Medication Management in Primary Care: A Structured Review Checklist for Primary Care Providers

MEDICATION MANAGEMENT IN PRIMARY CARE: A STRUCTURED REVIEW CHECKLIST FOR PRIMARY CARE PROVIDERS

by

Tyanne Tuyen Van

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Tyanne Tuyen Van entitled "Medication Management in Primary Care: A Structured Review Checklist for Primary Care Providers" and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

Kimberly D. Shea, PhD, RN, CHPN — Date: November 17, 2017

Christy L. Pacheco, DNP, FNP-BC — Date: November 17, 2017

S. Renee Gregg, DNP, FNP-BC — Date: November 17, 2017

Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

DNP Project Chair: Kimberly D. Shea, PhD, RN, CHPN — Date: November 17, 2017

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SIGNED: __Tyanne Tuyen Van_____

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ABSTRACT

Background: Medication management is an important aspect of health care to ensure patient safety and outcomes. Incomplete overview of medications is main cause of medication errors and discrepancies. The consequences of not completing medication management and reconciliation are associated with the wellness of the patients and result in increased health care cost. It is essential to improve medication management process to decrease medication discrepancies, minimize the prevalence of medication-related problems, increase patient health outcomes, and reduce health care cost in primary care settings. A Structured Review Checklist was recommended during routine comprehensive medication review as a process for evaluation of therapy, assessment of patients' medication adherence, and resolution of medical record discrepancies.

Purpose: The purpose of this DNP project is to evaluate primary health care providers' perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist to further develop key recommendations and tools for use by primary care providers to reduce medication discrepancies and medication errors as well as increase health outcomes and patient satisfaction.

Method: The design is descriptive cross-sectional. The online survey developed with Qualtrics software was sent to Practice Managers at Banner Health Clinics to be distributed to targeted primary care providers. Their perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist was assessed using 6-point Likert-type scales.

Outcomes: Only one health care provider completed the survey. The data cannot be used to analyze the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. However, even with participant recruitment challenges, the project provided a significant amount of lessons to learn for future research study.

CHAPTER I: INTRODUCTION

Background

Medication management is an important aspect of health care to ensure patient safety. Medication reconciliation was introduced by the Joint Commission in 2011 as part of the National Safety Goal #3, "improving the safety of using medications" (DiLascia & Vogenberg, 2013; Vejar, Makic, & Kotthoff- Burrell, 2015). Medication management includes medication reconciliation, defined as "a process of creating the most accurate list possible of all medications a patient is taking – including drug name, dosage, frequency, and route – and comparing that list against the physician's admission, transfer, and/or discharge orders" (Institute for Healthcare Improvement [IHI], 2017, para. 2). Many medication errors and discrepancies are due to incomplete overview of medication (van Sluisveld, Zegers, Natsch, & Wollersheim, 2012). According to the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) (2017), "A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer" (para. 2). Medication reconciliation is an important process to prevent these errors and adverse drug events (ADEs) by educating patients on the usage of prescription and over-the-counter (OTC) medication to help the patients understand the indication of the medication and potential adverse reactions (Vejar et al., 2015). Jäger, Szecsenyi, and Steinhäuser (2015) investigated various sources of medication errors and suggested strategies to avoid them during different medication management process, such as writing prescriptions, documentation, dispensing medications, administration of medications, and monitoring of adverse drug reactions.

Patients often receive new medication orders at a point of health care service, especially at the time of transitions in care, such as admission, transfer from one unit to another within a hospital, or discharge from a hospital to home or other health care facilities (Agency for Health Care Research and Quality [AHRQ], 2015). Medication errors are one of the most common types of medical errors associated with morbidity and mortality (Olaniyan, Ghaleb, Dhillon, & Robinson, 2015). In fact in a recent study, 71% of discharges from a hospital to skilled nursing care facilities had at least one medication discrepancy (Anathhanam, Powis, Cracknell, & Robson, 2012). Medication discrepancy occurs during these transitions as well as during physician visits in the primary care setting. Eighty-two percent of American adults take at least one medication and 29% takes five or more (Centers for Disease Control and Prevention (CDC), 2012). In one primary care setting, almost 35% of 85-89-year-old patients were taking 10 or more medications (Anathhanam et al., 2012). This patient population is at high risk for adverse drug events or medication-related problems associated with multiple comorbidity, polypharmacy, multiple prescribers, and the challenges with tracking, monitoring, managing and taking these medications (Mason, 2011). In primary care, the patients are responsible for self-administering medication, making it more difficult for health care providers to monitor their medications (Olaniyan et al., 2015). Olaniyan, Ghaleb, Dhillon, and Robinson (2015) found that the elderly (over 65 years of age) and children (under 18 years of age) are the two groups most susceptible to experience significant medication errors. The researchers suggested improvement of medication safety and error prevention by targeting the more susceptible populations and the most dangerous aspects of the system; as well as co-implementing the existing interventions to be time- and cost-effective (Olaniyan et al., 2015). Vejar, Makic, and Kotthoff- Burrell (2015)

found that the most effective approach to improve accuracy of the medication list for patients with polypharmacy were brown bagging their medication at their doctor visits.

The presence of multiple comorbidities is known to cause increased likelihood of drug-disease interactions, and polypharmacy may cause increased likelihood of drug-drug interactions (Anathhanam et al., 2012). Adverse drug events (ADEs) include adverse drug reactions (ADRs), medication errors, overdoses, dose reductions and cessation of therapy (Anathhanam et al., 2012). According to the Centers for Disease Control and Prevention (2015), ADEs result in over 700,000 visits to hospital emergency room each year in the United States. Alarmingly, 30.4% of patients over the age of 75 years were hospitalized due to ADEs, and 6.5% of admissions of inpatients over the age of 16 years were associated with adverse drug reactions (ADRs) (Anathhanam et al., 2012). Another study reports 2.5% of unintentional injuries seen in the emergency department are caused by adverse drug events, and 6.7% of these events result in hospitalization (Zeigler, 2015). A quality improvement study by Vejar et al. (2015) suggested that education played a critical role in increasing medication reconciliation rates and decreasing the use of high-risk OTC medications. Another study of Lang, Garrido, and Heintze (2016) found that communication factors have a significant impact in the occurrence and consequences of ADEs and patient satisfaction.

