Survey (Appendix 2). The survey asked questions that measured if the nursing student found the teach-back method to be effective for instructing patients about their medications. Nursing students completed The Patient Knowledge Tool (Appendix 3) to measure patient knowledge of medications before and after using the intervention. The patient and/or caregiver completed the One Minute Evaluation (Appendix 4) to measure satisfaction with the teach-back method for medication education. The results from the HCAHPS Survey (CMS, 2008) were obtained prior to and during the project. An improvement in the number of “Always” responses to questions about medication education in the HCAHPS survey measured patient satisfaction with the medication education intervention.

Design

The project used a quality improvement methodology. From October through December of 2016, all nursing students partaking in their clinical practicum on the

medical geriatric unit, Regan 3 South, within the health care facility were requested to participate in this quality improvement project to implement an evidence-based strategy to address ineffective medication education and low patient satisfaction HCAHPS survey responses.

Setting

The proposed project took place on a 37-bed medical geriatric unit within a 700-bed non-profit, health care facility in northern New Jersey. The patient population's age ranged from 65 years and older. The most common diagnoses for patients admitted to this medical geriatric unit included sepsis, urinary tract infection, pneumonia, congestive heart failure, chronic obstructive pulmonary disease, and failure to thrive. The average number of medications prescribed for each patient upon discharge from this unit varies from five to twelve medications. The average length of stay for patients on this unit is three to five days, and the unit currently has guardianship of two patients, which may last for up to two years.

The inclusion criteria for the project included patients who (a) anticipates discharge to home; (b) have current and/or new medications prescribed; (c) are awake, alert and oriented to time, place and person, or have a caregiver present. Exclusion criteria for the project included patients who (a) anticipates discharge to a long-term care or rehabilitation facility; (b) have dementia or an altered mental status and does not have a caregiver present; (c) anticipates discharge to a home outside of the United States.

The identified unit for the project is familiar with accommodating nursing students for their clinical practicum experiences. Nursing students from baccalaureate and associate degree nursing programs are on the unit four days each week during the fall 15-week semester. The Project Coordinator sought the assistance of the nursing students' clinical faculty for identifying patients for medication education, obtaining patient's Medication Administration Records and Micromedex medication information, and supporting students as they implement the medication education intervention.

The Project Coordinator worked closely with the unit's leadership nurses, who were previously familiarized with this project, to assist the clinical instructors with identifying patients for medication education and obtaining the necessary medication information. The unit leadership nurse kept track of patient complaints during implementation of the project on a log of Patient Complaints About Dissatisfaction With Medication Education (Appendix 5).

Intervention

The Project Coordinator facilitated the training session for the teach-back intervention one week prior to the initial implementation date. Each group of nursing students and their clinical instructor were asked to attend the training session. Students were informed of their participation in and of the quality improvement project. Teaching strategies for this session included an interactive teaching module and role-playing.

The primary resource for the student training was Using the Teach Back Toolkit taken from the AHRQ (2016) website. The toolkit included the following documents that were used in the training session: The 10 Elements of Competence for Using Teach-back Effectively (Appendix 6), the Interactive Teach-back Learning Module, and the Teach-back Observation Tool (Appendix 1).

The training commenced for the nursing students as an instructive session to provide the content for the teach-back method with The 10 Elements of Competence for Using Teach-back Effectively (AHRQ, 2016) (Appendix 6) as a supporting document. Next the students viewed the Interactive Teach-back Learning Module (AHRQ, 2016). Lastly, students partnered to simulate a patient encounter by role-playing as the nurse and the patient.

Evaluation was threaded through the teach-back process and began at the end of the initial training session. The Project Coordinator utilized the Teach-back Observation Tool (Appendix 1) to evaluate the nursing student's learning of the teach-back method. Nursing students evaluated patients' pre and post intervention learning with the Patient Knowledge Tool (Appendix 3) and students self-evaluated the teach-back method every week by completing the Nursing Student Perception of Teach-back Effectiveness Survey (Appendix 2).

Nursing students used the teach-back method to provide medication education to patients eligible for participation. The nursing students received pre-intervention training to learn the process of teach-back and the details for the specific intervention

and passed a competency assessment. The Using Teach-back for Medication Education handout (Appendix 7) created by the Project Coordinator, consolidated information from the training session, and was available to the nursing students as a reference for scripting and guidelines while interacting with the patients. The students' clinical faculty also received training in the process of teach-back, and information regarding the medication education intervention during the training session.

The intervention occurred on a medical geriatric unit that is accustomed to hosting nursing students for clinical practicum rotations. In collaboration with the clinical instructor and the units' leadership nurses, patients were identified for the purpose of the medication education intervention. The units' leadership nurses were previously oriented to this process. During the time of medication administration, students intended to teach their assigned clinical patient and additional eligible patient(s) the purpose and side effects of their current and new medications using the evidence-based teach-back method. Students were provided with the patient's list of medications and Micromedex medication information. If a patient's primary language was not English, the student sought the assistance of a translator or the translator phone for providing medication education, which was noted on the Patient Knowledge Tool (Appendix 3).

A patient's significant other or caregiver was included in the education when available and noted on the Patient Knowledge Tool (Appendix 3) and One Minute

Evaluation (Appendix 4). By the end of the clinical day all patients on the unit meeting eligibility criteria were intended to be provided with the medication education intervention. The nursing student provided the patient with the medication education intervention during the time of medication administration. By utilizing the patient's Medication Administration Record, the Micromedex medication information, and Using Teach-back for Medication Education (Appendix 7), students evaluated the patient's pre-intervention knowledge of current medications and delivered medication education using the teach-back method. PRN medications were not included in the medication education intervention. If the patient did not understand verbal or written English, the student sought the assistance of an interpreter or the interpreter phone for the teaching of the medication education intervention. If the student assessed that the patient was unable to teach-back the medication information, the nursing student explained the information again and repeated the teach-back education intervention. Nursing students provided the Micromedex medication information to the patient after teaching, in English or in Spanish translation. The patient and/or caregiver that received the medication education intervention completed the One Minute Evaluation (Appendix 4). Once leaving the room, students' completed the Patient Knowledge Tool (Appendix 3) for the patient taught about their medications. Nursing students informed the patient's primary nurse of the outcome of the medication education with each patient. Every week, students self evaluated the teach-back method by completing the Nursing Student Perception of Teach-back Effectiveness Survey (Appendix 2).

