Dedicated Medication History Specialist Impact on Completion of Medication Reconciliation

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Abstract

More patients die from medication errors each year than from motor vehicular crashes. Medication errors alone have caused more than 7,000 deaths annually and lack of an accurate medication history is a leading cause of medication errors. On average, every admitted patient has one medication error per day. It takes 32 minutes on average to complete a best possible medication history (BPMH). Over 46% of all admissions originate from the emergency department (ED). This research project is a quantitative quasi-experimental comparative study utilizing retrospective data to study the impact of a dedicated medication history specialist (MHS) in an ED in an acute care hospital in Georgia on the physician's ability to complete medication reconciliation within 24 hours of admission. The conceptual framework for this study was the Structuration Theory of Safety Culture. The results of this research showed that placement of a dedicated resources in the ED impacted the rate of completion of the medication reconciliation within 24 hours of admission. Furthermore, utilization of the dedicated resource allowed the registered nurse (RN) to function at top of license while delegating data collection to the MHS.

Keywords: Medication safety, Emergency department, Medication errors, ED, registered nurse, RN, Medication history, Structuration Theory of Safety Culture, Best Possible Medication History, BPMH

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SECTION I: INTRODUCTION

In 1999, the Institute of Medicine (IOM) published a report on medical errors that shocked the healthcare industry. The report stated that as many as 100,000 patients per year die from medical errors. This report stated that more people die each year from medical errors than from motor vehicular crashes (Kohn, Corrigan, & Donaldson, 1999). Medication errors alone have been reported to account for 7,000 deaths per year (Aspden, Wolcott, Bootman, & Cronenwett, 2007). Lack of an accurate medication history is a major source of medication errors (Aspden et al., 2007). Patients who present to the emergency department (ED) are at an increased risk for mediation errors. The patients are unknown to the healthcare provider, are in crisis and may not be able provide the healthcare provider information about daily medication regimes. The acuity and volume in the United States' ED's continue to grow preventing the ED staff from focusing on the individual patient's medication history. The healthcare provider and more specifically the ED nurse is called upon to obtain an accurate medication history in an environment that is chaotic and fast paced. Introduction of a dedicated resource to collect the data for the medication history may decrease the number of medication errors related to an inaccurate medication history. This study assessed the effectiveness of implementation of a medication history specialist in the ED of an acute care hospital in the southeast United States on obtaining a medication history prior to the attending initiating inpatient medication orders.

Background of the Problem

As early as 2006, Joint Commission (JC) issued a Sentinel Event Alert (SEA) that required facilities to adopt a medication history and medication reconciliation process to keep patients safe. Joint Commission standards require facilities and providers to (a) develop a list of current medications, (b) develop a list of medications to be prescribed, (c) compare the

medications on the two lists, (d) make clinical decisions on the comparison, and (e) communicate the new list to appropriate care givers and to the patient ("JC SEA 35," 2006, p. 1). The Institute of Medicine (IOM) strongly recommends developing a consumer-provider partnership. The IOM has also recommended three steps that should be utilized to improve medication safety during medication history. These steps include (a) verification or obtaining a medication list at point of entry, (b) clarification which ensures to the best of the providers ability that the medications and doses are accurate and appropriate, and (c) reconciliation which includes documentation and communication of any changes (Aspden et al., 2007, p. 169). In 2015, facilities are still attempting to implement processes that ensure the best accurate medication history and keep patients safe (Endo, 2015).

According to reports, three percent of all hospital related adverse drug events occur in the ED (Pham et al., 2008, p. 486). Adverse drug events are defined as patient injuries occurring in relation to the utilization, administration or omission of medication (Mueller, Sponsler, Kripalani, & Schnipper, 2012). Medication errors in the ED are underreported and are predicted to increase because of overcrowding and increased age and acuity of ED patients (Pham et al., 2008). A medication history is the most accurate list of a patient's current medicines including name, dosage, frequency and route; this list should include all over-the-counter medications and herbals. An accurate and complete medication history occurring at the point of entry into a healthcare facility is the first step to a medication error free hospital admission (Hellstrom, Bondesson, Hoglund, & Eriksson, 2012). Research has shown that there are four components to improving medication safety:

- Preadmission medication lists that are complete and accurate including over the counter and herbal mediations are the foundation of preventing medication errors
- A dedicated resource with knowledge about medication and skilled interviewer with specific training in completing an efficient and accurate medication history
- Transitions of care or handoffs between caregivers are vulnerable interactions that impact medication safety and should have focused identified processes to prevent errors
- Targeted interventions for safe practice should be implemented at points of entry into the healthcare facility (Mueller et al., 2012).

According to Hellstrom et al. (2012), a medication history takes approximately 32 minutes per patient to conduct an interview and obtain a medication history. The time for obtaining a medication history, as reported by Hellstrom et al. (2012), did not take into account the time for entry into an electronic medical record. Based on the environment of the ED, the percent of patients admitted through the ED and the complexity and acuity of patients today, makes the argument that medication history is a vulnerable step in keeping patients safe (Pham et al.., 2008).

As baby boomers age, there is an increasing number of patients presenting to the ED with complicated medication history and chronic disease (Hellstrom et al., 2012). According to the American Society of Consultant Pharmacists (ASCP) there are 43.1 million Americans aged 65 and older, by the year 2040 there will be 79.7 million, nearly 92% of older adults have one

chronic condition and 77% have at least two chronic diseases. The ASCP also reported that 36% of adults 65 and older had some type of disability ("ASCP fact sheet," 2015, para. 2).

There are many factors affecting the accuracy of a medication history, some of these are cultural and language differences that are complicated by multiple prescribing physicians and multiple pharmacies. Adding to the complexity of this issue is look alike sound alike medications and a lack of healthcare literacy on the part of the patient and/or family (Gleason et al.., 2010). Combining the facts of the percentage of older adults and the complexity of a medication history, and chronic illnesses and disability the issue of accurate medication history will continue to be a priority for healthcare providers across the continuum.

A systematic approach to obtaining the best possible medication history in the ED for the patient that is being admitted is required to improve medication safety. Medication history is one of the most important steps in keeping patients safe in the ED. A complete medication history is also important in the inpatient setting because an accurate medication history keeps down the cost of healthcare delivery in the United States by decreasing inpatient length of stay (Grooves, Meisenbach, & Scott-Cawiezell, 2011). According to the National Priorities Partnership, preventable medication errors cost 16.4 billion dollars annually and medication errors increase the patient's length of stay on average by eight days ("Preventing Medication Errors," 2010). Collaboration between ED providers, inpatient physicians, primary care physicians, specialist, pharmacist, retail pharmacies and the patient is imperative to establish an error free process for medication history and medication reconciliation. Unfortunately, medication history in the ED has historically fallen to the Registered Nurse (RN) to obtain and based on the time constraints, volume and acuity; the ED medication history process has not proven to be adequate. Because of the complexity of the process and the factors affecting accurate medication history, ED

nursing leadership and physician leadership must find innovative ways to accomplish obtaining an accurate medication history (Nana, Lee-Such, & Allen, 2012). Providing a dedicated medication history specialist in the ED may ensure adequate time and resources to obtain the medication history.

Review and Summary of the Relevant Literature

A search of PubMed, CINHAL, ProQuest and OVID utilizing emergency department (ED) and admitted patients revealed a large number of relevant and non-relevant articles. The results of this search ranged from a high n of 106,275 utilizing ProQuest to a low n of 1035 utilizing OVID. The search was refined utilizing a combination of the key search terms such as emergency department AND admitted patients, pharmacy tech, medication history and medication reconciliation. Ultimately, a filter of English articles was applied to the final search categories. PubMed revealed four potentially relevant articles, CINHAL revealed three potentially relevant articles, ProQuest revealed 31 potentially relevant articles, and Ovid revealed five potentially relevant articles. The abstracts of these articles were reviewed for the relevance to the utilization of pharmacy technicians in the ED to collect medication history on admitted patients. There were 10 articles related to the topic, three of the articles reviewed the impact of pharmacist, four articles reviewed the impact of pharmacy technicians, one compared pharmacist and pharmacy technicians, and one article studied the impact of standardization. Also included is an article that studied the perceptions of those responsible for the medication history and medication reconciliation related to the process.

In 1999, the IOM identified medication safety and more specifically obtaining an accurate medication history and reconciling medications as an important transition of care. Obtaining a medication history and reconciling medications are two important aspects of patient

safety (Kohn et al., 1999). The Joint Commission established national patient safety goals (NPSG) in 2003 and medication safety was one of the original NPSG. NPSG.03 established the requirement for medication safety on high-risk medications ("National Patient Safety Goals," 2002). NPSG.08a established the requirement for developing a process for collecting and documenting a complete list of the patient's current medications and NPSG.08b established the requirement to communicate the patients' current medication list to the next provider ("JC Special Report," 2005). The physician or advanced practice provider is accountable and responsible for the final medication reconciliation, but the collection of the best possible medication history falls under the scope of the RN (Poon, 2007).

Carter, Allin, Scott and Grauer (2006) conducted a retrospective review of admitted patient charts to compare discrepancies between medication histories collected by ED providers (ED physicians, ED registered nurses and medical students) and medication histories completed by pharmacists. The ED providers and the pharmacist collected the medication history, allergies and immunizations on the same patient population simultaneously. The ED provider staff had an accuracy rate of 18% and the pharmacists had an accuracy of 100% determined by a retrospective chart review conducted by the same reviewer.

A study by Hayes, Donovan, Smith, and Hartman (2007) reviewed the effectiveness of pharmacists compared to ED providers on the utilization of the facility's medication reconciliation forms. A total of 162 records were reviewed during the study. One hundred completed ED provider completed medication history and reconciliation, 62 pharmacists completed medication history, and reconciliation records were reviewed. The ED providers utilized the appropriate forms for completing medication history and reconciliation 78% of the time and the pharmacists utilized the appropriate forms for completing medication history and

reconciliation 100% of the time. A review for accuracy revealed a significant increase in number of errors on the forms collected by the ED providers. The medication history and medication reconciliation performed by the ED providers revealed 117 errors compared to the medication history and medication reconciliation performed by the pharmacists with just two errors. The mean ± standard deviation number of errors per form was also significantly higher in the forms completed by the ED providers, 1.7 ± 2.1 versus 0.3 ± 0.7 for those forms completed by the pharmacists. The major limitation of this study was that the pharmacist collecting the data was also the pharmacist that reviewed the records of the control and study group.

A study by Johnston, Saulnier, and Gould (2010) compared pharmacy technician's accuracy in obtaining medication history with pharmacist's accuracy. The study found that the medication history list showed no significant differences between pharmacy technicians and pharmacists when obtaining a medication history. There were 59 patients included in the study. Two pharmacy technicians and three pharmacists were trained on collection of the best possible medication history. There were no differences in the number of discrepancies involving prescription or over the counter medications (x^2 =0.52, df =1, n=118, p=0.47, and *Cramer's V* for effect size =0.07). For the medication histories obtained by both the pharmacists and pharmacy technicians, the number of unintentional discrepancies per patient was lower than the national rate per patient.

In a prospective qualitative study involving four focus groups to assess their perceptions of medication reconciliation with healthcare professionals who perform the task. The study focused on the amount of time medication reconciliation takes to complete, the complexity of the process, and effectiveness of the process. This was a descriptive study and the method used for collection of data was to hold focus groups of interested nurses who performed the medication

reconciliation process in the ED. Themes that arose included the knowledge of the patient related to his or her medications. The patient's level of knowledge and the number of medications a patient took at home impacted the amount of time needed to complete an accurate history. Another theme was that collection of medication history at triage is impossible because of the time constraints placed on the nurse by the volume of patients and the complexity of the patients' conditions. All the nurses in the study, stated that a national prescription database that linked patients' medication list with the patient's electronic medical record would improve the safety of the patient. Limitations of this study were that a disproportionate share of the focus groups were nurse educators and were more experienced than the general makeup of the ED and may not have been representative of the general ED RN population (Candlish, Young, & Warholak, 2012).

Nana, Such and, Allen (2012) reviewed the accuracy of pharmacist collected medication histories in the ED compared to medication histories collected by Registered Nurses (RN). A review of random sampled admitted patient records showed medication histories collected by the pharmacists to be significantly more likely to meet specified accuracy criteria than the medication histories conducted by the RNs. The ED providers and RNs indicated that the pharmacist's involvement in the medication history process improved the safety of admitted patients.

van den Bemt et al. (2013) conducted a study in 10 Dutch hospitals comparing physician led medication histories with pharmacy technician led medication histories. The focus of the study was to establish a process that would result in the best possible medication history, which would ultimately result in a decrease in medication errors. Three of the 10 hospitals utilized physician led completion of the medication history and seven of the facilities utilized pharmacy

technician led completion of the medication history. The sample size was 1,543 admitted patients over the age of 65. The study results showed an improvement in the best possible medication history as evidenced by a 30% reduction in medication errors related to inaccurate medication history collection on admission when the pharmacy technician collected the medication history.