Medication discrepancy is one of the common medication errors and is harmful to patients. Reported medication errors in outpatient settings are discrepancies between what physicians prescribe, believe patients taking, and record in patients' medication lists, and what the patients actually take (Wolff, Nowacki, Yeh, & Hickner, 2014). Twenty-three percent of medication errors were due to inaccuracies in the medication list (Wolff et al., 2014). Another study from

Veterans Affairs found only 21% of medical records had accurate documentation of all drug names, dosages, and directions for use (Wolff et al., 2014). Stewart and Lynch (2014) found the most common type of discrepancy occurred at follow-up care and were medications the patient discontinued, but still listed as active on the chart, as well as OTC medications were not listed in the chart. It is suggested that engaging the patient, or adopting a more patient-centered approach, during medication reconciliation process may benefit in reducing medication discrepancy (Stewart & Lynch, 2014). In addition, Wolff, Nowacki, Yeh, and Hickner (2014) recommended using a multistep intervention model to improve the medication reconciliation process.

Statement of Problem

There are proven challenges in successfully implementing medication reconciliation and medication management (Vejar et al., 2015). Some challenges and barriers include lack of standardized process, time restraints, patients' knowledge about the medications they take, inaccuracies of the medication list (Vejar et al., 2015), lack of expert knowledge about medication management process, low feasibility of checklists or tools for medication review, unavailability of medication lists at interfaces, lack of patient self-management ability, language/communication barrier, and lack of standardization of medication lists (Jäger et al., 2015). The consequences of not completing medication management and reconciliation are associated with ADEs, which affect the wellness of the patients and result in increased health care cost. According to the United States of Food and Drug Administration (FDA) (2015), the number of deaths related to ADEs is estimated 123,927 deaths for the year of 2014, and 44,693 deaths for only the first quarter of 2015. Along with this trend, the adverse drug reactions cost $136 billion annually; this is higher than the healthcare cost combined of cardiovascular and

diabetic care (FDA, 2016). Routine comprehensive medication review is crucial to minimize the prevalence of medication-related problems, increase patient health outcomes, and reduce health care cost (Mason, 2011).

Local Problem

Some patients were found to have medication discrepancy at follow-up care at an outpatient primary care setting by this principal researcher. During medication reconciliation process at this primary care setting, medication discrepancy was found according to what medications the patients reported taking compared to their medication list in the chart. There were several occasions at which medication discrepancy and medication adherence were significant issues. In one study, Armor, Wight, and Carter (2016) found 171 medication discrepancies in 81% of study participants, and they accounted for an average of 3.9 per participant in a primary practice. Several barriers associated with medication management process and sources of errors are identified, and strategies/interventions were recommended to overcome/prevent these errors or barriers (Jäger et al., 2015). It is essential to improve medication management process to decrease these discrepancies in primary care settings. A Structured Review Checklist was adopted for use by primary care providers to prevent medication discrepancy during medication management process.

Purpose and Aims

This quality improvement (QI) project assessed the usefulness of the Structured Review Checklist for use by health care providers within a Southwestern urban primary care setting. The purpose of this QI project is to evaluate the primary care providers' perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist.

The additional aim of this project is to investigate whether primary care providers use this Structured Review Checklist during medication management process to decrease medication errors or discrepancy within a primary care setting.

The knowledge gained from the study of this QI project was used to develop key recommendations and tools for use by primary care providers to reduce medication discrepancies and medication errors as well as increase health outcomes and patient satisfaction. The results of this QI project will be disseminated to Banner Health in power point presentation sent by email to Banner management team.

Study Questions

This quality improvement project implemented and evaluated the Structured Review Checklist for use by primary care providers, and investigated the primary care providers' attitudes toward perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist during medication management process. This study aimed to answer the following questions:

1. When used by health care providers in a primary care setting, what are perceived usefulness, and perceived ease of use regarding the Structured Review Checklist?
2. Will primary care providers use the Structured Review Checklist during medication management process?

Theoretical and Conceptual Frameworks

Theoretical Framework: Technology Acceptance Model (TAM)

Adoption the Structured Review Checklist may decrease medication discrepancy within a primary care setting. It is believed that individuals' usage of a technology or innovation is

significantly influenced by their beliefs and perceptions of the technology (Saadé & Bahli, 2005). The Technology Acceptance Model (TAM) was utilized in guiding research and development of this DNP project.

TAM, developed by Davis (1989), is the model that has been widely used in research to predict the acceptance based on the user's perceived usefulness (PU) and perceived ease of use (PEU) of the technology (Consumer Health Informatics Research Resource [CHIRr], n.d.). Previous research showed that two important determinant factors that influence individuals to accept or reject information technology are PU and PEU (Davis, 1989). Primary care providers may be more likely to use the Structured Review Checklist if they perceive that it is useful and easy to use.

Concepts

The word "technology" was used and defined as "a design for instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome" (Rogers, 2003, p. 13). In this project, technology was defined as the Structured Review Checklist that was being evaluated.

Perceived usefulness (PU) was defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).

Perceived ease of use (PEU) refered to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320).