Measurement

The project model, in Figure 2, illustrates three variables, two process measures, and three outcome measures. Two measures were used to evaluate the process of the teach-back method. Nursing students used the evidence-based teach-back method to instruct patients about their medications. The Project Coordinator utilized the Teach-back Observation Tool (Appendix 1) from the AHRQ (2016) website to evaluate the nursing student's knowledge of the teach-back method during the training session and with a patient. The training session took place one week prior to the implementation of the project. The Teach-back Observation Tool (Appendix 1) consists of 11 questions that the Project Coordinator responded with a "Yes, No or N/A" to evaluate the nursing students' knowledge of the teach-back method. The coding for each response in the Teach-back Observation Tool, (Appendix 1) is stated in the Code Book (Appendix 8) in which Yes = 1, No = 0, and N/A = 999. A total score was calculated by adding up the 11 items. The Project Coordinator used the Teach-back Observation Tool (Appendix 1) to evaluate the student's knowledge of the teach-back method by role-playing during training, and with one patient to establish competence in use of the teach-back method. A score of 9 or greater was required to establish a level of competence. If a student scored less than a 9 on the Teach-back Observation Tool (Appendix 1), the student was required to review the information provided in the training session, and then observed by the Project

Coordinator until the student received at least a 9 on the Teach-back Observation Tool (Appendix 1). The Project Coordinator shared the results with each student.

Nursing students evaluated the teach-back method by answering questions in the Nursing Student Perception of Teach-back Effectiveness Survey (Appendix 2). Nursing students completed the survey every week during the implementation of the project. The survey consisted of four questions about the use of teach-back for medication education using a Likert-type scale response of Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. Students had the option of providing anecdotal comments regarding problems encountered during their teaching experience and recommendations to improve the medication education process. Appendix 8 illustrates the coding for the four questions in this measure, including Strongly Disagree = 0, Disagree = 1, Undecided = 2, Agree = 3, and Strongly Agree = 4. This tool was used to measure the number of patients per week who received the intervention and this number was compared with the number of patients identified as eligible for the intervention. This will provide data for specific aim 1.

The second variable, patient satisfaction, was measured by the One Minute Evaluation (Appendix 4) and was completed by the patient and/or caregiver upon completion of the medication education intervention. The patient and/or caregiver was asked to rate the usefulness and satisfaction with the teaching session from a scale of 1 to 10, from not very useful or not very satisfied to very useful or very satisfied. The evaluation also provided an opportunity for the patient and/or caregiver

to add any comments about the teaching session. Another measure of satisfaction was the “Always” response to questions in the “Communication about Medicines” category in the HCAHPS survey (CMS, 2008) for the medical geriatric unit.

Responses to survey questions were coded as 0 = Never, 1 = Sometimes, 2 = Usually, and 3 = Always. The HCAHPS survey results for “Communication about Medicines” for the identified unit was obtained six months prior to implementation of the project, April 1, 2016 through September 30, 2016, and monthly during implementation of the project, October 1, 2016 through December 31, 2016.

The third variable, patient knowledge, was measured by the Patient Knowledge Tool (Appendix 3). After completing medication education with each patient, nursing students answered questions to evaluate the patient’s knowledge of medications before and after the medication education intervention. The first two questions evaluated the patient’s knowledge of medications before the intervention and the third and fourth questions evaluated the patient’s knowledge of medications after the intervention. Responses to all four questions were coded as

0 = none, 1 = some of the medications, and 2 = all of the medications (Appendix 8).

The balance measure was for the unit’s leadership nurses to gather information about patient complaints regarding the medication education provided by nursing students during the implementation of the project. The units’ leadership nurses documented the date, number of patient complaints, and any comments

received by patients during the implementation period on a Patient Complaints Log (Appendix 5).

Data Management

Data was collected from the Teach-back Observation Tool (Appendix 1) during the intervention training session and during the first week of implementation of the project, to measure the nursing students' knowledge of the teach-back method. The Project Coordinator observed each student to evaluate the nursing students' knowledge of the teach-back method by answering the questions on the Teach-back Observation Tool (Appendix 1) with a response of Yes, No or N/A. Students were required to demonstrate competency in the teach-back method.

The teach-back method was also measured by the data collected from the Nursing Student Perception of Teach-back Effectiveness Survey (Appendix 2). Nursing students completed the survey every week and submitted the results to their clinical faculty member who provided the completed surveys to the Project Coordinator.

The data from the patients' satisfaction with the medication education session was collected from the One Minute Evaluation form and was completed by the patient and/or caregiver at the end of each teaching session. Nursing students collected the evaluation from the patient and/or caregiver, and submitted the form to their clinical faculty member who provided the evaluations to the Project

Coordinator. The Project Coordinator obtained HCAHPS survey results from the units' leaders to evaluate patient satisfaction with medication education on the unit. Due to a lag time of one month for receiving the HCAHPS survey results, the unit's results for the category of "Communication about Medicines" was obtained five weeks following the intervention period from October 1, 2016 to December 31, 2016. HCAHPS survey results for "Communication about Medicines" was collected for six months before the project (April 1, 2016 to September 30, 2016) to identify an improvement in the "Always" response to questions in the category of "Communication about Medicines" during the intervention. The Project Coordinator collected the data from the unit's leadership.

The Patient Knowledge Tool, (Appendix 3), was completed by nursing students after each medication education intervention to document patient knowledge of medications. The students' faculty member collected the data each week and the faculty member ensured that the data was given to the Project Coordinator.

Data Analysis

The data from the two process and three outcome measures was analyzed in the "Study" phase of the 4-phase cycle of the Plan-Do-Study-Act [PDSA] Method each week of the project (Ogrinc et al., 2012). After an analysis of the results, modifications to the medication education intervention took place in the "Act" phase and another PDSA cycle ensued. Data for each measure was entered into a Statistical Package for the Social Sciences [SPSS file] using the coding as described in

Appendix 8, Coding for Measures. A numerical value was assigned to responses for questions on all tools and surveys. Descriptive statistics was used to describe the data obtained in the project, including the improvement in “Always” responses in the HCAHPS survey (CMS, 2008), patient satisfaction with the teaching session, patient knowledge of medications, and the teach-back method.