Sen, Siemianowski, Murphy, and McAllister (2014) described the effect of a pharmacy technician led medication history collection process. The researchers did conclude that the process improved medication safety by improving the accuracy of the medication history at point of entry in the ED. The recommendation from this study was to conduct further research regarding the impact of utilizing dedicated resources to obtain the medication history prior to admission. The researchers concluded that pharmacist obtained medication histories were more complete than those collected by other providers.

A study that evaluated the effectiveness of a standardized collection method on the accuracy of medication history showed that standardization drastically improved the accuracy of the medication history. A nurse and pharmacist collaborative developed a medication history collection tool. The tool was utilized by a group of nursing students. The nursing students using the standardized tool had an accuracy of 87% compared to those that did not use the tool whose accuracy was 74%. This showed as statistical improvement $p=0.010$. The results of this study showed that a standardized tool and process improved the accuracy of medication histories collected by nursing students (Henneman, Tessier, Nathanson, & Plotkin, 2014).

Cater et al. (2015) did a study to compare the utilization of pharmacy technician's collection of medication history as compared to the admitting physician collection of the medication history. There were 75 patients in the control group and 113 patients in the

intervention group. The results of the study did not show a decrease in medication errors related to inaccurate medication history. The medication error rating was identified through addition or deletion of medication within two hours of admission. The researchers concluded that other studies have shown the improvement in medication history by pharmacy technicians and implied that the results were different in their study because of the makeup of the facility where the study was conducted. The facility was an academic medical center with higher nurse to patient ratios and pharmacists stationed in the ED.

Hart, Price, Graziose, and Grey (2015) studied the impact of utilizing dedicated pharmacy technicians in the ED to improve the quality of the medication history, improve the safety of care delivered and decrease the workload on the ED RN. The sample size was 300 patients admitted from the ED, with 150 medication histories collected by the RN and 150 medication histories collected by the pharmacy technician. The results of the study showed the pharmacy technicians were accurate 88% of the time with the RNs accurate 57% of the time ($p<0.0001$). Nineteen (1%) errors were committed by the pharmacy technicians where 117 (8.3%) errors were committed by the RN (relative risk [RR] 7.5, $p=0.0001$). The results of this study demonstrates the benefit of trained pharmacy technicians in the ED to assist the RNs with collecting the best possible medication history. A decrease in errors also help the providers' ability to complete the medication reconciliation on admission.

van den Bemt et al.. (2013), Sen et al. (2014), Hart, Price, Graziose, and Grey (2015) found that introduction of a pharmacy technician in the ED improved the accuracy of the medication history and thereby decreased the number of medication errors occurring related to inaccurate medication history after admission. However, Cater et al. (2015), found that the introduction of pharmacy technicians in the ED did not improve the accuracy of medication

history collection. The three studies utilizing pharmacist to collect the medication history in the ED found an improvement in the accuracy of the medication history versus the RN collected medication history (Carter et al., 2006; Hayes et al., 2007; Nana et al., 2012). In review of the literature, the medication history obviously is an important step to keeping patients safe. The research also points to the improvement in accuracy of medication history when there is a dedicated resource to obtain the history.

A medication history is the list of medications an individual routinely takes. The medications can be prescribed by a physician, be an over the counter medication and/or herbals. Assuring an accurate medication list is extremely important to medication safety. An accurate medication list can ensure a patient receives necessary medications; medications ordered during hospitalization do not interact with medications the patient takes at home and ensures that any side effects of medications taken at home are considered during hospitalization. The medication history is the basis for the process that is known as medication reconciliation. Medication reconciliation is defined as the comparison between a patient's medication orders to those the patient was receiving before the hospital visit (Chaganti & Siu, 2015, p. e5).

Statement of the Problem

According to the Institute of Medicine, the average inpatient is subject to a minimum of one medication error per day (Aspden et al.., 2007). Research has shown that 40% of those medication errors are related to inaccurate medication history and medication reconciliation (Kohn et al.., 1999). Nationally approximately 46% of all inpatient encounters begin in the ED ("CDC FastStats," 2015). The estimated time that an accurate medication history takes for a RN to obtain is an average of 32 uninterrupted minutes (Bamsteiner, 2008). The environment nor patient load and acuity in the ED allow the RN to obtain an accurate medication history. The

consequences of inaccurate medication history and reconciliation can include delay in treatment, increased length of stay in the hospital, and ultimately an increase in morbidity and mortality ("Preventing Medication Errors," 2010). This problem requires research to identify evidenced based practices for the collection of the best possible medication history in the ED. A retrospective data review was conducted to assess the effectiveness of pharmacy technicians collecting the medication history compared to the RN collecting the medication history in an ED in Georgia.

Purpose of the Project

The purpose of this quantitative, quasi-experimental comparative study using retrospective data is to determine if the utilization of a medication history specialist in the emergency department impacts the rate of the completed medication reconciliations within the first 24 hours of admission in an acute care center in Georgia. The medication history is a vital part of the medication reconciliation process (Chaganti & Siu, 2015, p. e5).

Medication errors contribute to the number of lives lost during hospitalization as well as the number of avoidable inpatient days. According to Cater et al. (2015), medication history is inaccurate 67% of the time. Obtaining an accurate medication history at the point of entry into the healthcare facility or healthcare encounter is an important step to preventing medication errors. Busy ED Registered Nurses (RN) are required to obtain the medication history during the patient's ED visit. Patients today are presenting with multiple medications and herbal therapies that make the collection of this data very difficult. Research has shown that the collection of the medication history prior to the admission medication orders being written decreases medication errors and rework (Sen et al., 2014).

Research Question

Does the utilization of a medication history specialist in the emergency department impact the rate of completed medication reconciliations within the first 24 hours of admission in an acute care hospital in the southeast United States?

Hypotheses

H_1: The utilization of a medication history specialist in the emergency department impacts the rate of the completed medication reconciliations within the first 24 hours of admission in an acute care hospital in the southeast United States.

H_0: The utilization of a medication history specialist in the emergency department does not impact the rate of completed medication reconciliations within the first 24 hours of admission in an acute care hospital in the southeast United States.

Significance of the Project

Medication safety is a priority for healthcare providers nationally. According to the Institute Of Medicine's *Preventing Medication Errors* (1999), four out of every five Americans use prescription and/or herbal medications and almost a third take five or more medications (Aspden et al., 2007). The IOM also noted that of the mediation errors that occur at least 25 % of those are preventable (Hellstrom et al., 2012). These statistics are estimates based on voluntary reporting of errors by healthcare providers. Kohn et al. (1999) estimated that only 10% of all errors are reported. Based on information from the literature, improving the initial collection of the medication history in the ED can improve the quality of medication reconciliation on admission and ultimately decrease medication errors.

Obtaining the best possible medication history requires time and the ability to document accurately in the electronic medical record. Obtaining the medication history is a task that a RN

can delegate. RN skills are un-duplicative skills and duties that can be delegated should be to allow the RN to assess patient condition, establish patient goals and track progress, coordinate care with inter-professional care team members, provide patient-centered outcomes focused care, facilitate safe patient transitions and handoff, educate and engage the patient and their family, and assess and incorporate evidence-based practice at the bedside. Top of license functions like assessment and coordination of care improves the quality of care delivered by the RN at the bedside and ultimately leads to improved RN job satisfaction ("Advisory Board Top-Of-License," 2013). Delegating the medication history to a dedicated medication history specialist allowed the RN to function more efficiently and spend more time at the bedside providing care. The dedicated medication history specialist in the ED helped to ensure the best possible medication history, improve quality of care and decrease medication errors.

Nature, Scope and Limitations of the Project

This study attempted to determine if the utilization of a medication history specialist in the ED impacts the rate of the completed medication reconciliations within the first 24 hours of admission in an acute care hospital in the southeast United States. The independent variable is the introduction of the medication history specialist in the ED. The dependent variable is the rate of completion of the medication reconciliation within 24 hours of admission in an acute care hospital. The study design was selected because the introduction of the medication history specialist for collection of the medication history has been implemented and the need to study the impact of the effectiveness of this intervention requires a retrospective review of patients' charts to determine if the completion of medication reconciliation within the first 24 hours of admission has improved.

Approval from the American Sentinel University Institutional Review Board (IRB) was obtained to conduct this study. After approval was obtained from the American Sentinel University IRB the researcher received an exemption from the facility IRB chair to conduct the study. The study was conducted in acute care hospital in the southeast United States. Permission to conduct the study at this hospital can be found in Appendix A.

The acute care hospital has approximately 20,000 admissions that occur through the ED each year. The sample size for this study was 3,984 RN collected medication history charts and 926 medication history specialist collected medication history charts. The medication history specialist were scheduled to work during the hours of peak volume of admissions based on historical data.

Scope. The facility is a chest pain center, stroke center and a primary burn center. A retrospective review of electronic medical records was conducted to assess if the completion of medication reconciliation within the first 24 hours of admission improved. The records reviewed were a three-month period of time before implementation of the medication history specialist in the ED. This was the baseline, with the RN obtaining the medication history. The same three-month period of time (time of year) was utilized post implementation of the medication history specialist in the ED. The purpose of utilizing the same time of the year was to account for seasonality changes such as volume and types of illnesses presenting to the ED. The G*Power app was utilized to determine the sample size required to ensure statistical significance of this study (Faul, Erdfelder, Lang, & Buchner, 2007). The adult ED population was utilized for this study. The definition of an adult was any individual 18 years old or older. The ED has a pediatric ED, but does not have an inpatient pediatric unit. The age 18 was chosen as the cut off because the facility admits patients 18 years and older. A review of patient's charts admitted

through the ED was conducted to ascertain if the percent of medication reconciliation occurring within 24 hours of admission improved after the implementation of the medication history specialist in the ED. The information for this study was obtained through a retrospective review of data, documentation, and time stamps collected by EPIC, the electronic medical record. Confidentiality of the patient information was maintained at all times and individual patient identifiers were removed and code numbers were assigned. Data was maintained on a secure encrypted laptop that is password protected. Data analysis was conducted utilizing Chi-square test for independence.

Limitations. The limitations of this study include non-randomization of the charts that were reviewed. The pharmacy technician, to be called medication history specialist, was not staffed 24 hours per day. The rate of medication reconciliation was limited to the charts the medication history was completed by the medication history specialist. The study was a pre and post study and other initiatives related to medication safety were occurring during the implementation phase of this project that also impacted the improved collection of the medication history in the ED. The medication safety pharmacist and the researcher performed audits of the medication history specialists' medication history for accuracy.

Delimitations. The population is limited to the adult population and did not include any patient that is seen and treated in the pediatric ED. The inconsistency of the data because the majority of pediatric patients are transferred to the tertiary center impacted the decision to eliminate this patient population from the study. The other population of patients not included in the study is the ED's discharged patients. The reason for the exclusion of discharged patients is the lack of resources and large volume of patients. When assessing the best use of resources, the

admitted patients have a higher risk for medication error based on medication history and the volume allows for a dedicated resource to obtain the medication history on these patients.

Theoretical Framework

Giddens' (1984) theory of structuration is defined as the organization's structure around the rules and resources of the organization intersecting with the individuals within the organization. In other words, the very structure of the organization is in the design of the rules and resources that are continually changed and adapted by the individuals of that same organization. Giddens further defined structure as the very rules and regulations of an organization whether they were identified or unofficial (Turner, 1986). Groves, Meisenbach and Scott-Cawiezell (2011) took the theory of structuration one step further and developed the theory of structuration intersecting nursing practice and safety culture. The theoretical framework for the quantitative quasi-experimental comparative study, dedicated medication history specialist impact on medication history of the admitted ED patients is the structuration theory of safety culture. Structuration theory of safety culture supports the concepts around the study design. The dedicated medication history specialist program is focused on patient safety and is operating under a design of structure, rules and processes that are interacted upon by the agency.

The agency is defined for this project as the RN, the medication history specialist, the physician and the patient. Utilizing the structuration theory of safety in nursing practice in the ED allowed for constraints of rules and structure in a chaotic environment that enables safe practice. Through instantiation of practice or the production and reproduction of rules and resources provided organizational structure and the patient is kept safe. The medication history specialist program had a set of job aids to assist in the process of interview, collection and

entering of the medication history. This included detailed instruction and education around obtaining the best medication history possible.