The Structured Review Checklist and TAM

Understanding the variables that prevent primary care providers from acceptance of the Structured Review Checklist provided valuable insight for successful adoption, implementation,

and evaluation of the Structured Review Checklist to improve their usage and usefulness to health care providers. TAM described the relationships between the health care providers' PU, PEU, and intention to use. Previous study suggested that perceived ease of use influences perceived usefulness (Saadé & Bahli, 2005). This theoretical framework is presented in Figure 1 (Adapted from Saadé & Bahli, 2005; Davis, Bagozzi, & Warshaw, 1989; Venkatesh, Morris, Davis, & Davis, 2003).

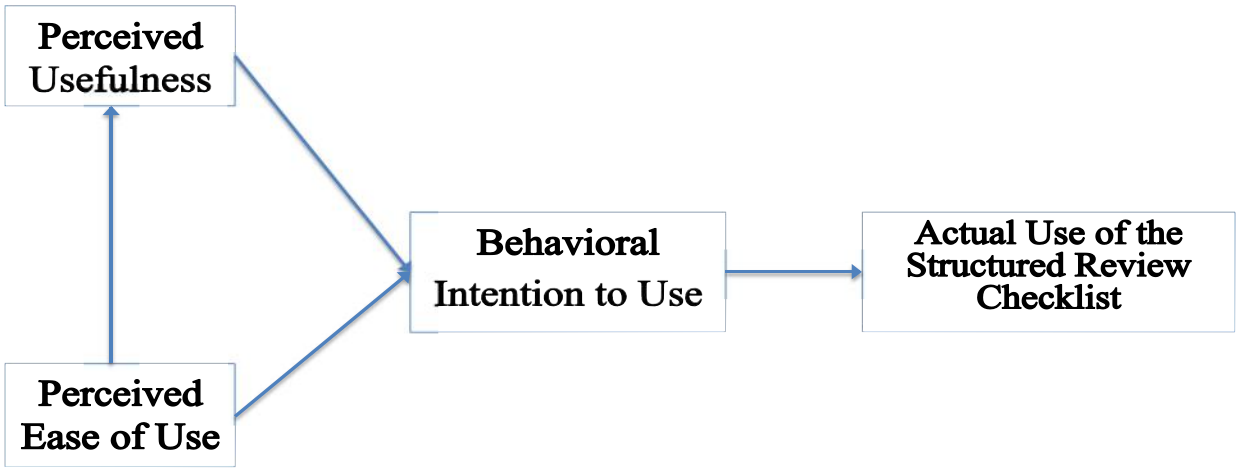

FIGURE 1. Technology Acceptance Model of Implementation of the Structured Review Checklist. (Adapted from Saadé and Bahli, 2005; Davis, Bagozzi, and Warshaw, 1989; Venkatesh, Morris, Davis, and Davis, 2003.)

CHAPTER II: SYNTHESIS OF EVIDENCE

Literature Review

Engaging the patient, or adopting a more patient-centered approach during medication reconciliation process reduces medication discrepancy (Mason, 2011; Stewart & Lynch, 2014). Many studies suggest a patient-centered approach as a key to successful medication management. A face-to-face motivational interviewing approach helps patients with polypharmacy to achieve an improved level of treatment adherence (Moral et al., 2015). The structured history taking of medication use is an effective medication reconciliation tool to identify discrepancies with potential for patient harm (Cullinan, O'Mahony, & Byrne, 2016). Another patient-centered approach is a customized care intervention to address key barriers to effective patient-provider communication with the goal of improving health outcomes for patients with multimorbidity (Wittink, Yilmaz, Walsh, Chapman, & Duberstein, 2016).

In addition, a multistep intervention model was recommended to improve the medication reconciliation process (Wolff, Nowacki, Yeh, & Hickner, 2014; Mason, 2011). A combined intervention consisting of an interactive educational meeting plus recommendations given by a clinical pharmacist concerning specific patients improves the appropriateness of prescribing for patients with polypharmacy (Bregnhøj, Thirstrup, Kristensen, Bjerrum, & Sonne, 2009). Other multistep intervention models include a structured, multifaceted, comprehensive, patient-centered medication therapy management intervention to significantly reduce the number and prevalence of medication-related problems and acute health services utilization (Roth et al., 2013). The tailored program including consequence use of medication list, medication reviews to

reduce potential inappropriate medication led to improved implementation of structured medication counseling and brown bag reviews (Jäger et al., 2017).

In a study of Jäger, Szecsenyi, and Steinhäuser (2015), researchers initially identified interventions to improve management of polypharmacy and barriers for implementation interventions as well as the corresponding strategies to address them, such as training, individual practice concepts, provision of a checklist, educational material for patients, and template of a medication list. They also developed workshop to identify the sources of errors during medication process and had the practice team elaborated individual concepts of how to implement the recommendations into their practice (Jäger, Szecsenyi, & Steinhäuser, 2015). A study of Stewart and Lynch (2014) identified the most common medication discrepancy types (Discrepancy with a medication listed in the chart, discrepancy with a reported medication not on the chart, discrepancy between dose reported and dose charted, and discrepancy between regimen reported and regimen charted) and reasons (Patient did not report; medication with automatic stop date; OTC use; patient did not report medication correctly; patient changed medication, etc.). The study of Stewart and Lynch (2014) also showed that the discrepancies with medication listed in the Electronic Medical Record was likely to persist despite the standardized pharmacist-led medication reconciliation. Sarzynski, Luz, Rios-Bedoya, and Zhou (2014) demonstrated that accuracy of medication lists did not improve when patients brown-bagged their medications for office visits compared to those who did not. The importance of information technology (IT) interventions with inter-professional communication was showed to be effective (Lainer, Mann, & Sönnichsen, 2013). Not only inter-professional communication is important, communication between patients and health care providers is significant in the

occurrence and consequence of adverse events and patients' satisfaction (Lang, Garrido, & Heintze, 2016). Olaniyan, Ghaleb, Dhillon, and Robinson (2015) demonstrated that the prescribing stage is the most susceptible stage for medication errors during the medication management process.