Protection of Human Subjects

Permission was requested and received to conduct a quality improvement project on a 37-bed medical geriatric unit within a 700 bed non-profit health care facility in northern New Jersey. Permission was requested and received to conduct this quality improvement project through the hospital's institutional review board. No patient identifiers or personal information was recorded. There was no anticipated risk to the subjects included in this project. Participants who did not understand verbal or written information in English, nursing students sought the assistance of an interpreter or an interpreter phone (Seracom). The benefits to subjects included in this project was to improve patient's knowledge of the purpose and side effects of their medications, and to improve patient's satisfaction with medication education provided by nursing students.

Nursing students from three academic institutions within northern New Jersey were requested to participate in this quality improvement project. There was no anticipated risk to the nursing students to be included in this project. No personal information or identifiers of the nursing students were recorded. It was not indicated

to seek permission for the nursing students to participate in this quality improvement project through the institutional review board of each academic facility. Nursing students were asked to use the evidence-based method of teach-back to instruct patients about their medications. It was an expectation that patient teaching is included within the curriculum of each nursing program as part of student learning outcomes. Students' participation was not evaluated by their faculty members as part of their clinical learning objectives.

Chapter IV

Results

The quality improvement project was implemented on a 37-bed geriatric unit with the purpose for nursing students to use the teach-back method to improve patient satisfaction results pertaining to medication education, and to improve patient's knowledge of medications. The project took place over a ten-week period. The "Planning" phase occurred during the first week of the project, before implementation. The project was implemented over nine weeks with ongoing evaluation, "Do-Study-Act" phases. The students were not on the unit for one week due to a holiday and three additional days due to academic commitments at their university.

Characteristics of the Participants

The patients on the designated unit for the project consisted of both male and female patients, primarily over the age of 65 years. Most patients participating in the

project spoke English, but 32% of the participants spoke Spanish. The participating patients' length of stay ranged from three to five days.

Table 1
Description of the participants

		Total Sample N = 55 N (%)
Patients educated by:		
	Junior Nursing Students	26 (47.3%)
	Senior Nursing Students	29 (52.7%)
Medication education completed by:		
	Patient	48 (87.3%)
	Family Member/Caregiver	5 (9.1%)
	Both	2 (3.6%)
Medication education assisted by translation (English to Spanish):		
	Total # requiring translation	18 (32.7%)
	Phone translator	11 (20.0%)
	Student Nurse translator	7 (12.7%)

A total of 55 patients were provided medication education by nursing students using the teach-back method over an eight-week period. Junior and senior nursing students were assigned to the unit once a week on different days for their clinical experience. Junior nursing students provided medication education to 26 patients and senior nursing students provided medication education to 29 patients (N=55) (Table 1). A majority of the medication education was provided to patients (87.3%) without a family member/caregiver present. Five (9.1%) teaching sessions were conducted with the patient's family member/caregiver. Two (3.6%) teaching sessions included both the family member/caregiver and the patient. The number of current medications

taught by nursing students to each patient varied ($M = 5.07$, $SD = 2.50$). Patients were taught an average of 5.07 ($SD = 2.50$) medications during each teaching session.

The patient population on the designated unit reflects the surrounding community which primarily consists of Hispanic and Arabic cultures. During the quality improvement project, the medication education needed to be translated from English to Spanish for 18 (32.7%) patients. A translator telephone was used to provide medication education to 11 (20%) patients (shown in Table 1). During the project, medication education was translated in-person by three student nurses for 7 (12.7%) patients.

Table 2

Nursing students' use of teach-back to provide medication education

		Total # actual patients educated (N=55)
		Total # possible patients to be educated (N=78)
	Junior nursing students	Senior nursing students
Week #1	----	5/6 (83.3%)
Week #2	5/8 (62.5%)	7/9 (77.8%)
Week #3	5/12 (41.7%)	4/6 (66.7%)
Week #4	5/7 (71%)	----
Week #5	----	7/7 (100%)
Week #6	6/11 (54.5%)	6/7 (85.7%)
Week #7	----	----
Week #8	5/5 (100%)	----
Total # of patients educated	26/43 (60.5%)	29/35 (82.9%)

Note: Cells with ---- indicate no clinical for nursing students that week.

Specific Aim 1

The Model for Improvement framework (Ogrinc et al., 2012), consisting of the Plan-Do-Study-Act phases, was utilized to evaluate the changes made to the current system of medication education provided to patients on the designated unit. Three specific aims were developed to guide the quality improvement project. Table 2 illustrates the results for specific aim 1: Increase nursing students' use of teach-back from the current state of 0% to 80% of their patient encounters by December 31, 2016 on a medical geriatric unit. The number of possible patients and the number of actual patients that received medication education by junior and senior nursing students weekly during the project is shown in Table 2. The junior nursing students achieved specific aim 1 at Week #8 by using teach-back with 100% of the patients encountered for medication education. The senior nursing students achieved the specific aim 1 during several weeks of the project, including the first week with 83.3% (5/6) of patients encountered, the 5th week with 100 % (7/7) of the patients encountered, and the sixth week with 85.7% (6/7) of the patients encountered. Overall, the senior nursing students were able to use the teach-back method with 82.9% of their patient encounters during the project, but the junior students were only able to use teach-back with 60.5% of their patients.

Table 3

Patients' knowledge of the name, purpose and side effects of their current medications before and after nursing students' use of the teach-back method.

Total number of patients educated (N = 55)	Before nursing students used teach-back N(%)	After nursing students used teach-back N(%)
Patients who knew none of the names and purposes of their medications	15(27.3%)	5(9.1%)
Patients who knew some of the names and purposes of their medications	31(56.4%)	18(32.7%)
Patients who knew all of the names and purposes of their medications	9(16.4%)	32(58.2%)
Patients who knew none of the side effects of their medications	37(67.3%)	5(9.1%)
Patients who knew some of the side effects of their medications	17(30.9%)	22(40.0%)
Patients who knew all of the side effects of their medications	1(1.8%)	28(50.9%)

Specific Aim 2

Specific aim 2: Ensure that 80% of the patients approached can state the name, purpose and side effects of their current medications as measured by the "Patient Knowledge Tool" by December 31, 2016. Table 3 illustrates that nursing students were unable to achieve the goal of Specific Aim 2. However, after nursing

students used the teach-back method there was an improvement from 16.4% to 58.2% of patients who knew the purpose of all of their medications; and an improvement from 1.8% to 50.9% of patients who knew the side effects of all of their medications after nursing students used the teach-back method. The patients who did not know the name and purpose of their medications decreased from 27.3% to 9.1%. Also, 67.3% of patients who did not know the side effects of their medications decreased to 9.1% after nursing students used the teach-back method. Overall, the patients' knowledge of the name, purpose, and side effects of their medications improved after nursing students used the teach-back method for medication education.