Utilization of practice is the team being enabled and constrained by rules and resources to ensure patient safety. The ED RN, pharmacy technician, physician and patient worked together within this framework of rules and resources to obtain the best possible medication history. Ultimately, there is structure defined in the rules and regulations of the program being communicated within the organization, and the agency is acting to keep the patient safe.

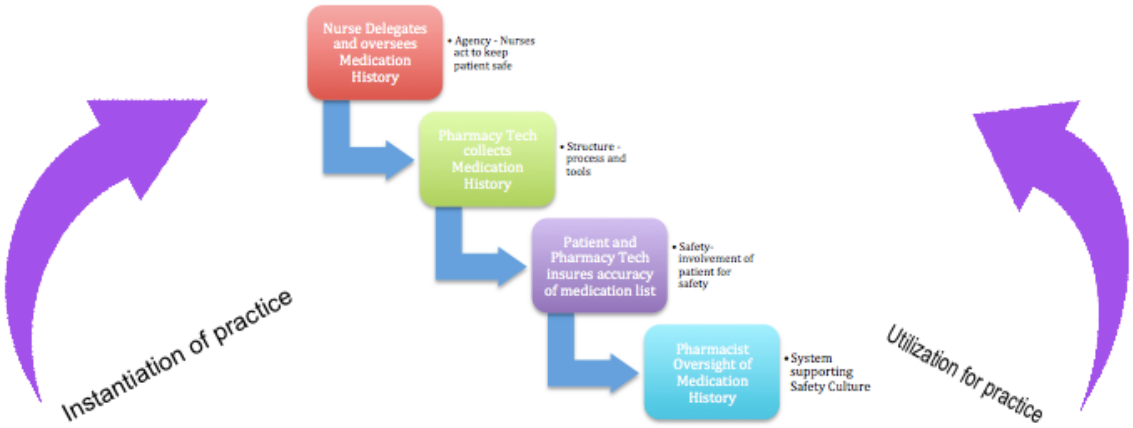

Figure 1. The conceptual framework for Structuration of Safety Culture

Definition of Terms

Emergency Department (ED): a department of the hospital dedicated to the diagnosis and treatment of unforeseen illness or injury ("ACEP ED," 2015).

Registered Nurse (RN): a graduate of an approved nursing program who has been successful in passing a national board of nursing examination and has been licensed to practice nursing in the state where registered (Georgia Registered Professional Nurse Practice Act, 2010).

Pharmacy technician: A healthcare provider with a national certification that under the direction of a pharmacist or other licensed healthcare provider performs pharmacy related functions (USPHARMD website, 2015, para. 2).

Medication History Specialist: A certified Pharmacy Technician employed to collect the medication history of patients ("Med History Specialist," 2012).

Medication history: A thorough history of all regular medication use prescribed and non-prescribed (Cater et al., 2015).

Best possible medication history: Is a history created using a systematic approach of interviewing the patient/family and a review of at least one other reliable source of information to obtain and verify all of a patient's medication use (prescribed and non-prescribed). Complete documentation includes drug name, dosage, route, frequency and last dose taken (Institute for Safe Medication Practices Canada, 2015).

Medication reconciliation: A formal process where healthcare providers work together with patients, families and care providers to ensure an accurate and comprehensive medication information is communicated consistently across transitions of care (Carter et al., 2006).

Medication error: Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of a healthcare professional (Kohn et al., 1999).

Serious Safety Event: An unexpected occurrence involving the death or serious physical or psychological injury or the risk thereof ("JC SEA 35," 2006). Also known as a never event.

Summary

Medication errors are a serious problem in United States healthcare facilities (Pham et al., 2008). The Joint Commission issued a national patient safety alert naming medication history together with medication reconciliation as one of the main areas that contribute to medication errors in hospitals ("JC SEA 35," 2006). The medication history is the platform that medication reconciliation builds on to prevent medication errors. The admitted patient is the most

vulnerable population for a medication error, and approximately 46% of all patients are admitted through the ED ("CDC FastStats," 2015). Because of these facts and the importance of the medication history, this project assessed the effectiveness of a dedicated medication history specialist in the ED on the completion of the medication reconciliation within 24 hours of admission from the ED.

This quantitative quasi-experimental comparative study assessed the effectiveness of pharmacy technicians working as medication history specialist collecting the medication history on patients being admitted from the ED. This was compared to historical data where the RN collected the medication history in the ED on admitted patients. The electronic medical record was utilized to determine if there is an increase in the completion of medication reconciliation within 24 hours of admission. The medication reconciliation completion rate within 24 hours of admission pre and post implementation of the medication history specialist was compared to determine if completion of the medication history improves the rate. This program attempted to improve the medication history, decrease medication errors and improve the quality of care delivered to patients in an acute care hospital in the southeast United States.

In section two, the Methods, justification of the project design, sampling method as well as setting is described. Data collection, analysis and management of the data methodology are identified. There is an exploration of the internal and external validity as well as ethical considerations of the medication history specialist study in section two.

SECTION II: METHODS

Introduction

The IOM published a report in 1999 that 100,000 lives are lost because of errors in healthcare (Kohn et al.., 1999). The Joint Commission identified medication safety as one of the first national patient safety goals ("National Patient Safety Goals," 2002). Seven thousand lives are lost annually related to medication errors (Aspden et al., 2007). As the focus on medication safety intensified, mediation history has been identified as the foundation of safe medication practice (Carter et al., 2006). The medication history should be obtained at the onset of each patient encounter in a healthcare setting. Approximately 46% of all hospitalizations originate from the ED ("CDC FastStats," 2015). Because such a large percentage of patients are admitted through the ED the process for collecting the best possible medication history is extremely important and subsequently the development of a standardized process for obtaining the best possible medication history prior to admission. A dedicated medication history specialist in the ED to obtain the best possible medication history attempted to improve the ability of the physician to complete the medication reconciliation and keep the patient safe.

Project Design

This project utilized a quantitative quasi-experimental comparative design. Quasi-experimental designs do not utilize randomization (Garrad, 2014). The quasi-experimental design approach is utilized to measure change in a health-related or safety-related outcomes after treatments or interventions when randomization is not feasible to use a true experimental design or control group (Moran, Burson, & Conrad, 2014). This design is most appropriate for the study because this type of design measures the outcome of a safety intervention. The non-randomized sample avoids the additional required steps for randomization and the ethical

dilemma of a less than optimal process that may impact safety of the patient (Garrad, 2014). This study compared the historical group prior to implementation of a medication history specialist in the ED to the group post implementation of the medication history specialist in the ED. This study design allowed a retrospective review of the intervention of a dedicated medication history specialist in the ED to validate the impact on completion of medication reconciliation within 24 hours of admission from the ED. A retrospective review of patients' medical records admitted through the ED was conducted for a period of three months prior to the introduction of the dedicated medication history specialist and for the same three-month timeframe one year after the introduction of the dedicated medication history specialists. Utilizing the same months of a year over a year pre and post intervention reduces the variability in patient type and volume related to seasonable changes (Pitts, Niska, & Xu, 2008).

Sample and Setting

The study occurred in an acute care hospital in the southeast United States. The facility is a 380 bed community hospital that is a primary burn center, chest pain center and stroke center. Permission was obtained to conduct the study (Appendix A). The ED volume is approximately 105,000 visits per year and the admission rate is 20%. The inclusion criteria for the study is any patient 18 years and older that is admitted through the ED. The facility does have a pediatric ED, but does not have an inpatient pediatric unit, therefore all pediatric patients (patients less than 18 years old) were excluded from the study.

The electronic medical record system (EMR) is EPIC and the disposition of the patient from the ED is automatically collected in the medical record. Epic EMR has a scheduled electronic report which generates a list of the admissions from the ED by month. The list of admissions was reviewed by the facility medication safety pharmacist for patients that were

admitted. Patients that were admitted into an observation status were excluded because the length of stay was shortened and may skew the data and alter the impact of the medication history specialist in the ED. The patients 18 years old and older that are admitted into an inpatient status were included into the study.

The sample size for this study was 3,984 RN collected medication history charts and 926 medication history specialist collected medication history charts (n=4910). The sample size was determined utilizing G*Force statistical power analysis with a confidence level of 95% and confidence interval of 5 (Faul, Erdfelder, Lang, & Buchner, 2007). The sample design was a sample of convenience. The strengths of a sample of convenience are that this type of sampling design is less costly, less time consuming, administration of the sample is easier, the design usually assures higher participation rate, and generalization is possible with similar subjects. The weaknesses of a sample of convenience are that the results are difficult to generalize to other non-similar subjects, the sample is less representative of an identified population, the study results are dependent on the unique characteristics of the sample and there is a greater likelihood of error due to experimenter or subject bias (McMillan & Schumacher, 2006).

Instrumentation

A retrospective electronic chart review was utilized to determine completion of medication history in the ED and was the medication history completed by a RN or by a medication history specialist. The electronic chart was reviewed for completion of the admission medication reconciliation and was the reconciliation completed within 24 hours of the admission. The chart review was conducted by the facility's medication safety pharmacist. The medication safety pharmacist assigned an identification (ID) number to each dataset and removed all patient identifiers. The medication safety pharmacist maintained a log in an

encrypted excel file archived on a secure private sharepoint approved by the facility and in compliance with the facility's nursing research policy of the medical record number that coincides with the ID number. The de-identified datasets were stored on a facility approved encrypted Universal Serial Bus (USB) drive in a password protected excel file ("Policy LD-04-01," 2015).

A retrospective chart review is a type of research design that utilizes patient-centered, electronically documented information to answer one or more research questions (Vassar & Holzmann, 2013). Utilization of the EMR to obtain data for research is a widely excepted practice in many health-related fields such as epidemiology, quality assessment, professional education and clinical research. The EMR utilized at the study setting is EPIC. EPIC is a widely accepted EMR of choice for research centers (Sanderson, 2013) .

Data Collection

The researcher obtained permission from the American Sentinel University Institutional Review Board (IRB) to conduct the research study at the acute care hospital in the southeast United States. Permission to conduct the study has been obtained from the facility (Appendix A). The researcher obtained an exemption from the facility's IRB (Appendix D).

The medication history specialist job description was co-developed by ED and pharmacy leadership and focused on collecting the best possible medication history (Appendix B). The medication history specialists were hired following the acute care hospital's human resources policies and procedures. The medication history specialist attended the facilities two-day orientation. The training of the medication history specialist included EPIC documentation training, a medication exam and two-weeks of precepted orientation by the facility's medication

safety pharmacist (Appendix C). There was ongoing audits for accuracy of the medication history specialist work product by the medication safety pharmacist monthly.

The medication safety pharmacist uploaded the admissions for the three-month pre-implementation time frame into an excel workbook labeled pre-implementation. This process was repeated for the three-month post implementation time frame and the workbook was labeled post implementation. The records were filtered by admission type utilizing Excel. All records that have an admission type of observation were excluded. The remaining records will be filtered by age and any records for patients that are less than 18 years old were excluded (17 years and 364 days). The remaining patients with an admission type of inpatient and over 18 years of age were included in the study. The facility medication safety pharmacist reviewed each medical record and obtained the data elements for the study. The elements collected were date of admission, time of day of admission, admission location (Critical Care, Medical Surgical or Telemetry), age of the patient, sex of the patient, medication history completed by RN or medication history specialist, and answer was the medication reconciliation completed within 24 hours of admission yes or no.

The information was collected and was entered into an excel spreadsheet by the facility medication safety pharmacist. The medication safety pharmacist assigned an ID number to each dataset and kept a log of the patient's medical record number and ID number. The log was archived on the facilities private sharepoint in accordance with the facility nursing research policy ("Policy LD-04-01," 2015). The ID number was the only identification of the information entered into the spread sheet. The date was entered as standard date, month, date and year (mm/dd/yy). The time was entered utilizing a 24-hour clock in hours and minutes (hh:mm). Admission location was coded as followed: critical care 1, telemetry 2, medical surgical 3. The

age of the patient was collected in years. Patients' sex was collected and recorded as female 1, male 2. Medication history collected by RN was entered as 0 and medication history collected by medication history specialist was entered as 1. Medication history completed within 24 hours of admission was coded as no 0 and yes 1.