Mason (2011) recommended a structured medication assessment process for evaluation of therapy, assessment of patients' medication adherence, and resolution of medical record discrepancies. In addition, this multistep process not only includes a comprehensive medication history interview, structured therapy assessment, and monitor but also involves a collaborative effort of open communication between health care providers and other members of the medical team (Mason & Bakus, 2010).

Mason (2011) identified that patient non-adherence is the problem associated patient with chronic kidney disease. Even though there is no research found with similar result, the patient non-adherence problem is implied to occur in other patient population, especially patients with polypharmacy.

The summary of literature review articles is shown in Appendix A.

Gaps in Research

Including a pharmacist during the medication reconciliation process was found to be effective in comprehensive review of medications (Mason, 2011). It was recommended to use pharmacist expertise as some data support it as an improvement of health outcomes and health care reductions (Mason, 2011). However, as in primary care setting, additional research is limited on balancing between the reductions of health care costs as health care outcome is improved, compared to health care cost to include the role of a pharmacist. In addition, the

perceived usefulness, perceived ease of use, and behavioral intention of use regarding the structured medication optimization and reconciliation process recommended by Mason (2011) were not previously studied.

Identified medication-related problems such as adherence and medication record discrepancies are associated with patients with chronic kidney disease (Mason, 2010), as well as potential problems for other patient population, especially patients who have multiple chronic health problems requiring polypharmacy. Therefore, by adopting the structured medication optimization and reconciliation process recommended by Mason (2011), the same effect was expected to prevent medication errors/discrepancies and optimizing care.

The Structured Review Checklist

Although the structured medication optimization and reconciliation process was developed for chronic kidney disease patients, it was expected to be useful and appropriate in minimizing the occurrence of medication-related problems (ie. medication errors, medication discrepancies, etc.), optimizing patient outcomes, and reducing health care cost (Mason, 2011) for other patients, especially patients who have multiple chronic health problems requiring polypharmacy. Mason and Bakus (2010) developed a structured process for evaluation of therapy and resolution of medical record discrepancies optimize patient care through patient interview. The first step is to obtain an accurate medication history including prescription and non-prescription medications, supplements, social substances, and adherence of the patients through interviews (Mason, 2011). Using the data collected through medication history, prescription refill records, and laboratory records, medication-related problems will be identified (if any) and evaluated (Mason, 2011). Patient adherence and barriers to take or obtain the medication will be assessed for education, if

necessary (Mason, 2011). The next step is to identify any discrepancies and reconcile the medication (Mason, 2011). A monitoring plan will be developed and documented with clinical findings, and follow-up care plan will be updated in medical record (Mason, 2011).

The Structured Review Checklist was adopted from a structured medication optimization and reconciliation process developed by Mason and Bakus (2010) (See Appendix B). The Structured Review Checklist should be used on an ongoing basis for a continuing review of medication therapy to keep the clinical changes and medication modifications up to date on patients' medical records (Mason, 2011).

CHAPTER III: METHODS

Ethical Considerations

The project was submitted to the University of Arizona Institutional Review Board (IRB) and then to Banner Health IRB for approval prior to implementation. Upon IRB approval, primary care providers participated in the study voluntarily, had the right to decline to participate, and were free to stop the survey at any time during data collection (Smith, 2003). An informed consent was included for the participants before the start of the survey. To protect the participants' safety and privacy, demographic information of the participants was collected on a voluntary basis and was protected according to the University of Arizona's policies and Federal regulations regarding responsible conduct of research. No identifiable data was collected. There was limited risk for participation in this study, and the author had no conflicts of interest.

Planning the Study

Design

This QI project used a descriptive cross-sectional design (Polit & Beck, 2012) to investigate the primary care providers' perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist (See Appendix B) during medication management process. Participants used the Structure Review Checklist for one patient and then answered the online survey.

Sample

For inclusion in the project, the participants must be primary care providers who are currently working in a primary care setting at X facility. Any clinician who practices exclusively in the inpatient setting was excluded. This DNP project aimed for a minimum of 20 survey

participants as the sample size and a maximum of 30 participants. There was minimal risk for participants, and benefits included possible increase in knowledge to improve patient care.

Setting

The online survey was conducted in primary care practice at Banner Health Clinics in Casa Grande, Arizona. An email invitation was sent to recruit participants that include all health care providers that provide primary care for Banner Health Clinics in Casa Grande, Arizona.

Banner Health is one of the largest nonprofit health care systems in the United States headquartered in Arizona. Banner Health system owns and operates 28 acute-care hospitals, physician groups, long-term care centers, outpatient surgery centers, urgent care centers, family clinics, home care and hospice services, pharmacies, and a nursing registry located in Arizona, California, Colorado, Nebraska, Nevada, and Wyoming (Banner Health, 2017). Banner Health Clinics are located in Metropolitan areas in Phoenix, Tucson, Casa Grande, Page, Pine, Payson, etc., offering a variety of services depending on the locations, such as family medicine, internal medicine, pediatrics, maternity, neuroradiology, nuclear medicine, orthopedics, rheumatology, and others.

Survey

An online survey was developed using Qualtrics software accessed through the University of Arizona. Qualtrics software is easy to use and navigate with various features. Qualtrics software allowed users to develop survey questions in a different format such as multiple choice, free text, and 6-point Likert-type scale, etc. The survey data from Qualtrics software was managed by real-time web reports as well as export to Word, PowerPoint, PDF, or SPSS to create a professional presentation with instant access (Qualtrics, 2017).

The survey included questions that target perceived usefulness, perceived ease of use, and behavior intention of use as well as collecting demographic information of health care providers. The project was approved by University of Arizona IRB and Banner Health IRB prior to initiation. Upon approval, the descriptive letter of intent including a consent disclaimer to participate and the Structured Review Checklist was sent out to Practice Managers to be distributed to primary care providers as potential participants via email along with a Qualtrics link to the survey.