Table 4

Patients rate their satisfaction with the teach-back method used by nursing students for medication education.

	Total number of patients educated with the teach-back method (N = 55)			
	Mean	SD	Minimum	Maximum
I was satisfied with the medication education session using the teach-back method.	9.1	1.7	2.0	10.0

Score range 5 to 10 indicating 100% satisfied

Note: Scale 1 (Not satisfied) – 10 (Very satisfied)

Specific Aim 3

Specific Aim 3: 80% of the patients receiving teach-back will be satisfied with their medication teaching as measured by the One Minute Evaluation (Appendix 4) and the HCAHPS survey (CMS, 2008) “Always” responses to questions pertaining to

medication education will be at or above the benchmark of each quarter by December 31, 2016. Specific Aim 3 was met through the results of the One Minute Evaluation. Overall patient satisfaction scores were reported by patients as 9.1 (SD = 1.7) (See Table 4). Scores were reported on a scale of 1 (not satisfied) out of 10 (very satisfied). All scores reported by patients were greater than a 5 indicating that 100% of the patients were satisfied with the use of the teach-back method. Patients' comments about the teach-back method included, "I actually didn't know about anything they gave me so this was very helpful"; "thought it was very helpful and was explained well"; and "found the information very useful".

Table 5

HCAHPS Survey "Always" (Top Box) responses to questions pertaining to medication education

Benchmark (Top Box)

1. 77.2%
2. 52.3%

	1 st quarter (Jan-Mar)	2 nd quarter (Apr-Jun)	3 rd quarter (Jul-Sept)	4 th quarter (Oct-Dec)
1. Staff explained the purpose of new medications	68.4%	72.2%	81.8%	75.0%
2. Communication of possible side effects of new medications	47.4%	50.0%	66.7%	50.0%

Note: 1st, 2nd, and 3rd quarters are without nursing students using teach-back

Specific Aim 3 was not met by the HCAHPS results for questions pertaining to medication education. Results for the first three quarters (nine months) prior to implementation of the project was reported by unit leadership to the Project

Coordinator as a percentage of responses reported as “always” to medication education questions. The fourth quarter was results obtained from October 1, 2016 through December 31, 2016. Results of the fourth quarter were reported by unit leadership to the Project Coordinator one month after the project concluded. No other data regarding the HCAHPS survey results were available to the Project Coordinator.

75.0% of survey respondents reported “always” to the first question, “Staff explained the purpose of new medications” (Table 5). The benchmark for the first question was 77.2%. The second question, “Communication of possible side effects of new medications”, 50.0% of survey respondents reported “always”. The benchmark for the second question was 52.3%. Unfortunately, the results for the fourth quarter did not meet or exceed the benchmark for patient satisfaction regarding the two questions for medication education.

Results Related to the Delivery of the Intervention

The quality improvement project commenced with the first of four phases within the Model for Improvement Framework (Ogrinc et al., 2012). The “Plan” phase included the training of junior and senior nursing students in the teach-back method. Training took place one week before implementation of the project. The nursing students and their clinical instructors were instructed in use of the teach-back method using an interactive teaching module, role playing for medication education, and were evaluated in their knowledge of the use of the teach-back method using the Teach-back Observation Tool (Appendix 1). A score of 9 or greater on the Teach-back Observation Tool indicated a level of competence in knowledge in the use of the

teach-back method for medication education. Each training session was completed within 30 minutes. All junior (N=10) and senior (N=10) nursing students, and their clinical instructors (N=2), achieved a score of 9 on the first attempt. A perfect score of 11 was not applicable in training since two aspects evaluated documentation and teaching a family member. The nursing students and clinical instructors participating in the training session commented that they were familiar with the teach-back method, and that “it was not difficult to learn, but they were glad to have a script”. The nursing staff on the designated unit were oriented to the project during a brief meeting that was held on the first day of implementing the project. The staff nurses were given information regarding the purpose of the project, use of the teach-back method, and eligibility criteria for patient participation. The staff were asked to assist in obtaining patient’s medication administration records, and medication information through Micromedex.

The evidence-based intervention was implemented in the second “Do” phase during weeks two through ten, including one week over a holiday. Several changes were made to the initial plan for implementing the intervention. The first change involved using the Project Coordinator to meet with unit leadership to identify eligible patients for participation in the project. The change was made as a result of time constraints and limited availability of unit leadership. A second change that took place was the participation of the nursing students in the project. Only two groups out of four groups of nursing students assigned to the designated unit agreed to participate in the project. The two nursing programs that declined their student’s

participation stated it was a result of several issues, including project implementation occurring during the student's first semester in the clinical setting, the students' lack of pharmacology knowledge, and their inability to administer medications. One nursing program agreed to allow a group of junior nursing students and a group of senior nursing students to participate in the project. A pair of junior nursing students were randomly selected weekly to provide medication education using the teach-back method for eligible patients. For consistency in the number of nursing students' participation, two senior nursing students were randomly selected weekly to participate independently in the project. Nursing students participating in the project did not have a patient assignment as initially planned, and were only responsible for providing medication education using the teach-back method to identified eligible patients.