Data analysis was performed utilizing Statistical Package for the Social Sciences (SPSS) software from IBM. The information was exported from excel into SPSS. The excel workbook was stored on a facility approved, encrypted USB drive and will be password protected. Once the research study was completed the USB drive was delivered to the facility information technology security officer for storage. The USB drive will be maintained in a locked storage for seven years in the information technology department. The information technology security officer will sanitize the USB drive following the National Institute of Standards and Technology (NIST) guidelines and in compliance with the facility's research policy ("Policy LD-04-01," 2015; Kissel, Regenscheid, Scholl, & Stine, 2014). The information archived on the facility sharepoint will be maintained and destroyed by the information technology security officer in compliance with the NIST media sanitation guidelines and the facility research policy.

Data Analysis Methods

SPSS version 23 was utilized for data analysis. The researcher utilized descriptive statistics to describe the sample. The data was assessed for missing or incorrectly coded data by the researcher. Data analysis was conducted utilizing Chi-square test for independence to determine if there is a statistical difference in completed medication reconciliations within 24 hours of admission if the medication history is completed by a medication history specialist compared to RN. The Chi-square is an appropriate test when comparing two variables with nominal level data (Tappan, 2011).

Data Management Methods

The patient information was assigned an id number and de-identified for the purpose of the study by the medication safety pharmacist. The id number was utilized to identify the individual data sets. Excel workbook was utilized to store and organize the data and it was encrypted, password protected and stored on a facility information technology approved USB drive that is encrypted and password protected. The data was maintained throughout the research study on the USB drive and was in the possession of the researcher or stored in a secure file at the facility. At the end of the study the USB drive was given to the information technology security officer for storage and destruction based on the facility's research policy ("Policy LD-04-01," 2015). In accordance with the facility's research policy destruction and storage of the information will be performed by the information security officer. The information security officer will store the information in locked storage for seven years in compliance with the facility's policy and at the end of the seven years the USB Drive will be sanitized following the NIST guidelines for media sanitation (Kissel, Regenscheid, Scholl, & Stine, 2014).

The retrospective data collection was performed by the medication safety pharmacist at the facility. The data was entered directly into an excel workbook by the medication safety pharmacist. No identifying information was entered into the spread sheet. The date was entered as standard date, month, date and year (mm/dd/yy). The time was entered utilizing a 24-hour clock in hours and minutes (hh:mm). Admission location was coded as followed: critical care 1, telemetry 2, medical surgical 3. The age of the patient was collected in years. Patients' sex was collected and recorded as female 1, male 2. Medication history collected by RN was entered as 0 and medication history collected by medication history specialist was entered as 1. Medication history completed within 24 hours of admission was coded as no 0 and yes 1.

Ethical Considerations

This study is a retrospective review of the electronic medical record and there was not consent obtained from the patients included in the study. EPIC has an application called "Break the Glass" which is in place to protect patients' health information (PHI) ("EPIC & HIPAA", 2012). The application requires anyone not assigned to care for the patient to enter a reason on a tracking log as to why the chart was entered. The electronic medical record tracks electronically all individuals that review the patient's information, the medication safety pharmacists documented in the tracking log that the review of the electronic medical record was for research purposes as required by the Healthcare Insurance Portability and Protection Act ("HIPAA," n.d.).

Permission to conduct the research was obtained from the American Sentinel University IRB and the facility IRB provided an exemption from IRB review. The privacy of patient information was maintained at all times utilizing the encrypted facility approved USB drive as well as secure storage of the USB drive. The medication safety officer utilized the id number to de-identify the patient medical record information. The security of the information was maintained utilizing encryption of the document, password protection and was kept on an encrypted USB drive and stored in a locked secure office at the corporate office of the facility. The information security officer will store the USB Drive for seven years in compliance with the facility's policy and the USB drive will be sanitized following the NIST guidelines for media sanitation (Kissel, Regenscheid, Scholl, &Stine, 2014).

Internal and External Validity

Internal and external validity are important components of any research study. An

important consideration when designing a researcher study is to identify the threats to internal and external validity during the design phase.

Internal Validity

The threats to internal validity of this quasi-experimental comparative study are related to study design and control. Quasi-experimental design does not utilize a control group and the sample is a sample of convenience. The threat related to utilizing a sample of convenience is systematic bias. Systematic bias refers to the difference between the results from the sample and the theoretical results from the entire population which may skew the results ("Convenience Sampling," 2016). The study utilized descriptive statistics to evaluate the sample compared to the facilities admission statistics i.e. admissions to type of unit and male percentage versus female percentage. Design contamination was a threat to this study design through lack of standardization of the performance of the job duties by the medication history specialist. To combat design contamination, the medication history specialists received standardized training. This threat was also mitigated through continued training by the medication safety pharmacist. Finally, because of financial constraints, the medication history specialists were not staffed 24 hours a day in the acute care hospital. The staffing pattern is for 20 hours per day seven days per week. The admission rates for the facility was studied prior to implementation of the medication history specialist and the staffing pattern was established to match 95% of the facility's admissions.

External Validity

External validity threats are threats that impact the generalizability of the study. Because of the importance of medication reconciliation to the safety of every patient, the facility has implemented several changes to the EMR and policy changes to improve the completion of the

medication reconciliation with 24 hours of admission. Joint Commission and the Centers for Medicare and Medicaid Services has a focus on improving the medication reconciliation process and these regulations and rules also impacted the results of the study ("JC SEA 35," 2006) ("Meaningful Use," 2014). Both of these external threats are considered effects of multi-treatment interference and were considered during analysis of the results (Tappan, 2011).

Summary

The quasi-experimental comparative study was conducted in an acute care hospital in Georgia. The study focused on the impact of the intervention of a dedicated medication history specialist in the ED on the completion of the medication reconciliation within 24 hours of admission from the ED. The study included patients that are 18 years old or older and were admitted into an inpatient status. A review of the EMR of patients admitted from the ED pre and post intervention was reviewed for completion of medication reconciliation within 24 hours of admission. The next section, the results and discussion of findings section, will explore the study findings. A review of the data collection and analysis will be discussed, along with the results of study.

SECTION III: RESULTS AND DISCUSSIONS OF FINDINGS

Introduction

The IOM published a report in 1999 that 100,000 lives are lost because of errors in healthcare (Kohn et al., 1999). Medication safety has been identified as a major strategy to decrease hospital caused medical errors and error caused mortality (Aspden et al., 2007). Nationally, several initiatives have been instituted to improve medication safety including medication reconciliation at each transition of care ("JC Special Report," 2005). The Joint Commission (JC) included medication safety as part of the national patient safety goals as early as 2002 ("National Patient Safety Goals," 2002). The JC furthered required facilities to develop a medication reconciliation process that improved medication safety throughout the health care continuum ("JC Special Report," 2005). Medication reconciliation is one strategy to improve medication safety and obtaining the best possible medication history is the foundation of medication reconciliation. The safe medication practice includes obtaining the best possible medication history at every entry point into the healthcare continuum (Carter et al.., 2006). According to the CDC FastStats (2015) 46% of all acute care hospitalizations originate in the ED. Because the majority of admissions enter through the ED, this raises the importance of the best possible medication history being obtained in the ED prior to admission to inpatient status to prevent medication errors during the acute care admission. The ED must develop a standardized process to obtain the best possible medication history prior to admission to the inpatient setting. A dedicated medication history specialist in the ED to obtain the best possible medication history was instituted in an acute care hospital in Georgia to attempt to improve the ability of the physician to complete the medication reconciliation within 24 hours of admission and keep the patient safe.

Summary of Methods and Procedures

The quasi-experimental comparative study was conducted in an acute care hospital in Georgia. The study focused on the impact of the intervention of a dedicated medication history specialist in the ED on the completion of the medication reconciliation within 24 hours of admission from the ED. The study included patients that were 18 years old or older and were admitted as an inpatient status. The EMR of patients admitted from the ED pre and post intervention was reviewed for completion of medication reconciliation within 24 hours of admission. The researcher obtained permission from the American Sentinel University Institutional Review Board (IRB) to conduct the research study at the acute care hospital in the southeast United States (Appendix E). Permission to conduct the study was obtained from the facility (Appendix A). The researcher obtained an exemption from the facility's IRB (Appendix D).

The medication history specialist was introduced into the ED in an acute care hospital in Georgia in November, 2015. The medication history specialist was staffed 20 hours per day to match the majority of admissions occurring in the ED. Historical admission data was reviewed for the previous year and analyzed for number of patients admitted per hour to establish the number and hours of medication history specialist needed per day.

The medication history specialist received specialized training to standardize the process of obtaining the best possible medication history. Interview techniques and simulation training as well as precepted orientation occurred to ensure that the standards of medication history collection and documentation were established and maintained. The medication safety pharmacist conducted observations monthly to ensure the standards set during training were maintained. This training and observation followed the conceptual framework of the theory of

structuration of safety culture providing rules, structure and agency to the process of collecting the medication history (Groves, Meisenbach & Scott-Cawiezell, 2011).

This study compared the historical group prior to implementation of a medication history specialist in the ED to the group post implementation of the medication history specialist in the ED. A retrospective review of patients' medical records admitted through the ED was reviewed for April, May and June, 2015 prior to the introduction of the dedicated medication history specialist and for the same three-month timeframe April, May and June 2016 after the introduction of the dedicated medication history specialists. Choosing to utilize the same months of a year pre and post intervention helped reduce the variability in patient type and volume related to seasonal changes (Pitts, Niska, & Xu, 2008) .

The EMR report of admissions was written to collect the data elements for this study. The medication safety pharmacist ran the report for admissions from the ED for the two specified timeframes. The medication safety pharmacist uploaded the de-identified admission data for the three-month pre-implementation time frame into an excel workbook labeled pre-implementation. This process was repeated for the three-month post-implementation time frame and the workbook was labeled post-implementation.

The medication safety pharmacists removed the medical record numbers and assigned each record a unique identification number. The researcher utilized the excel files to filter the records by admission type. All records that have an admission type of observation were excluded. The observation records were excluded because the medication reconciliation would be completed within 24 hours at a higher rate than the admitted patients as the average length of stay of the observation patient was 18 hours. The remaining records were filtered by age and any records for patients that were less than 18 years old were excluded (17 years and 364 days). The

patients less than 18 years of age were excluded because the hospital does not have a pediatric admission unit. If the patient was admitted directly to a procedural unit or the surgical suite they were excluded. Any patient that was admitted during an EMR downtime was excluded because the data was incomplete which resulted in 102 excluded records from 2015, and 88 excluded records from 2016. The remaining patients with an admission type of inpatient and over 18 years of age were included in the study. The elements collected were date of admission, time of day of admission, admission location (Critical Care, Medical Surgical or Telemetry), age of the patient, sex of the patient, medication history completed by RN or medication history specialist, and the medication reconciliation was completed within 24 hours of admission yes or no.

The information collected was entered into an excel spreadsheet by the facility medication safety pharmacist. The medication safety pharmacist assigned an ID number to each dataset and kept a log of the patient's medical record number and ID number. The log is archived on the facilities private sharepoint in accordance with the facility nursing research policy ("Policy LD-04-01," 2015). The date was entered as standard date, month, date and year (mm/dd/yy). The time was entered utilizing a 24-hour clock in hours and minutes (hh:mm). Admission location was coded as followed: critical care 1, telemetry 2, medical surgical 3. The age of the patient was collected in years. Patients' sex is collected and recorded as female 1, male 2. Medication history collected by RN will be entered as 0 and medication history collected by medication history specialist will be entered as 1. Medication history completed with 24 hours of admission will be coded as no 0 and yes 1.

The excel workbook was imported into the SPSS version 23 statistical software and the codebook was created. The first analysis was to obtain the descriptive statistics of the data set which included bar graph representation of the data. Data analysis was conducted utilizing Chi-

square test for independence to determine if there was a statistical difference in completed medication reconciliations within 24 hours of admission if the medication history was completed by a medication history specialist compared to a RN.

The data has been maintained throughout the research study on the USB drive and has been in the possession of the researcher or stored in a secure file at the facility. At the end of the study, the USB drive will be given to the information technology security officer for storage and destruction based on the facility's research policy ("Policy LD-04-01," 2015). In accordance with the facility's research policy destruction and storage of the information will be performed by the information security officer. The information security officer will store the information in locked storage for seven years in compliance with the facility's policy and at the end of the seven years the USB Drive will be sanitized following the NIST guidelines for media sanitation (Kissel, Regenscheid, Scholl, & Stine, 2014).