The survey contains 34 items to examine concepts such as perceived usefulness, perceived ease of use, behavioral intention to use, and demographics. The subscales contain 1 item to determine if the health care provider is eligible for the survey, 9 items in the subscale that measures perceived usefulness, 11 items in the subscale that measures perceived ease of use, 1 item in the subscale that measures behavioral intention to use, 4 items to provide feedback, and 8 items to collect demographics (See Appendix G). Respondent concordance of the survey items in the subscales that measured perceived usefulness and perceived ease of use was measured using 6-point Likert-type scales anchored by 6 as “Strongly agree’ and 1 as ‘Strongly disagree”. Others were measured using multiple choice and free text.

The assessment tool was adopted from studies of Davis (1989) regarding computer usage and a study of Saadé and Bahli (2005) regarding on-line learning. In the first study of Davis (1989), a Cronbach alpha reliability was 0.97 for perceived usefulness and 0.91 for perceived ease of use, and a Cronbach alpha was 0.98 for perceived usefulness and 0.94 for perceived ease of use in the second study. In the study of Saadé and Bahli (2005), a reliability alpha for perceived usefulness, perceived ease of use, and intention to use was 0.74, 0.67, and 0.62

respectively. All of these studies showed that the assessment tool was reliable with a significant Cronbach alpha.

Intervention: The Structure Review Checklist

The Structured Review Checklist (See Appendix B) was sent to the potential participants via email forwarded from Practice Managers, along with the letter of intent, the consent disclaimer to participate, and the Qualtrics link to the survey.

Method of Evaluation

Data Collection

The survey was sent to potential participants by Practice Managers at Banner Health Clinics in Casa Grande, Arizona. In addition, a descriptive letter of intent and a consent disclaimer to participate were distributed to potential participants in the same manner. The survey was sent out to Practice Mangers to be forwarded to potential participants at the invitation to participate, the second time to remind about 2 weeks later (See Appendix E), and the third time 2 days before it was closed (See Appendix F). The survey was available for total of one month.

Plans for Data Analysis

Each of the study questions was planed to be analyzed using descriptive statistics such as a measure of the central tendency (Mean, mode, median, standard deviation, and significance). The collected data was planed to be compared among participants as well as the total measure of central tendency for the entire instrument. Internal consistency of the perceived usefulness, perceived ease of use was planed to be assessed using Cronbach's alpha, which was planed to be compared to those from the studies of Davis (1989), and Saadé and Bahli (2005).

CHAPTER IV: RESULTS

Data Collection

Survey distribution and data collection occurred between October 6, 2017 and November 3, 2017. The descriptive letter of intent along with the Structured Review Checklist and the link to the survey was sent to Practice Managers to be distributed to primary health care providers working at Banner Health Clinics in Casa Grande, Arizona. During the first two weeks, the numbers of participations were low at two respondents. To recruit more participants, the first email reminder was sent out to Practice Managers to be forwarded to potential participants 2 weeks after the initial invitation email was sent. The second email reminder was sent out 2 days before the survey was closed. At the competition of data collection, a total of 3 participants responded to the online survey. The primary care providers participated in the survey voluntarily with no offer of compensation and no identified information collected.

Description of the Sample

A total of 3 participants started the survey. Of those, 2 providers, who are currently working in primary care settings, were eligible to participate in the survey (see Figure 2). However, only 1 out of 2 participants completed the survey; one participant started the survey but stopped after the first question. The person who completed the survey identified her as a 28 year-old White, not Hispanic or Latino, female, working full time as a Nurse Practitioner with the highest education of DNP degree, and has been 1-5 years in practice.

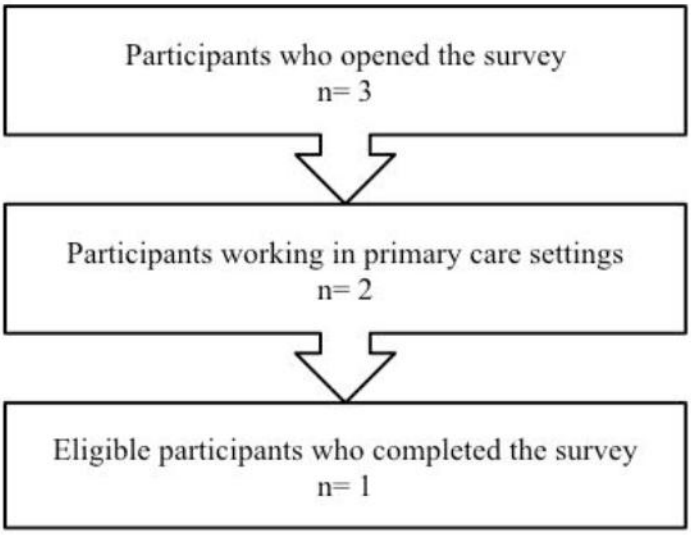

FIGURE 2. Numbers of Health Care Providers Meeting Inclusion Criteria.

Participant's Perceived Usefulness, Perceived Ease of Use, and Behavioral Intention of Use Regarding the Structured Reviewed Checklist

The mean score of the participant's perceived usefulness and perceived ease of use regarding the Structure Review Checklist are presented in Table 1. The participant responded 'Yes' to the question "If the Structured Review Checklist was available for regular use during medication management process in electronic health record, would you use it?", which was used to measure behavioral intention of use of the Structured Review Checklist.