During the third "Study" phase, data were analyzed regarding the teach-back method from the Teach-back Observation Tool, and from The Nursing Student Perception of Teach-back Effectiveness Survey. Data analyzed from the Teach-back Observation Tool demonstrated nursing student competence ($M = 9.7$, $SD = 1.7$) in the teach-back method during their first medication education session. Table 6 illustrates the results for the Nursing Student Perception of Teach-back Effectiveness Survey. The majority of nursing students (80%) felt confident educating their patients about their medications using the teach-back method. More than half of the nursing students (55%) found the teach-back method easy to use in educating patients about their medication(s). Most nursing students (65%) found that their patients had

to repeat the information more than once to demonstrate understanding of their medications. Nearly half of the nursing students (45%) found that the teach-back method enabled their patients to understand the purpose and side effects of their medications. Nursing students attributed difficulty with the medication education process due to language barriers. Anecdotal responses by nursing students identified issues caused by use of the translator phone during the intervention, such as, “the interpreter phone caused difficulty in communication”, “patients became irritated or were just uninterested”, and “patients had trouble retaining information when translating from interpreter to patient and back”. The issue of language barriers were resolved when nursing students were available to act as translators.

Recommendations made by nursing students to improve the teach-back method included, “phone interpretation difficult, have a translator in person”, “having interpreters physically present”, “physical translators”, and to “use Spanish speaking students because the translator couldn’t elaborate”. It was observed by the project coordinator that less time was needed for medication teaching sessions when a nursing student translated information versus a translator phone that was used for medication teaching.

No difficulties were encountered by nursing students evaluating patient knowledge of their medications using the Patient Knowledge Tool. Immediately following the teaching session, nursing students were able to complete the Patient Knowledge Tool within five minutes. Eleven patients (N=55) required the assistance of nursing students to complete the One Minute Evaluation following the teaching

sessions. Reasons for assistance in completing the form included patients' complaints of feeling tired; patients having an intravenous infusion in their dominant writing hand; or patient preference to have the student nurse write their comments. The One Minute Evaluation was completed within five minutes upon conclusion of the teaching session.

No difficulties were encountered by nursing students during the process used for evaluating teach-back using the Teach-back Observation Tool and the Nursing Student Perception of Teach-back Effectiveness Survey. The Project Coordinator was able to complete the Teach-back Observation Tool for each student and their clinical instructor within ten minutes after the training session. After nursing students demonstrated the use of the teach-back method during their first medication teaching session, the Project Coordinator was able to complete The Teach-back Observation Tool within a few minutes. The nursing students were able to complete the Nursing Student Perception of Teach-back Effectiveness Survey at the conclusion of their participation in the project without any issues. Nursing students were able to complete the survey in less than five minutes without asking any questions regarding the patients or the survey. Survey results demonstrate nursing students' competence and confidence in use of the teach-back method. The survey results support the use of an evidence-based intervention by nursing students for educating patients about their medications. In the future, it would be helpful to conduct a follow-up survey with the nurses to determine if their patients' knowledge of their medications improved after teach-back was used by nursing students. Nurses' discovery of an improvement in the

patients' knowledge of medications could motivate the nurses to use the teach-back method for medication education.

Table 6

Nursing Student Perception of Teach-back Effectiveness Survey

Total # of nursing students (N=20)				
	Strongly Agree	Agree	Disagree	Undecided
	N(%)	N(%)	N(%)	N(%)
I felt confident educating my patient(s) about their medication(s)	16(80%)	4(20%)	----	----
I found the teach-back method easy to use in educating my patient(s) about their medication(s).	11(55%)	6(30%)	----	3(15%)
Patient(s) had to repeat information back more than once to demonstrate understanding about their medication(s).	4(20%)	13(65%)	----	3(15%)
The teach-back method enabled the patient(s) to understand their medications purpose and side effects.	9(45%)	9(45%)	----	2(10%)

A Patient Complaints Log was maintained by Unit Leadership and monitored weekly by the Project Coordinator during the project. Each week the Project Coordinator inquired if any complaints were voiced by patients or family members. Any complaints would be analyzed during the “Study” phase. No complaints by patients or family members/caretakers were documented during the project.

Results were analyzed weekly during the final, “Act”, phase and changes were made to the medication education process followed by the initiation of another

“PDSA” cycle. A second “PDSA” cycle was initiated following week #2. The junior nursing students experienced difficulty with the use of the translator phone in which the translator and patient became frustrated with the medication education process. A change was made in the information being taught to patients about their medications. Nursing students instructed patients about the purpose and side effects of each medication, evaluated the patient’s understanding of the information if the patient could teach-back the medication correctly, and then proceeded to the next medication. In doing so, the patient and translator found the information to be less repetitive and the process to be more efficient which resulted in a slight improvement in patient knowledge of the purpose and side effects of medications.

Several contextual issues arose during the implementation of the project. The process used for identifying eligible patients and obtaining the patient’s medication administration record (MAR) and medication information through Micromedex was inefficient and time-consuming. The Project Coordinator identified eligible patients with the assistance of unit leadership and the patient’s primary care nurse who also assisted with obtaining the patient’s MAR and medication information through Micromedex. The initial steps of the project took 45 minutes to an hour depending on the nurse’s availability. By the second week of the project the unit leadership provided the names of eligible patients and allowed the Project Coordinator access to the Micromedex which reduced the time spent during the initial steps of implementing the project. However, there were subsequent days in which the Project Coordinator was unable to receive the assistance from the nurses for the initial steps

of the project in a timely manner which affected the time available for nursing students to provide medication education.

As anticipated, the use of the translator phone presented several challenges during the project. The process of using the teach-back method for medication education had to be modified to accommodate the translators and patients. The medication teaching session using teach-back required small amounts of information to be translated with each conversation between the translator and the patient and caused the patient and the translator to become very frustrated with the teaching session. Use of the translator phone required modifications to the teach-back process and resulted in slightly improved patient knowledge of the purpose and side effects of medications. It was also discovered that having a nursing student translate the medication information using the teach-back method was more time efficient and improved patient's understanding of their medications.

Two clinical groups declining participation affected the project in several ways. In the first place, the process for providing medication education to identified eligible patients was changed. Initially the plan was for each nursing student to provide medication education to their clinical assigned patient and up to two additional patients. As a result of the change in nursing student participation, the Project Coordinator decided that participating nursing students would not take patient assignments and would only provide medication education to identified eligible patients. The change in the nursing student participation was made in an effort to

capture as many eligible patients for the project during the nursing student's clinical hours.