Summary of Sample and Setting Characteristics

The retrospective review of records included a total of 4910 records (*n*=4910), 2443 records were pre-implementation of medication history specialist in the ED from April, May and June of 2015 and 2467 records were post-implementation of medication history specialist in the ED from April, May and June of 2016. Data was reviewed, 2987 or 60.8% of the charts were from females and 1923 or 39.2% were from males (Figure 2). The mean age of the sample was 62.1 years with female mean age of 65.0 and male mean age of 61.0 (Figure 3). The admission location for the sample was analyzed (Figure 4). Over twelve percent (12.3%) of the sample was admitted to the ICU, 39.2% were admitted to the Medical Surgical Unit and 48.5% were admitted to the Telemetry unit.

Data regarding completion of medication histories was analyzed. There was a total of 3984 medication histories completed by RN's with 2443 or 100% completed in 2015 and 1541 or 62.5% completed in 2016 and 926 or 37.5% medication histories completed by medication history specialist in 2016 (Figure 5). The records reviewed revealed 3802 or 77.4% had the medication history completed prior to the admission orders being written (Figure 6). The medication reconciliation was completed by the physician within 24 hours of the admission from the ED 1318 or 53.9% of the time in April, May and June of 2015, and 1556 or 63.0% of the time in April, May and June of 2016 (Figure 7).

Figure 2: Number of Female and Male Records Reviewed

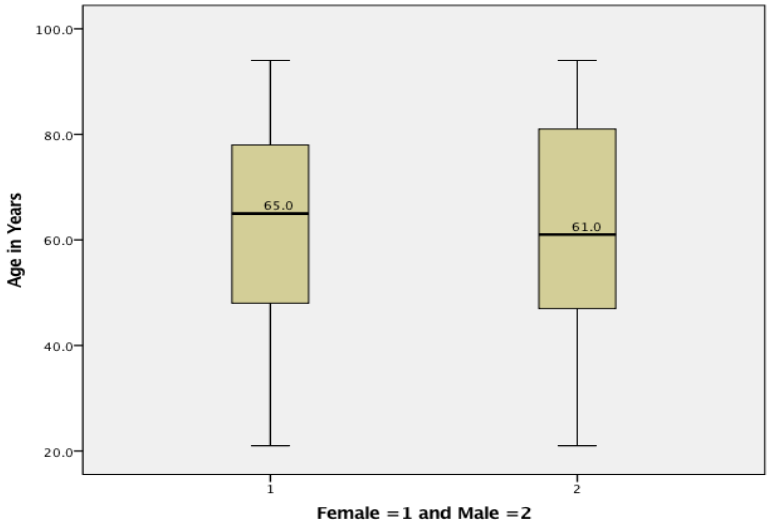

Figure 3: Age in years for Female and Male

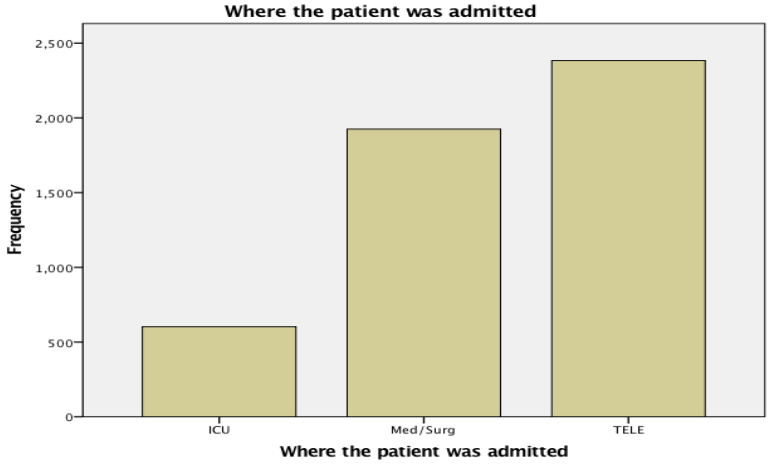

Figure 4: Type of unit where the patient was admitted.

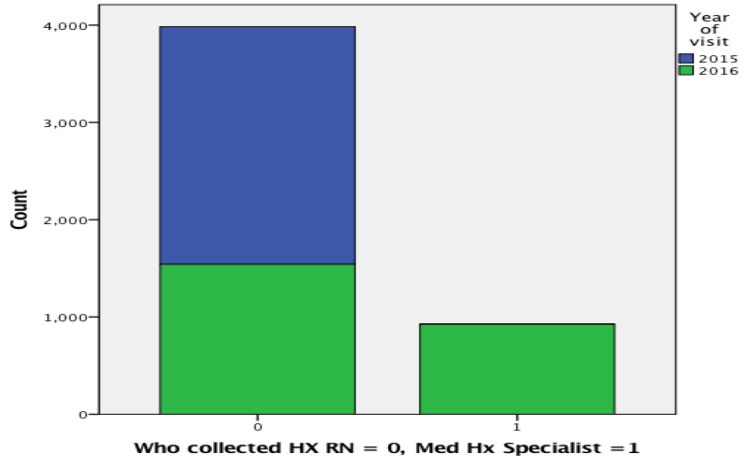

Figure 5: Number of Medication HX collected per year by RN or Med Hx Specialist

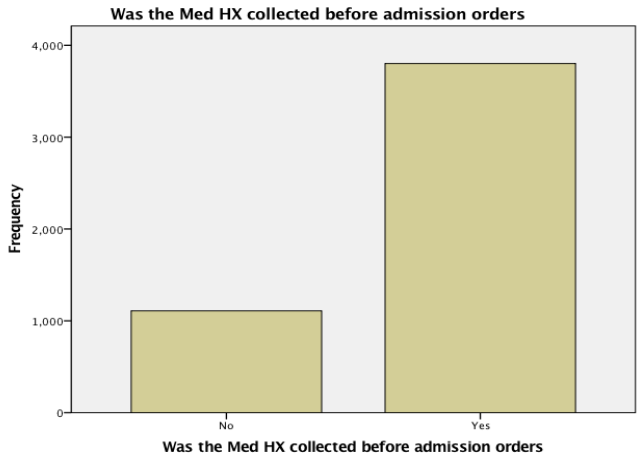

Figure 6: Number of Medication History collected before Admission Orders

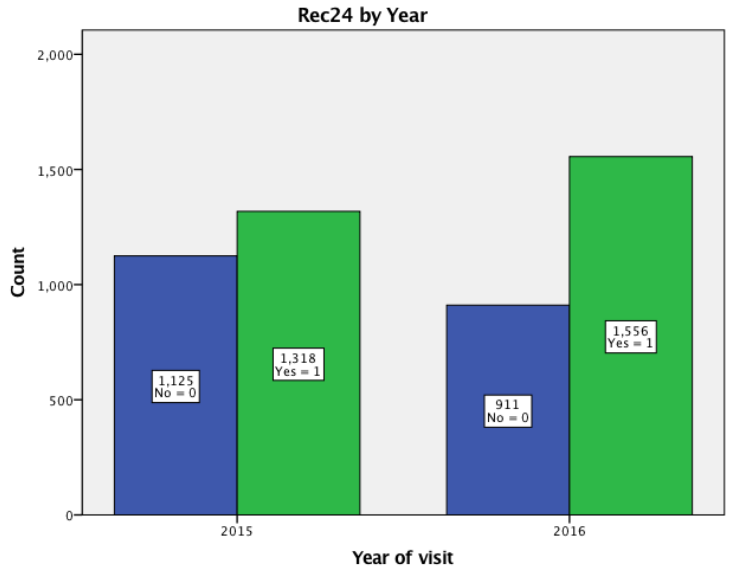

Figure 7: Medication reconciliation completed within 24 hours by year.

Major Findings

SPSS version 23 was utilized for the analysis of the data. The researcher utilized descriptive statistics to describe the sample. The data was assessed for missing or incorrectly coded data by the researcher. Data analysis was conducted utilizing Chi-square test for

independence to determine if there was a statistical difference in completed medication reconciliations within 24 hours of admission if the medication history was completed by a medication history specialist as compared to a RN. The Chi-square test for independence was chosen to test the relationship between two categorical variables (Pallant, 2013, p. 227).

Inspection of the cross-tabulation table indicated that 87.4% medication histories collected by the medication history specialists resulted in the medication reconciliation being completed within 24 hours of admission from the ED and 51.8% of the medication histories collected by the RN resulted in the medication reconciliation being completed within 24 hours of admission from the ED. The Chi-square test for independence (using the Continuity Correction for 2X2 tables) indicated that this difference was statistically significant (p=.000). A Chi-square test for independence (with Yates Continuity Correction) (Table 1) indicated small to medium association between medication history specialist collected history and medication reconciliation being completed within 24 hours of admission from the ED, χ^2 (1, n = 4910) = 389.38, p =.000, phi = .28. These results allow the researcher to reject the null hypothesis that the utilization of a medication history specialist in the emergency department does not impact the rate of the completed medication reconciliations within the first 24 hours of admission in an acute care hospital in the southeast United States.

Table 1: Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	390.844[a]	1	.000		
Continuity Correction[b]	389.381	1	.000		
Likelihood Ratio	442.707	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	4910				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 383.98.
b. Computed only for a 2x2 table

		Value	Approximate Significance
Nominal by Nominal	Phi	.282	.000
	Cramer's V	.282	.000
N of Valid Cases		4910	

Further analysis of the data was completed to understand the impact of other factors on the completion of the medication reconciliation in 24 hours. Inspection of the cross-tabulation table indicated that 58.7% of the medication histories collected before the admissions orders were inputted into the patient's record resulted in medication reconciliation being completed within 24 hours of admission from the ED and 58.1% of the medication histories collected after the admission orders were inputted into the patient's record resulted in the medication reconciliation being completed within 24 hours of admission from the ED. A Chi-square test for independence (with Yates Continuity Correction) (Table 2) indicated no significant association between medication history collected before admission and medication reconciliation being completed within 24 hours of admission from the ED, χ^2 (1, n = 4910) = .079, p = .752, phi = .005.

Table 2: Chi Square Test

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.100[a]	1	.752		
Continuity Correction[b]	.079	1	.779		
Likelihood Ratio	.099	1	.752		
Fisher's Exact Test				.755	.389
N of Valid Cases	4910				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 459.45.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.005	.752
	Cramer's V	.005	.752
N of Valid Cases		4910	

Implications for Nursing Practice

Medication safety has been identified as one of the goals for improving patient outcomes and reducing harm. Medication history has been identified as a tool to prevent medication errors during a patient's inpatient stay. The medication history should be obtained as soon as possible at every point of entry into care. By dedicating the medication history in the ED, the RN is delegating tasks thereby allowing the RN to function at the top of his or her license. According to Hellstrom et al. (2012), the medication history process takes 32 minutes on average to obtain the best possible medication history, based on this information the medication histories collected by the medication history specialist during this study theoretically saved the bedside RN 29,632 minutes. This allowed the RN to practice at the top of his or her license and provide care with the extra time that was previously spent obtaining and documenting data related to the medication history. Top of license functions like assessment and coordination of care improves

the quality of care delivered by the RN at the bedside and ultimately leads to improved RN job satisfaction ("Advisory Board Top-Of-License," 2013). Delegating the medication history to a dedicated medication history specialist allows the RN to function more efficiently and increase the time spent at the bedside providing care. A dedicated medication history specialist in the ED can help ensure the best possible medication history, improve quality of care and decrease medication errors.

Carter, Allin, Scott and Grauer (2006) studied the accuracy of the medication history collected by ED personnel compared to the accuracy of the medication history collected by a pharmacist. The results showed that the ED personnel accuracy was 18% while the pharmacist accuracy was 100%. Another study by Johnston, Saulnier, and Gould (2010) showed no difference between the pharmacist and pharmacy technician collected medication history accuracy. While this study did not look at accuracy of the medication history, the results of these two studies infer that the dedicated medication history specialist would provide a more accurate medication history. Van den Bemt et al. (2013) completed a study comparing RN collected medication histories to pharmacy technician collected medication history and the impact on medication errors, when the medication history was collected by the pharmacy technician. The results showed that a dedicated pharmacy technician in the ED improved the collection of medication histories and reduced the number of medication errors related to inaccurate medication history. Sen, Siemianowski, Murphy, and McAllister (2014) studied the impact of utilizing pharmacy technicians to obtain the best possible medication history at the point of entry in the emergency department and showed a decrease in medication errors and improved job satisfaction of the RN. Henneman, et al. (2014), completed a study related to standardization of the process of collection of the medication history. The study showed that by

creating a standardized process and tools to collect the medication history improved medication safety in the ED. The studies listed above show improved patient safety related to dedicated resources collecting the medication history in the ED and support the results of the dedicated medication history specialist in the ED study. These studies show that a dedicated resource improves the collection of the medication history with resulting patient safety.