TABLE 1. *Participant's Perceived Usefulness (PU) and Perceived Ease of Use (PEU) Regarding the Structured Reviewed Checklist (n=1)*

Construct	Item	Measure Likert Scale 1 (Strongly Disagree) – 6 (Strongly Agree)	Mean Score
PU	Q2	Using this Structured Review Checklist would save me time	5
	Q3	This Structured Review Checklist enables me to accomplish medication management process more quickly	4
	Q4	This Structured Review Checklist addresses my needs during medication management process	5
	Q5	Using this Structured Review Checklist improves my job performance	4
	Q6	Using this Structured Review Checklist allows me to accomplish more work than would otherwise be possible	4
	Q7	Using this Structured Review Checklist enhances my effectiveness during medication management process	4
	Q8	Using this Structured Review Checklist improves the quality of medication management process	5
	Q9	Using this Structured Review Checklist makes it easier to reconcile medication	4
	Q10	Overall, I find that using this Structured Review Checklist is useful for medication management process	5
PEU	Q11	I may become confused when I use this Structured Review Checklist	3
	Q12	I make errors frequently when I use this Structured Review Checklist	3
	Q13	Interacting with this Structured Review Checklist is often frustrating	3
	Q14	Interacting with this Structured Review Checklist requires a lot of mental effort from me	3
	Q15	I find it easy to recover from errors I encounter while using this Structured Review Checklist	4
	Q16	This Structured Review Checklist is rigid and inflexible to interact with	4
	Q17	I find it easy to manage the patient's medication reconciliation process with this Structured Review Checklist	4
	Q18	The Structured Review Checklist is easy for me to understand and follow	5
	Q19	It is easy for me to remember how to perform medication reconciliation using this Structured Review Checklist	4
	Q20	This Structured Review Checklist provides helpful guidance in medication management process	4
	Q21	Overall, I find this Structured Review Checklist easy to use	4

Participant's Feedback Regarding the Structured Review Checklist

The participant responded 'Yes' to the question "Did you use the Structured Review Checklist?", 'No' to "Are you currently using any tool for medication reconciliation in your practice?", 'Yes' to the question "Is there a medication reconciliation process currently available in your practice?", and 'Nothing at this time' when was asked "What would you suggest about the Structured Review Checklist? Please provide your comment below."

CHAPTER V: DISCUSSION

Summary

The survey participation goal of 20 was not met, and the final sample size was only 1 participant. The most challenge of this project was participant recruitment. Since there was only 1 participant finished all the questions from the online survey, the result of that survey cannot be used to analyze the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. Therefore, the result could not be used to make any practice implications or disseminate to Banner Health Clinics, Casa Grande for improving in patient care and outcome. However, the project provided the principal investigator significant lessons to learn for future research.

Recruitment Challenges

According to McPeake, Bateson, and O'Neill (2014), one of the drawbacks of the online survey is poor response rate. They recommended sending two email reminders, personalizing each email, and stating the average time it would take to complete the survey in the email to increase survey response rate (McPeake, Bateson, & O'Neill, 2014). Even though all of these methods were used, the survey respondents remained low. Recruitment challenges associated with this project were identified. No issues with obtaining the consent were directly identified since participants would be implied to give consent to participate in the research study if they chose to start the online survey. The recruitment issues were identified as challenges associated with gatekeepers (ie. Practice Managers), assessing participants, and time commitment of the participants (Namageyo-Funa et al., 2014). Since there was no access to the email list of primary care providers, the initial invitation email and the reminder email were sent to Practice Managers

to be distributed to potential participants. The Practice Managers acted as gatekeepers from assessing potential participants.

Challenges with Gatekeepers

One of the strategies for successful participant recruitment, collaborating with gatekeepers was used to recruit potential participants (Namageyo-Funa et al., 2014). One of the gatekeepers at Banner Health Clinics at Casa Grande, Arizona was contacted initially to obtain support and to act as a facilitator to other gatekeepers to send out invitation email to potential participants. However, the initial process still faced some challenges as out of office autoresponder email message was received from one of the gatekeepers when the initial recruitment email was sent out. The out of office autoresponder email message asked to contact someone else for immediate help, but that person's email address or contact was not provided. The initial invitation email might not have been distributed to potential participants due to this incident. These incidents might have contributed to the low rate of survey participations.

Another challenge with the gatekeepers was their time commitment to a study depending on their workload and perceived benefit to the potential participants (Namageyo-Funa et al., 2014). Since they were not paid to assist with the recruitment, they could have helped only as their time and workload permitted (Namageyo-Funa et al., 2014). This might have been contributed to low recruitment with this study.

Challenges with Assessing Participants

Another recruitment issue in this QI project was associated with assessing potential participants, in which only one recruitment tool was used (Namageyo-Funa et al., 2014). The recruiting email and reminder email were sent primarily through email to the gatekeepers to be

disseminated to potential participants. The potential participants might not have gotten the invitation email and/or reminder email, or the email might have been buried in their mailbox with tons of other email. In addition, the low rate of survey participation might have been due to lack of trust of the researcher (Namageyo-Funa et al., 2014) as the survey invitations were via email only.

Challenges with Time Commitment of Participants

The low rate of survey participations might have been associated with the time commitment of potential participants (Namageyo-Funa et al., 2014). The design of this project may hinder the potential participants to participate in the online survey because of time commitment to print out the Structured Review Checklist, use it with one patient during medication reconciliation process, and then fill out the online survey. Health care providers might have concerns about disrupting routine practice (Pit, Vo, & Pyakurel, 2014) and would rather use their own ways of getting it done in their day-to-day practice. In addition, the perceived long Checklist might have made health care providers hesitate to participate in the study due to time constraint. In addition, this research project might have been started during the time of the year when the health care clinics were busiest (early Winter time), which potential participants might find it hard to commit their time during busy working hours.

Primary care providers claimed being 'too busy' as grounds for non-participants in some studies (Parkinson et al., 2015). They might have experience 'survey saturation', which they might have been regularly asked to complete surveys and questionnaires in many aspects of their professional roles (McPeake, Bateson, & O'Neill, 2014). As a result, they might have chosen to

complete absolutely necessary questionnaires and disregarded optional surveys (McPeake, Bateson, & O'Neill, 2014).