Chapter V

Discussion

The purpose of this quality improvement project was for nursing students to implement the teach-back method to improve patient knowledge of medications and patient satisfaction in the “Always” responses in the HCAHPS survey (CMS, 2008). The first specific aim of this quality improvement project was to: (1) increase nursing students use of teach-back from the current state of 0% to 80% of their patient encounters by December 31, 2016 on the medical geriatric unit. At the conclusion of the eight-week project, senior students encountered 83% of the available patients, while the junior students encountered 60% of the available patients. Difference in the students' abilities to meet the benchmark can be attributed to both experience and knowledge. Comparatively, junior students had limited experience with patient encounters and knowledge related to patient education, teach-back or pharmacology. The project occurred during the first semester of the nursing program while junior students were enrolled in a fundamentals nursing course, which was a prerequisite for the formal pharmacology course. As expected, the junior nursing students' encounters increased toward the later part of the semester and final week of the project when their patient experiences increased. The level of experience and knowledge of the junior and senior nursing students align with Benner's theory of novice to expert (Benner, 1982).

The senior nursing students were able to provide medication education using the teach-back method for 29 patients (N=55) on the designated unit, and they were able to achieve the first specific aim. Results are most likely due to the level of knowledge and experience accrued by senior level nursing students. Overall, 80% of the nursing students strongly agreed that they felt confident using the teach-back method to educate their patients. Most nursing students (55%) strongly agreed and 30% agreed (15% undecided) that the teach-back method was easy to use in educating patients about their medications. Results of the project reflect previous findings that the teach-back method is a simple, effective, evidence-based teaching strategy that can be used by any member of the healthcare team (Kornburger et al., 2013 & Tamura-Lis, 2013).

The second specific aim of this quality improvement project was to ensure that 80% of the patients approached could state the name, purpose, and side effects of their current medications as measured by the "Patient Knowledge Tool" in Appendix 3 by December 31, 2016. Although only 58.2% of patients could state the name and purpose of all of their medications and 50.9% of patients could state the side effects of all of their medications there was a significant improvement in patient knowledge compared to prior to the teach-back intervention. Results from the project are consistent with earlier studies supporting teach-back as an effective method of improving patients' knowledge (Dantic, 2013; Negarandeh et al., 2013; Peter et al., 2015; and Schillinger et al., 2003).

The nursing students inability to achieve the second aim can largely be attributed to difficulty with managing patients' language barrier. Language has been identified as one of the barriers that can prevent patient education (Beagley, 2011). Use of the translator phone presented several challenges to the nursing students when trying to use the teach-back method to provide medication information to patients. Both the translators and the patients became impatient with the teach-back process which required information to be translated in simple language and in short phrases, and then assessing the patient's understanding before proceeding. Nurses avoid using the teach-back method if they need the assistance of an interpreter during discharge instructions, including instructions about medications (Kornburger et al., 2013). Seven (12.7%) of the twenty-six nursing students participating in the project were able to translate in Spanish. When available, the bilingual nursing students were utilized to translate the medication information from English to Spanish instead of using the interpreter phone. Overall, a change in the teach-back process used for the medication teaching with a translator phone and by using bilingual nursing students resulted in positive outcomes as noted by nursing students' anecdotal comments on the Nursing Student Perception of Teach-back Effectiveness Survey. When use of the translator phone is unavoidable, the effectiveness of teach-back can be enhanced by providing the patient with written materials in their preferred language during the training session; using plain language; and chunking information (AHRQ, 2016).

The third specific aim was to have 80% of patients satisfied with their medication teaching as measured by the One Minute Evaluation (Appendix 4) and the

HCAHPS Survey (CMS, 2008) “Always” responses to questions pertaining to medication education will be at or above the benchmark of each quarter by December 31, 2016. Results of the One Minute Evaluation yielded that 96.4% of all patients that participated in the project were highly satisfied with the teach-back method used for their medication teaching ($M = 9.1$, $SD = 1.7$). This finding is consistent with the literature confirming that the teach-back method contributes to patient satisfaction (Tamura-Lis, 2013; Caplin & Saunders, 2015). No previous studies demonstrated the effectiveness of using nursing students in patient medication teaching using the teach-back method.

The HCAHPS Survey “Always” responses to questions pertaining to medication education were reported as 75% and 50% which did not achieve or exceed the benchmark for the fourth quarter of 2016 on the unit. The recent HCAHPS results align with the findings in a previous study by Jha, Orav and Zheng (2008) that a low percentage of “Always” responses in the category of “Communication about Medications” is not unusual, attributing the low scores to ineffective communication during the discharge process. Unfortunately, the results of this project do not reflect the results of a recent study in which pharmacy students taught patients about their medications and resulted in improved HCAHPS survey results (Soric, Glowczewski & Lerman, 2016).

There are several possibilities as to why the project did not improve patient satisfaction scores for questions about medications. Low participation by nursing students in the project affected the number of patients that received medication

education using the teach-back method. Participation of all of the nursing students assigned to the designated unit would have captured more patients over a potentially longer period of time, and increased the likelihood of eligible patients receiving multiple medication education sessions before discharge. The patient's disposition at discharge may have been a contributing factor to the project's outcomes. In that situation, patients were not identified as eligible for the project and did not receive medication education by nursing students. A third reason could be that the HCAHPS question about medications focuses on the purpose and side effects of "new" medications. Nursing students provided medication education for current medications prescribed for the patient at the time of the teaching session. Nursing students were not involved with medication reconciliation at the time of discharge. Healthcare providers might have prescribed additional medications for patients at the time of discharge. Also, the issues encountered by nursing students using the interpreter phone during teaching sessions could have negatively affected patient satisfaction with medication education as reflected by the HCAHPS survey results.

Overall, the results of the project support the implementation of an evidence-based intervention of the teach-back method delivered by nursing students. The patients' knowledge of the purpose and side effects of their medications improved from the use of the teach-back method by the nursing students, as evidenced by the results of the Patient Knowledge Tool. Positive anecdotal responses on the One Minute Evaluation demonstrated patient satisfaction with the teach-back method for medication education, even though the HCAHPS results did not reflect patients'

responses on the evaluation. Although language barriers presented a challenge for 20% of Spanish speaking patients using the teach-back method with the phone interpreter, the process improved after modifying the format for discussing the purpose and side effects of medications. The use of bilingual nursing students improved the process of using the teach-back method for medication education with Spanish-speaking patients. The timing of the intervention was during medication administration in the morning hours. Family or caregivers were infrequently present at the patient's bedside during medication education since most of the family members or caregivers visited patients in the evening hours. Having the patient's family members or caregivers participate in the medication teaching session could have influenced the project's outcomes. As noted in previous research, involving the patient's family members or caregivers in the patient's education about medications had a positive effect on the patient's medication compliance after discharge and readmission rate (Cargill, 1992; Foust et al., 2012; Kerzman, Baron-Epel & Toren, 2004).