ED Nursing leaders have a responsibility to ensure the safety of the patients seeking care in their departments. The dedicated medication history specialist program allows ED RNs the ability to delegate a very time consuming process of medication history collection while improving the safety of the patient. Utilizing the Structuration Theory of Safety Culture, the RN establishes guidelines, tools and oversight of the collection of the medication history to ensure the best possible medication history.

Recommendations

The results of this study identified that there is a correlation between a dedicated medication history specialist in the ED and the ability of the physician to complete the medication reconciliation within 24 hours of the patient's admission from the ED. This study indicates a need to implement a dedicated resource in the ED to obtain the best possible medication history. Utilization of the medication history specialist to complete the medication history of all patients in the ED including the discharged patients would improve medication safety across the continuum of care and should be the next step in this project. Nursing leaders must identify ways to allow the RN to perform those duplicative skills and provide other resources to perform those tasks that do not require the skill of the RN.

Further study on the impact of the medication history specialist in the ED needs to be conducted to ascertain if the dedicated resource leads to a more accurate medication history and

thereby decreases medication errors. Other research could focus on utilizing dedicated medication history resources at other entry points to care. Further research needs to be completed to validate the dedicated medication history specialist in the ED as a best practice to improve medication safety of the patient.

Discussion

This study examined the relationship between a dedicated medication history specialist in the ED to the ability of the physician to complete the medication reconciliation within 24 hours of the patient's admission from the ED. The hypothesis stated that the dedicated medication history specialist would have an impact on the physician's ability to complete the medication reconciliation within 24 hours. The results of this study have important implications into the medication safety of the patient and to the RN's ability to function at top of license. A dedicated medication history specialist improves the collection of the medication history thereby improving the medication reconciliation completion which improves the safety of the patient. The dedicated medication history specialist performs the task of collecting the medication history, allowing the RN to perform those nursing functions that improve care, like education, assessment and collaboration with other team members that only the RN can do. The results of the study prove that the dedicated medication history specialist program improved the completion of the mediation reconciliation within 24 hours of admission at one acute care center in Georgia. The acute care center in Georgia's ED is a high-volume, high acuity ED with an admission percentage rate of 20%. Based on this information, the medication history specialist program can be duplicated in other medium to high-volume EDs with an expectation of similar results.

Research has shown that an accurate medication history improves the accuracy of the medication reconciliation which decreases medication errors during admission (Chaganti & Siu, 2015). The medication history specialist in the ED is a tool to ensure that the best possible medication history is obtained. The dedicated medication history specialist program also allows the RN to focus on providing care, direction, and education that only the RN can provide. Anecdotally, the admitting physicians, ED RNs, ED MDs and admitting RNs expressed extreme satisfaction with the medication history specialist collected medication history. The best possible medication history collected by the medication history specialist allowed the MDs to safely prescribe needed medication to the patient. The dedicated resource whether medication history specialist or other resource ensures that the best possible medication history is collected. Standardization of the interview process, and process of collecting the medication list improves the safety of the medication process.

The majority of research on the topic of medication history has been related to the accuracy of the medication history based on the type of provider that collected the history (Carter et al., 2006; Hayes et al., 2007; Nana et al., 2012; van den Bemt et al., 2013; Sen et al., 2014; Hart, Price, Graziose, & Grey 2015). Conversely, this study focused on the impact of a dedicated medication history resource on the ability of the physician to complete the medication reconciliation within 24 hours of admission which adds to the body of knowledge related to obtaining the medication history in the ED. The program utilized standardization of process, interview skills, oversight of the mediation history specialist to ensure the best possible medication history.

Conclusions and Contributions to the Profession of Nursing

The dedicated medication history specialist in the ED has the potential to improve the collection of the medication history and improve the physician's ability to complete the medication reconciliation within 24 hours of admission from the ED. The dedicated resource gives back time to the ED RN allowing the RN to function at top of license instead of collecting data. The contribution of the dedicated mediation history specialist program to the safety of the patient by ensuring the best possible medication history validates the need for a dedicated resource at the point of entry in the ED.

The dedicated medication history specialist program in the ED allowed the RN to safely delegate the duty of collecting the best possible medication history, utilizing the Structuration Theory of Safety Culture. The Structuration Theory of Safety Culture provided the framework the dedicated medication history specialist in the ED program through training, a standardized interview process, and standardized documentation process. The project utilized agency by the involvement of the patient, oversight of the medication history specialist by the RN and the pharmacist and the physician's direct involvement in the medication reconciliation process.

The Structuration Theory of Safety Culture provided the appropriate framework for this project and study. The medication history specialist program is built around structure and participation of the RN, physician, medication history specialist, and the patient. Previous research has shown that the process of obtaining a medication history and medication reconciliation at the point of entry into the healthcare system decreases medication errors (Chaganti & Siu, 2015). The importance of nursing utilizing resources to maximize the ability to provide care and decrease errors thereby improving patient outcomes was highlighted during this study. An imperative is for RNs to ensure the safety of the patients in their care. The medication

history specialist project provides the RN with one safety tool that can improve medication safety.

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Appendix A

From: **Spiva, LeeAnna** LeeAnna.Spiva@wellstar.org
Subject: Capstone Project Support
Date: February 14, 2016 at 7:07 PM
To: Lyon, Freda Freda.Lyon@wellstar.org

LS

February 15, 2016

To Whom It May Concern:

As the Executive Director of the Center for Nursing Excellence at WellStar Health System, I am delighted to provide this letter of support for Freda Lyon, MSN, RN, NE-BC to conduct her Capstone project at WellStar Health System. We are committed to providing the necessary leadership and resources for the successful implementation of this extraordinarily valuable project here at WellStar. Mrs. Lyon will have access to many of the people that were and currently are involved in the medication history specialist program. We are committing access to the existing data (pending university faculty and WellStar Research Council and affiliated institutional review board approvals) that will be used to evaluate implementation and effectiveness for this program. If you have questions, please feel free to contact me by email or telephone.

Sincerely, LeeAnna Spiva

LeeAnna Spiva, PhD, RN
Executive Director, Center for Nursing Excellence
WellStar Development Center
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Appendix B

Job Title **Medication History Specialist** Job Code: 7395	Reports To (Title) **Manager/Director Emergency Dept.**	Creation / Revision Date **June 2015**
Dept Number	Dept Name	

If this is a supervisory position, please complete these items		
Job Titles Reporting Directly to this Position:	Responsible for the following:	
	Annual Budget $$	# FTE's

A job description defines the job to be performed by a fully qualified employee who possesses the knowledge, skills, and experience required for the position. This is not designed to be an exhaustive list of all activities performed in the job.

This document should be reviewed and signed by the employee during department orientation. An electronic copy should be forwarded to the Human Resources department for future reference, and a signed copy should be forwarded to Human Resources and should be maintained in the manager's department education records.

JOB SUMMARY: a brief description of the job.

Reports to Manager/Director of Emergency Department

As an integral member of the Emergency Department team the Medication History Specialist (MHS) is responsible for working with patients who have been identified for admission to the hospital in order to obtain and document the best possible medication history. The MHS role is essential to assure high quality and safe care by reducing medication duplications, ommissions and possible errors. The information obtained will be accurately entered into the computer system and it will be used by the physicians, pharmacist, nurse and other healthcare providers as an input into treatment plans and medication orders during hospitalization, and in discharge planning for post hospital transition and care.

Must be capable of passing the medication reconciliation competency test for Pharmacy Technicians.
Must be able to pass annual competency and quality assurance metrics.
Interview and inquiry techniques, with the patient, family, pharmacy9s) to compile the best possible medication history.
Responsible for entering all home medication orders into the electronic medical record.
Monitor the tracking board for potential admissions and highly complex patients to complete the medication history to assist in the delivery of quality care.
Upon notification of patient admission responsible for updating home medication record in electronic medical record to match ordered and or active prescription medications.
Pissess service excellence skills, setting patient and family at ease, emonstrating, patience and compassion at the bedside.

Will work under direction of ED Leadership, Medication Safety Pharmacist, and nurses as needed to resolve any discrepancies/errors in home medication orders.

For Direct Patient Care positions, Indicate American Heart Association or American Academy of Pediatrics certification required:

- ☐ BLS (Basic Life Support)
- ☐ ACLS (Advanced Cardiac Life Support)
- ☐ NRP Neonatal Resuscitation Program
- ☐ PALS Pediatric Advanced Life Support

JOB QUALIFICATIONS: minimum requirements to be considered qualified to do the job.

Required Minimum Education:
High School graduate or possess a General Educational Development (GED) Degree.
Medical Terminology preferred

Required Minimum Certification: Licensed as Certified Pharmacy Technician from the National Technician Licensing Board. Registered with the Georgia State Board of Pharmacy

Required Minimum Experience:
Two years pharmacy technician experience required, retail experience preferred.

Required Minimum Skills:
Minimal typing skills.
Basic computer skills.
Good oral communication skills.
Basic management skills.
Good "problem solving" skills.
Good interpersonal skills.
Ability to lift a minimum of 30 pounds.
Ability to push a transportation cart of approximately 100 pounds

PHYSICAL DEMANDS AND WORKING CONDITIONS: typically found in this job.

Check one to indicate exposure to blood, body fluid, or tissues: (double click box and select "checked")

☐ Category 1: This job poses the potential of occupational exposure in routine tasks performed.

☒ Category 2: This job may pose the potential of occupational exposure. Regular job tasks do not involve exposure, but the employee may have potential exposure in some tasks.

☐ Category 3: This job does not pose the potential of occupational exposure in any duties.

WELLSTAR CORE COMPETENCIES (apply to all WellStar Team Members)**:**

Communication: Communicates well both verbally and in writing, creates accurate and punctual reports, delivers presentations, shares information and ideas with others, has good listening skills.

Customer Focus: Builds customer confidence, is committed to increasing customer satisfaction, sets achievable customer expectations, assumes responsibility for solving customer problems, ensures commitments to customers are met, solicits opinions and ideas from customers, responds to internal customers.

Integrity/Ethics: Deals with others in a straightforward and honest manner, is accountable for actions, maintains confidentiality, supports company values, conveys good news and bad.

Financial Stewardship: Plans for and uses resources efficiently, always looks for ways to reduce costs,

Dependability: Meets commitments, works independently, accepts accountability, handles change, sets personal standards, stays focused under pressure, meets attendance/punctuality requirements.

Job Knowledge: Understands duties and responsibilities, has necessary job knowledge, has necessary technical skills, understands company mission/values, keeps job knowledge current, is in command of critical issues.

Problem Solving/Analysis: Breaks down problems into smaller components, understands underlying issues, can simplify and process complex issues, understands the difference between critical details and unimportant facts.

Teamwork: Meets all team deadlines and responsibilities, listens to others and values opinions, helps team leader to meet goals, welcomes newcomers and promotes a team atmosphere.

Safety/ Work Environment: Promotes mutual respect, demonstrates consistent application of safety absolutes and the Safety First Program and keeps workplace clean and safe.

Quality: Is attentive to detail and accuracy, is committed to excellence, looks for improvements continuously, monitors quality levels, finds root cause of quality problems, owns/acts on quality problems.

RESPONSIBILITIES, ROLES, AND FUNCTIONS: A set of functions that define the job's reason for existence. Not to be confused with core competencies. (TAB at the end to enter a new line) Break down each responsibility into 3 to 5 tasks/activities that make up the responsibility. In other words, show what the employee does in the job to accomplish the job's objectives. Provide the normal percentage of time spent on each overall responsibility. ⟶	% of Time Spent Total 100%
1. Customer Service a. Properly provide customer service during phone calls, team interaction and patient/family interaction. b. Communicate effectively with all patient populations to gather best possible medication histories. c. Communicate effectively with pharmacists, nurses, family members and others outside the hospital to gather further medication history information. d. Demonstrate professionalism and excellent interpersonal skills. e. Make rounds in the Emergency Department on the nursing staff, physician staff and patients.	20%
2. Medication Reconciliation a. Obtains and clarifies patient's home medication list by utilizing drug information resources, contacting community pharmacies, contacting physician office for prescription clarification, interviewing patient/family and reviewing prescription bottles brought to the Emergency Department by the patient to ensure proper identification of doses and drugs including prescription medications, over the counter drugs and herbals/supplements. b. Interacts with and provides medication history and other related patient information to nurses, physicians, pharmacists and other medical professionals as appropriate.	80%

Printed Name_____Employee's Signature_____ Date_____

The employee's signature documents the opportunity to review and clarify the information outlined above.