Strategies for Future QI Projects

As for issues with the time commitment of gatekeepers, it was recommended to work closely one on one with the gatekeepers through the recruitment process to earn their trust and commitment as an alternative recruitment strategy for future QI project (Namageyo-Funa et al, 2014). In addition, roles and expectations of the gatekeepers should be clarified before the study as it is significant for successful recruitment (Namageyo-Funa et al., 2014). Any approach must be overcome the barrier of gatekeepers to persuade them that it is worth their time to facilitate participation of the survey (Parkinson et al., 2015).

As the time progress and survey participants remained low, the principal investigator should have re-evaluated the recruitment plan and added additional strategies to increase participant numbers (Namageyo-Funa et al., 2014). A recent longitudinal study done by Yu et al. (2017) suggested that monetary incentive offer "could be particularly useful near the end of data collection period when an immediate boost in response rate is needed" (p. 8). Along with these findings, a systematic review study of Pit, Vo, and Pyakurel (2014) recommended strategies for improving primary care providers' survey response rates as following: monetary and nonmonetary incentives, larger incentives, upfront monetary incentives, postal surveys, and pre-contact with a phone call from a peer. Additional recruitment strategies such as constant contact, spending more time at the study sites answering any questions and concerns of the potential participants to build trust and using face-to-face recruitment (Namageyo-Funa et al., 2014) could be implemented to increase recruitment in future QI study. Also, using a well-known and trusted

network of professionals to endorse the survey was also recommended (Parkinson et al., 2015). As for using more than one strategy, Pit, Vo, and Pyakurel (2014) also recommended sequential mixed mode of using online survey followed by a paper survey with a reminder as it was demonstrated to be more effective than an online survey alone. Along with this recommendation, Parkinson et al. also suggested "a followed-up letter that included a paper copy of the questionnaire, suggesting the physical 'portable' copy acted as an opportunistic prompt to complete the questionnaire" (p. 256).

Taking time constraint factor into account to understand the busy schedule of the potential participants, considering dropping off the printed Structured Review Checklist or having clinic staff to print it out and make it available for their use should be done to increase survey participations in future QI project. Additionally, a randomized control trial done by Agarwal et al. (2016) suggested providing monetary incentives to the administrative assistants to increase survey responding rate in physicians with leadership positions.

Conclusion

This project was initially to determine the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. However, there were not enough study participants to provide adequate data to be analyzed and drawn any conclusion or implementation. However, even with recruitment challenges, the project provided a great amount of lessons to learn for future research study. Although gatekeeper and administrator supports build trust and credibility with study participants, using gatekeepers during recruitment may facilitate or hinder participant recruitment (Namageyo-Funa et al., 2014). In addition, use of one recruitment tool resulted in low participation rate. Understanding the potential participants is

imperative in successful recruitment. While it may be inevitable to avoid the challenges with participant recruitment, it is significant to learn from previous experience and apply to future QI study.

APPENDIX A:

SUMMARY OF LITERATURE REVIEW ARTICLES

SUMMARY OF LITERATURE REVIEW ARTICLES

Reference	Research Question/Hypothesis or Concepts/Phenomena	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
Jäger, C., Szecsenyi, J., & Steinhäuser, J. (2015). Design and delivery of a tailored intervention to implement recommendations for multimorbid patients receiving polypharmacy into primary care practices. ***BioMed Research International*****, *2015*. doi: 10.1155/2015/938069**	To improve the implementation of guideline recommendations for polypharmacy into practice, considering individual barriers	Use qualitative approaches (group discussions, interviews, workshop) targeted at health care professionals and patients to identify barriers for implementation of the named recommendations and strategies to address these barriers.	Sample: 12 general practitioners and 8 health care assistants from 8 practices participated in workshop. The workshop was held in Feb 2014 and lasted for 4 hours and took place in a seminar room of a hospital located in the surrounding area of the practices Setting: primary care practice in Germany	Data Collection: Primary care physicians, who were enrolled in a GP-centred care contract of a large German health insurance, and patients aged >50 years, suffering from at least 3 chronic conditions and being prescribed more than 4 drugs permanently, were targeted Data Analysis: Barriers for implementation and the corresponding strategies to address them have been identified, workshop (focused on knowledge, awareness, and skills) for health care professionals and educational materials for patients have been developed, Practice teams elaborate individual concepts of how to implement the recommendations into their practice. Workshop has been evaluated by the participants by means of questionnaires.	Results of the group work: 41 possible sources of errors and 41 strategies to avoid them on the various levels of the medication process were found. Results of the evaluation: 14 of 20 participants completed the evaluation questionnaire. Majority of the participants evaluated the workshop overall positively: 93% were content with the practical relevance and 79% stated that the participation in the training was overall worthwhile.
Stewart, A. L., & Lynch, K. J. (2014). Medication discrepancies	To describe the types and causes of medication discrepancies that persist despite pharmacist led medication	Observational case series study of established patients	Sample: 40 patients (age 23 to 64 years, mean 49 years) with >= 2 med rec encounters	Data Collection: study included patients from previous study for whom there was at least 2 medication reconciliation encounters, established patients	The mean number of medications reported by the patient was not changed between baseline and follow-up, 4.5 (range 1-9)