Patients, family members or caretakers did not voice any complaints regarding the medication teaching sessions conducted by the nursing students during the implementation of the project. Unit leadership maintained a Patient Complaints Log that was monitored weekly by the Project Coordinator. The Project Coordinator was present on the designated unit each week and was available for assisting the nursing students with any questions or concerns during the project. Nursing students were not only excited to participate in the project, but also took their role as patient educator

very seriously. The lack of data for patient complaints can most likely be due to the student's professional demeanor and actions during teaching sessions and the Project Coordinators availability to assist students when needed.

Utilization of the nursing students to provide medication education to patients using the teach-back method was an important component of the project. Patients were satisfied with the medication education provided by the nursing students using teach-back. Results align with a previous study that found nursing students positively affect patient satisfaction (Oskay, Gungor & Basgol, 2014). Nursing students participating in the project strived to conduct the medication instruction during or close to the time of medication administration. It was not observed by the Project Coordinator whether the nursing students' participation in the project influenced the nursing staff to use the teach-back method. However, nursing staff verbalized their appreciation of student involvement in medication teaching.

In most healthcare settings, patients usually receive medication instruction from their nurse. The current process for medication teaching on the designated unit is to be conducted by nurses using the teach-back method on admission, discharge, and when a patient is prescribed a new medication. The nurses did not resist the change in the process by having the nursing students provide medication teaching. However, the teaching sessions were only conducted by the two groups of nursing students once per day, two days per week for eight weeks during the project. Patients did not resist the change in the procedure and verbalized their satisfaction with the medication teaching conducted by the nursing students. One challenge encountered

by the Project Coordinator was the time spent each week to obtain the names of eligible patients, the patient's medication administration record (MAR), and medication information from Micromedex. A recommendation would be to revise to continually improve the process used for obtaining the list of eligible patients, medication record, and information from Micromedex.

Limitations

One limitation of the project was not having the full participation of each group of nursing students assigned to the designated unit. Participation from all of the nursing students could have resulted in a larger sample size and different outcomes for the project. The project was implemented during the hours of clinical experience for the nursing students which may have limited the sample size and affected the outcomes. During the afternoon, evening and weekend hours, the patient's discharge plans often changed from an anticipated discharge to a rehabilitation facility or skilled nursing facility to the patient's home. The inclusion of nursing students assigned to the afternoon, evening, and weekend hours could have captured additional eligible patients for the project.

Recommendations for the next PDSA

The next PDSA should streamline the process of obtaining the patient's names and their medication list. The process could begin during the time that the nurse is receiving report, followed by obtaining the patient's medication list. The initial steps of the process would take less time and allow more time for patient teaching. Another recommendation includes the participation of all nursing students to use teach-back

during medication administration. Clinical partnerships between healthcare facilities and academic institutions enable nursing students to experience various learning opportunities. The teach-back method is an evidence-based intervention for improving patient care and nursing advocates the use of evidence-based interventions. A future PDSA will implement a change requiring nursing students to use teach-back during medication administration. In doing so, the nursing student benefits by understanding the role of the nurse, time management and communication skills, and patient teaching skills. Healthcare institutions benefit by improving patient satisfaction and patient outcomes.

Conclusion

Use of an evidence-based intervention, the teach-back method, in this quality improvement project was effective in improving the patient's knowledge of the purpose and side effects of their medications. As evidenced by the One Minute Evaluation, patients were satisfied with the nursing students' use of the teach-back method for their medication teaching sessions. Although the junior nursing students were more challenged than the senior nursing students to provide medication education, most students reported feeling confident in their use of the teach-back method. Language barriers presented a challenge for nursing students during the project. However, medication education using the teach-back method was uneventful during medication education sessions conducted by bilingual nursing students in comparison to those using a translator phone. No complaints were noted from patients or family members/caregivers during the project. No negative consequences

transpired with the nursing students, patients, or nurses during or following the implementation of the project.

The positive outcomes of the project suggest the importance of having nursing students use the teach-back method during medication education, and could be sustained throughout the healthcare facility through clinical partnerships with academic institutions. Implications for practice would include encouraging nursing students to utilize the teach-back method for medication teaching while administering medications to patients. Clinical partnership programs could mandate nursing faculty to utilize evidence-based techniques, such as the teach-back method, for patient education. As an alternative to traditional clinical experiences, nursing faculty could engage their students in quality improvement projects with their clinical partners, or implement clinical assignments and/or simulations that incorporate the knowledge, skills and attitudes (KSA's) reflective of QSEN quality improvement competencies for the delivery of safe and quality patient care by prospective nurses (Case Western Reserve University, 2014).

The significance of this project is the impact of student nurses on patient satisfaction and patient knowledge. Nursing students can use the One Minute Evaluation and the Patient Knowledge Tool to evaluate patient satisfaction and patient knowledge in various patient teaching scenarios. Both tools provide immediate feedback that is essential during the evaluation period of a quality improvement project. The results of this quality improvement project can be used as a segue into further research of the dynamics of the nursing student and patient

relationship and its impact on patient knowledge, patient satisfaction, and patient outcomes.

Definition of Terms

1. Current medications-medications prescribed during the patient's hospitalization.
2. Medication education-patient provided information about a medication's purpose and side effects.
3. New medications-medications recently prescribed during the patient's hospitalization that the patient was not taking prior to this hospital admission.
4. Patient education-to provide relevant health care information to the patient in an effort to improve or alter that patient's health status.
5. Patient knowledge-measured by obtaining responses to questions 1-4 in the Patient Knowledge Tool (Appendix 3).
6. Patient satisfaction-measured by (1) obtaining "always" responses above the benchmark in the category of "Communication about Medicines" in the HCAHPS Survey (CMS, 2008); (2) obtaining data from the One Minute Evaluations (Appendix 4).
7. PRN medications-medications administered to the patient as needed or as requested by the patient.