Job Description	
Original Creation Date	June 2015
Revision Dates	
Final Approver(s)	Freda Lyon, Jill Case-Wirth, Elizabeth Rebo
Date Approved	July 2015
Education Requirement	HS diploma or equivalent
Certification Requirements	Cert Pharmacy Tech
License Requirements	Licensed Pharmacy Tech in state of GA
Evidence-based Practice References	
This job description replaces all previous job descriptions for the same job code/job title.	

Appendix C

I. Introduction

Purpose:

The following learning objectives were developed to help define the roles and responsibilities of the Medication History Specialist (Medication History Specialist) in the medication reconciliation process. The goal is to provide the Medication History Specialist with the tools necessary to accurately reconcile a patient's home medications.

Learning Objectives:

1. Define the medication reconciliation Hospital National Patient Safety Goal
2. Define and describe the medication reconciliation process and the Medication History Specialist's role within this process
3. Describe the workflow for completing a medication reconciliation
4. Provide helpful tips for obtaining an accurate medication history
5. Provide sample scripts
6. Provide additional resources

Process Requirements:

1. Complete Medication History Specialist training
2. Pass Competency Exam with score ≥ 90%
3. Complete and maintain audit requirements with ≥ 90% accuracy
4. Introduction to the Emergency Department (tour, workflow, multidisciplinary interaction)

Hospital National Patient Safety Goal:

NPSG.03.06.01

Maintain and communicate accurate patient medication information

Rationale for NPSG.03.06.01

There is evidence that medication discrepancies can affect patient outcomes. Medication reconciliation is intended to identify and resolve discrepancies—it is a process of comparing the medications a patient is taking (and should be taking) with newly ordered medications. The comparison addresses duplications, omissions, and interactions, and the need to continue current medications. The type of information that clinicians use to reconcile medications include medication name, dose, frequency, route, and purpose. Organizations should identify the information that needs to be collected to reconcile current and newly ordered medications and to safely prescribe medications in the future.

Elements of Performance for NPSG.03.06.01

Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in Epic or other format that is useful to those who manage medications.

Note 1: Current medications include those taken at scheduled times and those taken on an as needed basis.

Note 2: It is often difficult to obtain complete information on current medications from a patient. A good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the elements of performance.

Define the types of medication information to be collected in non-24-hour settings and different patient circumstances.

Note 1: Examples of non-24-hour settings include the emergency department, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings.

Note 2: Examples of medication information that may be collected include name, dose, route, frequency, and purpose.
Compare the medication information the patient brought to the hospital with the medications in Epic in order to identify and resolve discrepancies.
Note: discrepancies include omissions, duplications, contraindications, unclear information, and changes.
Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter (for example, name, dose, route, frequency, purpose:
Note: When the only additional medications prescribed are for a short duration, the medication information the hospital provides may include only those medications
Explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter.
Note: Examples include instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications (including over-the-counter products) are added; and to carry medication information at all times in the event of emergency situations.

Medication Reconciliation Defined by The Joint Commission:
"The process of comparing a patient's medication orders to all of the medications that the patient has been taking. This reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions. It should be done at every transition of care in which new medications are ordered or existing orders are rewritten. Transitions in care include changes in setting, service, practitioner or level of care.

Acute Care Hospital Medication Reconciliation Process:

Medication History Specialists serve as an additional resource for physicians, midlevels, and RNs
It is the ultimate responsibility of the nurse to ensure a medication reconciliation is complete for his/her patients
Physicians MUST review all medication reconciliations with the patient prior to ordering any medications
All Medication History Specialist duties MUST remain within their scope of practice. Medication History Specialists should NOT:
Answer any clinical questions
What is this medication used for?
Are these medications compatible?
Pull medications out of pyxis for a physician, midlevel, or RN
Attend medical alerts, trauma alerts, Code FASTs, or medical emergencies
Deliver any medications to a nurse without pharmacist verification
******Please note this list is NOT an all-inclusive list of things a Medication History Specialist may be asked to do which would be considered outside of their scope of practice. It is the Medication History Specialist's responsibility to direct all clinical questions to the pharmacist******
The complete Acute Care Hospital Medication Reconciliation Policy (MU-04-01) can be found on Esource

Medication History Specialist Duties:
Obtain a medication history for admitted emergency department patients
Contact patient's pharmacy, family, nursing home, etc. to obtain the most accurate medication list
Update patient's medication list in Epic
Other duties may be performed within the emergency department or in the main pharmacy but must remain within the Medication History Specialist's scope of practice

Workflow for Medication History Specialists
This workflow describes the process the Medication History Specialist should follow at Acute Care Hospital when completing a medication reconciliation.

Medication History Specialist identifies and prioritizes patients in need of medication reconciliation

1.1 Epic System

Review ED trackboard
Review patient's disposition (admit, discharge, transfer, etc.)
Patients marked for admission should be first priority
Admits with and without bed assignments
Healthcare provider or RN request
Physicians, midlevels, or RNs may specifically request a Medication History Specialist's assistance with completing a medication reconciliation for an admitted patient in the emergency department
Identify patients with an Emergency Severity Index (ESI) less than or equal to 2
Patients marked as ESI 1 are most critical and are most likely to be admitted
Round frequently in your designated area

Medication History Specialist conducts pre-patient interview work-up

Print and review the RX Med Rec at Admin report looking for any of the following: duplications, missing dosages, incomplete instructions etc.
Determine if the patient has a medication list available and review looking for any duplications, missing dosages, incomplete instructions, etc.
Determine if patient is from a skilled nursing, rehabilitation, or assisted living facility
If so, obtain MAR from patient's chart or contact the facility and ask for one to be faxed

Medication History Specialist conducts patient interview

ALWAYS introduce yourself to the patient and explain why you are there
Verify patient name and date of birth
If patient has a list, the Medication History Specialist MUST review list with patient or visitor prior to updating the medication reconciliation in Epic
Obtain medication prescription bottles, if available
Verify name and date of fill
Verify with patient whether or not they are taking the medication and how they are taking it
Interview patient or visitor to gather home medication information
Ask open ended questions (Ex. Are there any medications you take that are not on your list? Have any of these medications been discontinued? Have any of the doses changed? Do you take any over the counter medication?)
For any short course medications (i.e. antibiotics, steroid packs), ask patient for the number doses/days remaining and add to 'instruction' field.
For any non-daily medications (i.e. weekly, monthly, etc.), ask patient for additional information (which day of the week/month dose is taken) and add to 'instruction' field.
Obtain patient's pharmacy name(s) and number(s)
This may be used to verify or resolve any discrepancies, unknown dosages or medications
Be sure to obtain the patient's permission before calling their pharmacy
Please refer to the Mandatory Items (in back of packet) for a detailed list of items to include in the medication history

If patient is unresponsive, unreliable or an incomplete medication history is obtained and there is no contact in the room, the Medication History Specialist may complete the following tasks

Ask for family
Call patient's retail pharmacy
Obtain pertinent medication information
Last fill date
Retail chains (Walgreens, CVS etc.) share database information among stores. If the patient's pharmacy is closed, try calling a 24 hour location
Check alternative locations for possible information
Physician offices/clinics
Chart review
Call patient's contacts
Contact information located at nurses station
Be cognizant of the time of day when contacting family members

If a patient is unable to participate in a medication interview, other sources may be utilized for obtaining medication histories and/or clarifying conflicting information. Other sources should never be a substitute for a thorough patient medication interview for patients who are able to participate

In the event of a discrepancy, the Medication History Specialist will revisit patient and confirm correct information
If the patient's directions are different from the prescribed directions the Medication History Specialist will document how the patient is currently taking their medication
Example
Pt's bottle states Lasix 20mg daily. Pt had recent Rx change to 10mg daily creating a discrepancy between the Rx bottle and current patient dose
Record what the patient is actually taking in the direction field
If a medication cannot be clarified, the Medication History Specialist will complete one or more of the following tasks
Free text note – 'patient unaware of strength, frequency, etc.'
Inform the physician, midlevel, or RN via PerfectServe or in person

Once all medication information is obtained, the Medication History Specialist will enter medications in Epic under the Medication Reconciliation tab
Verify completeness of medication reconciliation
Mandatory information for each medication entry includes:
Medication Name
Strength
Formulation (i.e. XL, CD, ER, etc.)
Dosage
Route
Frequency
If PRN, indication
If unable to find a medication in the Epic database
Verify correct spelling of medication name
Search using both brand and generic names
Ask a pharmacist
If still unable to find, document medication as a non-formulary medication

Medication History Specialist will indicate a medication reconciliation is complete by clicking, "Mark As Reviewed" and updating the Med List Status to "Pharmacy Reviewed"
Medication History Specialist must document on all medication reconciliations they complete

If for any reason the medication reconciliation could not be obtained the Medication History Specialist will complete one or more of the following tasks
Inform the physician, midlevel, or RN
Ask family member or visitor to bring patient's prescription bottles or medication list to hospital within 24 hours

After a medication reconciliation has been reviewed completely, the Medication History Specialist must log an intervention (I-Vent) in the patient's chart
I-Vents are used to track the number of medication reconciliations completed per shift
Any additional information regarding dosing, frequency, etc. can be documented here
This documentation is only visible to the pharmacy staff

If a physician has acted on the medication reconciliation prior to the Medication History Specialist updating the medication reconciliation the Medication History Specialist will
Update the medications in Epic
Contact the physician or midlevel in person or via Perfect Serve to inform them of any discrepancies
PerfectServe is accessible through Wellstar Web Links or by dialing '12000' and following the prompts
Techs should review all issues with a pharmacist prior to speaking with the physician/midlevel

Sample Scripts for Medication History Specialist Communication with Patients, Caregivers and Practitioners

Patient Interview:

"Hello, my name is _____. I am a Medication History Specialist here in Emergency department. I would like to get some information from you about your home medications and how you take them."

"Are you (Patient Name), I need to verify your date of birth. Can you tell me your birth date?"

If patient has a list or has been recently discharged:

"Thank you for bringing this list in I would like to review each individual medication with you to make sure there have not been any changes and to determine when you took your last dose.

Additional questions to add at end of patient interview:

"Are you taking any dietary supplements or herbal remedies?
"What about lotions, creams, patches or inhalers?"
"What about medications that you just take only when you need it? (ex. headache, fever, pain, etc.)"
"What pharmacy(s) do you routinely use?"

Additional Information and Tips

Items to include in a Medication History:
Prescription medications
Herbals
Vitamins/Minerals
OTC's
Sample medications

Probing Questions:

Ask patients if they have brought in their prescription bottles and/or containers.
Ask patients if they have a medication list.
Ask patients if they use any medications that are not taken orally (ex. "Do you put any medications on your skin?"). Items include topicals, inhalers, eye drops, ear drops, nebulizers, patches.
Ask patients about what medications they take for their specific medical condition(s) (ex. "What medications do you take for your diabetes, high blood pressure, asthma").
Ask patients when they take their medications (ex. time of day, week, month, etc.).
Ask patients if there have been any recent changes to their medications.
When a patient can't provide complete information regarding a medication, asking them to describe the medication may provide additional information.
Ask patients about non-prescription medications.
Do you take medications for headaches, allergies, pain, heartburn, or sleep?
Ask patients if they take vitamins, minerals or herbal medications.
Ask patients what pharmacy they get their prescriptions filled.
Ask patients if they receive injections or medications from a physician's office.
Ask patients if they receive medications from the internet or mail order pharmacies.
Remember to try and use open-ended questions throughout the interview.
Remember patients may not associate things such as multivitamins, herbals, insulin, inhalers or non-prescriptions items as medications. You may need to specifically ask about these items.

General Tips:

When reviewing your original Epic notes, look at the patient's history for medical conditions. For example, diabetes, hypertension, GERD, etc. These conditions will guide you to ask if they are taking medications for these conditions.
Use the patient's pharmacy for information (be sure to obtain permission from the patient to do so.)
If the patient does not speak English, there are interpreters available for assistance.
When a patient comes from a nursing or long-term care facility, there should be a medication record with that patient. It is important to review this carefully. Contact the facility and request a MAR to be faxed to the ED if one is not provided upon arrival.