8. Teach-back method-patient provided health care information in simple language, and in short phrases. The patient repeats back the information in his/her own words in order for the educator to assess understanding.

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Appendix 1: Teach-Back Observation Tool (AHRQ, 2016)

Teach-back Observation Tool

Care Team Member: _____ Date: _____

Observer: _____ Time: _____

Did the care team member...	Yes	No	N/A	Comments
Use a caring tone of voice and attitude?				
Display comfortable body language, make eye contact, and sit down?				
Use plain language?				
Ask the patient to explain in their own words what they were told to do about: <ul style="list-style-type: none"> • Signs and symptoms they should call the doctor for? • Key medicines? • Critical self-care activities? • Follow-up appointments? Use non-shaming, open-ended questions?				
Avoid asking questions that can be answered with a yes or no?				
Take responsibility for making sure they were clear?				
Explain and check again if the patient is unable to use teach-back?				
Use reader-friendly print materials to support learning?				
Document use of and patient's response to teach-back?				
Include family members/caregivers if they were present?				

1

Appendix 2: Nursing Student Perception Of Teach-Back Effectiveness Survey

Directions: Please complete the survey at the end of each clinical week and give the completed survey to your Clinical Instructor.

Week # _____

1. I felt confident educating my patient(s) about their medication(s).

1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree

2. I found the teach-back method easy to use in educating my patient(s) about their medication(s).

1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree

3. Patient(s) had to repeat information back more than once to demonstrate understanding about their medication(s).

1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree

4. The teach-back method enabled the patient(s) to understand their medication's purpose and side effects.

1-strongly disagree; 2-disagree; 3-undecided; 4-agree; 5-strongly agree

5. What problems did you encounter teaching your patient(s) this week?

6. What recommendations do you have to improve the medication education process?

Appendix 3: Patient Knowledge Tool

Week # _____

Directions: After teaching a patient about their medications, enter the date and response to each teaching assessment on each row.

1. Before teaching the patient about medications, the patient knew the purpose of:
all their medications-2/some of their medications-1/none-0
2. Before teaching the patient about medications, the patient knew the side effects of:
all their medications-2/some of their medications-1/none-0
3. After teaching the patient about medications, the patient knew the purpose of:
all their medications-2/some of their medications-1/none-0
4. After teaching the patient about medications, did the patient know the side effects
of: all their medications-2/some of their medications-1/none-0
5. Translator used: Yes-1/No-0
6. Patient's significant other or caregiver taught: Yes-1/No-0

[illegible]

Appendix 4: One Minute Evaluation

Week # _____

Directions: Upon completion of medication teaching, please ask the patient and/or caregiver (or both) to evaluate their medication teaching experience with the teach-back method.

Completed by (please check): Patient ____ Family member ____ Teaching session # ____

Date: _____

1. Using a scale of 1 (not useful) to 10 (very useful), please rate your experience with the medication education session using the teach-back method.

*Please check the bubble for your response.

1	2	3	4	5	6	7	8	9	10
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Not Useful

Very Useful

2. Using a scale of 1 (not satisfied) to 10 (very satisfied), please rate your satisfaction with the medication education session using the teach-back method.

*Please check the bubble for your response.

1	2	3	4	5	6	7	8	9	10
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Not Satisfied

Very Satisfied

3. Please use the space below to write any comments about the medication education session using the teach-back method.

Appendix 6: 10 Elements of Competence for Using Teach-back Effectively (AHRQ, 2016).

10 Elements of Competence for Using Teach-back Effectively

1. Use a caring tone of voice and attitude.
2. Display comfortable body language and make eye contact.
3. Use plain language.
4. Ask the patient to explain back, using their own words.
5. Use non-shaming, open-ended questions.
6. Avoid asking questions that can be answered with a simple yes or no.
7. Emphasize that the responsibility to explain clearly is on you, the provider.
8. If the patient is not able to teach back correctly, explain again and re-check.
9. Use reader-friendly print materials to support learning.
10. Document use of and patient response to teach-back.

What is Teach-back?

- A way to make sure you—the health care provider—explained information clearly. It is not a test or quiz of patients.
- Asking a patient (or family member) to explain **in their own words** what they need to know or do, in a caring way.
- A way to check for understanding and, if needed, re-explain and check again.
- A research-based health literacy intervention that improves patient-provider communication and patient health outcomes¹.

¹ Schillinger, 2003

Appendix 7: Using Teach-back for Medication Education

TEACH BACK GUIDELINES

1. Speak clearly and slowly.
 2. Use simple language in short sentences.
 3. Use open-ended questions.
 4. Ask the patient to repeat back in his or her own words the information you have given to the patient.
 5. If the patient's teach-back information is incorrect, re-explain the information and repeat steps 1-4.
 6. Use the Micromedex medication sheet to tell the patient the purpose of their medications.
 7. Use the Micromedex medication sheet to tell the patient the side effects of their medications.
 8. Teach the purpose and side effects for one medication at a time.
 9. Provide the Micromedex medication sheets to the patient AFTER teaching.
- (AHRQ, 2016).

TEACH BACK SCRIPT FOR MEDICATIONS

Before using the teach-back method:

(Purpose) Student: "Can you tell my why you are taking this medication?"

(Side Effects) Student: "Can you tell me 2 side effects from taking this medication?"

After using the teach-back method:

(Purpose) Student: "Can you tell me, in your own words, why you are taking this medication?"

(Side Effects) Student: "Can you tell me, in your own words, 2 side effects from taking this medication?"

(AHRQ, 2016)

Appendix 8: Coding for Measures

Variable Values		Labels
TBObservation Q1-Q11	999	N/A (Not Applicable)
	0	No
	1	Yes
NSPercepTB Q1-Q4	1	Strongly Disagree
	2	Disagree
	3	Undecided
	4	Agree
	5	Strongly Agree
PtKnowledge Q1-Q4	0	None
	1	Some
	2	All
Q5-Q6	0	No
	1	Yes
OneMinuteEval		
Q1	1-10	Not Useful – Very Useful
Q2	1-10	Not Satisfied-Very Satisfied
PtComplaints Day of project 1-90		
	1+	Number of patient complaints received