Medication References:

Micromedex
Google
Pharmacists

Frequently Asked Questions:

Should I go into a patient's room alone?
It is acceptable to go into the patient's room alone, be sure to leave the curtain and/or door open.
Is 'PRN' a frequency?
No, PRN is not a frequency. The patient must provide the number of times of day they use there PRN medication (i.e. daily PRN, every 4hrs PRN)
If a medication is PRN should it also have a reason?
Yes, all PRN medication should have a reason (i.e Ambien 5mg po Nightly PRN for sleep).
How exactly do I indicate the stop date on specific short term drugs?
Free text the stop date under 'instructions.'
If a patient takes a 'once weekly' med, or 'once monthly' med, do I always need to fill in the date/day of the week?
Yes, you should always document date/day of the week the medication is taken unless the patient is unable to provide this information. This can be documented in the 'instructions' section.
If a patient states they take a medication "q4-6 hrs PRN' what should I document as the frequency?
You should document 'q4hrs prn.'
When should I flag a medication for removal?
Medication History Specialists should not routinely use this function. This function is routinely used by nurses.

Name: _____	
Medication Reconciliation	**D**
Understands what medication reconciliation means and the MHS role	_____
Understands the reason hospitals are required to provide medication reconciliation (NPSG.03.06.01)	_____
Demonstrates knowledge of the following terms:	
Medication reconciliation	_____
Medication History Specialist (MHS)	_____
ESI number (ie. acuity)	_____
PerfectServe	_____
Demonstrates knowledge of information included in the Medication Reconciliation Pharmacy Technician Education Packet	_____
Demonstrates knowledge of information included in Medication Reconciliation Medication History Specialist Epic Quick Tips Packet	_____

General	**D**
Exhibits knowledge of the Medication History Specialist schedule and names/contact information of the Medication History Specialist's direct supervisor, Lead Medication History Specialist, and pharmacist	_____
Identifies location of Medication History Specialist workstations	_____
Identifies location of printers	_____
Identifies location of fax machines	_____
Demonstrates knowledge of units and rooms located within the ED and PATT	_____
Identifies where to find patient charts	_____
Understands contact/droplet/airborne isolation precautions	_____
Demonstrates knowledge and compliance of proper attire for indicated isolation precaution	_____
Identifies where to find Liability for Storage of Home Medication Forms	_____

Professionalism	**O**
Exhibits a polite and positive attitude toward patients, family and staff members	_____
Consistently remembers to carry Ascom and always answers appropriately	_____
Dresses according to uniform requirements	_____
Appropriately displays name badge	_____
Demonstrates constructive use of downtime (ie. rounding in levels of the ED, using track board to find potential medication reconciliations, restocking fast moving items such as flushes, insulin, or pyxis stockouts)	_____
Demonstrates effective communication with all members of the patient care team (ie. physicians, midlevels, nurses, Respiratory Therapy)	_____

Pharmacy Computer Systems	**O**
Exhibits knowledge of computer systems	_____
Navigates and identifies pertinent information within Epic	_____
Able to locate the following items:	
ED Track board	_____
Notes: nursing, physician	_____
ESI acuity	_____
Medication reconciliation tab	_____
Demonstrates knowledge of how to print paper copies of medication reconciliations	_____
Demonstrates knowledge of additional online resources and how to access them	_____

Patient Interview	**O**
Introduces themselves and their role to the patient and any others in the room	_____
Uses at least 2 patient identifiers to ensure correct patient	_____
Conducts a thorough patient interview obtaining all mandatory medication information	_____
Consistently remembers to inquire about herbals, vitamins, alternative medicines and OTCs	_____
Consistently remembers to inquire about last dose taken	
Medication History Specialist always clarifies any discrepancies they encounter	_____
Medication History Specialist appropriately utilizes alternative sources of information to complete the medication reconciliation when appropriate (i.e. patient's pharmacy, facility MAR, patient bottles, family, physician's office, outside medications tab, etc.)	_____
When obtaining a medication reconciliation over the phone, Medication History Specialist remembers to use the 'write down and read back' method	_____
When obtaining medication reconciliation from vials, Medication History Specialist verifies that each bottle belongs to the patient and checks the last fill date	_____
Upon completion of the interview, Medication History Specialist thanks the patient and politely excuses themselves from the room	_____

Organizational Learning – Interview Techniques Participated in class provided by Wellstar Organizational Learning on proper interview techniques	**D** _____

Medication Reconciliation	**O**
Proficiently identifies patients in need of a medication reconciliation	_____
Able to prioritize patient interviews by level of need	_____
Completes a thorough pre-interview workup	_____
Handles medication discrepancies and documents appropriately	_____
Demonstrates proficiency in entering a medication reconciliation	_____
Demonstrates appropriate use of 'free texting' (i.e. specific day or month taken)	_____
Demonstrates ability to enter a nonformulary medication	_____
Appropriately documents iVents for all medication reconciliations	_____
Appropriately communicates any changes to medication reconciliation with treatment team if orders have been acted on by the physician	
Demonstrates appropriate use of the PerfectServe system	_____
Communicates any pertinent issues to the rest of the patient care team (i.e. incomplete medication reconicilations)	_____

Follow-up / Hand off Consistently and appropriately gives hand off report to the next shift, including any information about any incomplete med recs and anything that needs additional follow up Communicates all complete and any incomplete med histories to nursing staff and treatment team, as appropriate	**O** _____ _____
Competency Completed competency exam with score ≥ 90%	**A** _____
Audits Demonstrates knowledge of the Medication History Specialist auditing process	**D** _____
Workload Downtime Demonstrates teamwork by assisting central pharmacy operations when needed Medication History Specialist remains in possession and continues to answer Ascom while working in central pharmacy	**D** _____ _____
IT Downtime Demonstrates knowledge and use of appropriate downtime procedures (i.e. paper medication history collection forms)	**D** _____

Trainer : _____ **Initials:** _____

Pharmacist: _____ **Initials:** _____

By signing below, I acknowledge understanding and competency of the preceding listed items.

Trainee: _____ **Initials:** _____

Date completed: _____

Name

Method Key
R = Read Assigned
O = Observe Skill in Practice
A = Written Assessment or Document
D = Discuss or Show

_____

Medication reconciliation includes:

A. Creating the most accurate list of a patient's medications
B. Addressing omissions, duplications, and dosing errors
C. Resolving discrepancies
D. Documenting only physician prescribed medications
E. All of the above
F. All but D

When completing a medication reconciliation, it should always include:

Medication Name
Strength
Route
Frequency
PRN indication
All of the above

If maintained properly, a completed medication reconciliation can:

A. Reduce confusion and save time
B. Improve communication between patient, family and healthcare providers
C. Improve medication safety
D. All of the above

The brand name for the drug Zolpidem is Ambien®, which is prescribed as a sleep aid. What is the brand name for the benzodiazepine, Lorazepam?

A. Xanax®
B. Coreg®
C. Ativan®
D. Crestor®

Benazepril is classified as a(n) :
A. Beta Blocker
B. ACE Inhibitor
C. Calcium Channel Blocker
D. Diuretic

Which of these drugs is a Beta Blocker?

A. Lisinopril
B. Amlodipine
C. Valsartan
D. Metoprolol

The acronym APAP is used for:

A. Aspirin
B. Urgently
C. Acetaminophen
D. None of the above

Which of the following drugs would not be used to treat seizures?

A. Topamax
B. Depakote
C. Lamictal
D. Tramadol

Which of the following NSAID drugs is classified as a
COX-2 Inhibitor:

A. Nabumetone
B. Naproxen
C. Celecoxib
D. Ibuprofen

Of the following, which medication would most likely be prescribed to increase blood coagulation:

A. Hydrochlorothiazide
B. Vitamin K
C. Clopidogrel
D. Warfarin

Which of the following drugs would not be prescribed to lower lipids?

A. Clopidogrel
B. Ezetimibe

C. Fenofibrate
D. Atorvastatin

Cyanocobalamin is also known as:

A. vitamin B1
B. vitamin B6
C. vitamin B12
D. vitamin B

Terazosin belongs to a group of drugs known as alpha-blockers and is used to treat:

A. Hypertension
B. Urinary disorders
C. Cluster headaches
D. Both A and B

All of the following are anti-diabetic agents except:

A. Byetta®
B. Lyrica®
C. Januvia®
D. Actos®

The drug **Avapro®** is an antihypertensive / A2RB indicated for hypertension, diabetic nephropathy, and congestive heart failure. What is the generic name for Avapro®?

A. Valsartan
B. Losartan
C. Irbesartan
D. Losartan
Which of the following is not an Antihistamine?

A. Cetirizine
B. Atomoxetine
C. Fexofenadine
D. Hydroxyzine
What is the generic name for Lantus® insulin?

A. Insulin glargine
B. Insulin lispro
C. Insulin detemir
D. Insulin aspart
The drug Valacyclovir has the suffix 'vir'. Drugs with this suffix in their generic name are usually _____.

A. Anti-biotics
B. Beta Blockers

C. Laxatives
D. Anti-virals
Which of the following drugs are ACE inhibitors?

A. Captopril, Ramipril and Irbesartan
B. Enalapril, Lisinopril and Fosinopril
C. Benazepril, Ramipril and Donepezil
D. Telmisartan, Valsartan and Candesartan
Out of the drugs listed below, which is not a calcium channel blocker?

A. Diltiazem
B. Verapamil
C. Memantine
D. Amlodipine

Ibuprofen is classified as a(n) ?

A. Muscle Relaxer
B. N.S.A.I.D.
C. Anesthetic
D. S.S.R.I
An example of a therapeutic duplication might be when a patient receives?
Levothyroxine & Liothyronine
Medroxyprogesterone & Methylprednisolone
Quinine & Quinidine
All of the above

List 3 Medications from the fluoroquinolone medication class.
_____
_____
_____

Match to sig with the appropriate definition.

ac	_____ _____	bedtime
pc	_____	by mouth
sc	_____ _____	intravenous
ad	_____	after meals
ud	_____	before meals
hs	_____	as directed
sl	_____	subcutaneous
po	_____	right ear
im	_____	sublingual
iv	_____	intramuscular

Match the brand and generic name for each medication.

Benicar _____ (Clopidogrel)
Lipitor _____ (Lorsartan/Hydrochlorothiazide)

Aricept _____ (Pantoprazole)
Singular _____ (Olmesartan)
Lexapro _____ (Risperidone)
Plavix _____ (Zolpidem)
Toprol XL _____ (Montelukast)
Prevacid _____ (Pregabalin)
Avapro _____ (Lansoprazole)
Effexor XR _____ (Metoprolol Succ.)
Protonix _____ (Alendronate)
Diovan _____ (Venlafaxine)
Fosamax _____ (Lorsartan/Hydrochlorothiazide)
Zetia _____ (Amlodipine)
Seroquel _____ (Fenofibrate)
Hyzaar _____ (Ramipril)
Norvasc_____ (Risedronate)
Tricor _____ (Quetiapine)
Altace _____ (Irbesartan)
Actonel _____ (Valsartan)
Coreg _____ (Topiramate)
Lyrica _____ (Atorvastatin)
Ambien _____ (Ezetimibe)
Risperdal _____ (Donepezil)
Topamax _____ (Carvedilol)

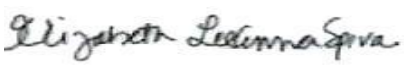
Appendix D

January 30, 2017

To Whom It May Concern:

As the Executive Director of the Center for Nursing Excellence at WellStar Health System, I am delighted to provide this letter of support and approval for Freda Lyon, MSN, RN, NE-BC, DNP Student at American Sentinel University to conduct her DNP project at WellStar Health System. There are no IRB requirements attached to this project. We are committed to providing the necessary leadership and resources for the successful implementation of this valuable project here at WellStar. If you have questions, please feel free to contact me by email or telephone.

Sincerely,



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Appendix E

AMERICAN SENTINEL UNIVERSITY

July 8, 2016

Freda Lyon
DNP Student
American Sentinel University

Re: Dedicated medication history specialist impact on completion of medication reconciliation

Dear Ms. Lyon:

On July 8, 2016, the American Sentinel University Institutional Review Board reviewed the research proposal entitled "Dedicated medication history specialist impact on completion of medication reconciliation." The purpose of this project is to determine if the utilization of a medication history specialist in the emergency department impacts the rate of the completed medication reconciliations within the first 24 hours of admission in an acute care center in Georgia. The contingencies have been addressed and the IRB **approves** the protocol. Work on this project may begin. This approval is for a period of one year from the date of this letter and will require continuation approval if the research project extends beyond **July 8, 2017**.

If you make changes to the protocol during the period of this approval, you must submit a revised protocol to the American Sentinel University IRB for approval before implementing the changes.

If you have any questions regarding the IRB's decision, please contact me through irb@americansentinel.edu.

Sincerely,

B. F. Petrie, Ph.D.
Chair,
American Sentinel University IRB

c Kris Skalsky– Chair