despite pharmacist led medication reconciliation: The challenges of maintaining an accurate medication list in primary care. *Pharmacy Practice*, *12*(1). Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3955863/	reconciliation targeted at correcting discrepancies between patient-reported medications and medications listed in the outpatient EMR		following initial visit: 23 (58%) female, 19 (47.5%) African American, 19 Caucasian, 2 Latino or other. Baseline: 117 charted medications, 178 reported medications, 110 discrepancies. Follow-up: 158 charted medications, 186 reported medications, 102 discrepancies. Setting: an urban, indigent care clinic (primary care)	only Data Analysis: All data were entered from the scannable data collection form directly to Microsoft Access 2007 and were analyzed using IBM SPSS Statistics and Minitab version 15.1. Inferential statistics were conducted using Paired-t test for continuous variables, McNemar's test for ordinal data, Chi-squared and Fisher's exact test for dichotomous variables. A patient specific discrepancy rate was calculated for each visit by dividing the number of discrepancies present by the number of medications listed on the chart	and 4.7 (range 0-11) respectively. The mean number of medications listed in the chart increased from 2.9 (range 1-9) at baseline to 4 (range 1-11) at follow-up. Discrepancy at baseline: 39 patients (97.5%) and at follow-up: 33 (82.5%), 14.5% reduction in the number of patients with a discrepancy. The mean patient specific discrepancy rate at baseline (0.994) was not significantly different from the mean discrepancy rate at follow-up. Discrepancies with medications listed in the EMR are persist despite a standardized method for medication reconciliation led by a pharmacist. The discrepancies with medication not listed in the chart are related to use of OTC meds: need for med rec to be conducted at each interface of care where changes are made and to engage the patient in making regular updates to their own med list.

Vejar, M. V., Makic, M. B. F., & Kotthoff- Burrell , E. (2015). Medication management for elderly patients in an academic primary care setting: A quality improvement project. *Journal of the American Association of Nurse Practitioners*, *27*(2), 72-78. doi: 10.1002/2327-6924.12121	To improve medication management in a geriatric primary care practice. To decrease the risk for potentially preventable ADEs caused by drug-drug interactions, medication duplication, and the use of potentially inappropriate medications for the elderly through improved medication management and medication reconciliation. Goals: 1.Improving medication reconciliation documentation 2.Increasing number of patients that brown-bag 3.Reducing use of high-risk OTC medications 4.Reducing duplicate medication therapy	Quality improvement project: pre- and postintervention design	Sample: senior patients, average age 81 years (a range of 51-102 years) Setting: primary care practice (senior's clinic)	Data Collection: a preintervention time frame was from Oct 2010 to May 2011 and postintervention data assessment took place in June 2011-Jan 2012. Multiple interventions based on literature, team feedback, and monthly reviews of outcome progress. Open communication. Excel was used Data Analysis: Several Plan-DO-Study-Act (PDSA) cycles were completed for each specific aim. Several interventions were implemented to improve outcomes 1-4. Benchmark data, 1 month of preintervention observations, were compared to the last month of observations, at the conclusion of 1-year project. SPSS version 19 and VassarStats were used	Strategies to engage patient may have benefit in reducing this discrepancy. 1.successfully documenting medication reconciliation rate in preintervention was 64% and postintervention was 96%. Of these 576 data points, 360 chart reviews in preobservation period and 216 were in postobservation period. The overall improvement in provider documentation of medication reconciliation was statistically significant. Cramer's V of 0.40 suggests a moderate strength of association between the interventions and outcome of medication reconciliation. 2.At baseline, percentage of patients who brought all their medications were 0%. Post intervention, 64%. Of 277 data points, 61 were in the preintervention phase and 216 were in the post intervention phase. Statistically significant improvement in the number of patients who brown-bagged. Cramer's V of 0.67 suggests a moderately strong association between the interventions and outcome. 3.At baseline, 46% of

					patients reported using one or more high-risk and potentially dangerous OTC medications and 17% of patients in postintervention. Total 216 charts: 51 were in the preintervention data and 216 were in the postintervention data. Statistically significant reduction in the use of high-risk medications. Cramer's V of 0.31 suggested a weak association between interventions and outcome of reducing the use of potentially dangerous OTC meds. 4. 80% of providers and pharmacist felt duplication was a problem less than 25% of the time and 20% felt it was between 25% and 50%. 267 charts in preintervention group: 51 charts in preintervention and 216 charts in postintervention. At baseline, patients were using duplicate medication 39% of the time and 1% post data, a 38% reduction. Statistically significant decrease in duplicate medication therapy. Cramer's V of 0.47 suggested a moderately strong association between the intervention and the

			reduction in duplication medication usage. Most effective interventions: reminder notes posted in each exam room and monthly discussions with the providers regarding the current compliance rates. Education played a significant role in increasing medication reconciliation rates and patients brown-bagging meds. The most effective interventions for increased brown bagging: the automated phone reminder system. Brown bagging was an effective tool in improving accuracy of medication lists. Improvements in medication management throughout this project increased accuracy of existing patient med lists and potentially assisted with reducing preventable ADEs. The collaborative team approach used was effective in improving medication management.

Sarzynski, E. M., Luz, C. C., Rios-Bedoya, C. F., & Zhou, S. (2014). Considerations for using the 'brown bag' strategy to reconcile medications during routine outpatient office visits. *Quality in Primary Care*, *22*(4), 177-187. Retrieved from http://zp9vv3zm2k.search.serialssolutions.com/?V=1.0&sid=PubMed:LinkOut&pmid=25695529	To determine if 'brown bag' practices performed during routine office visits improve the accuracy of provider-documented medication lists	Cross-sectional pilot	Sample: 46 elderly (65 years or older) patients Setting: a university affiliated community geriatric clinic, primary care	Data Collection: Patients self-selected into two groups: 'brown-baggers' (BBs) and 'non-brown-baggers' (NBBs) Data Analysis: Three medication lists were compared for each patient: provider-documented in patient's chart, researcher – generated by post appointment semi-structured interview, post-appointment semi-structured telephone interview. Accuracy of charts and point-of-care (POC) lists were compared with reference lists among BBs and NBBs. Fisher's exact test and t tests compare proportions and mean differences between BBs and NBBs.	72%) patients brought some of their medications to scheduled appointments (BBs), of these, 39% bagged all of their medications. 35% of provider documented chart lists were complete; only 6.5% were accurate. Some 76% of chart-documented medication lists contained inclusion, omission and/or dosing instruction discrepancies, with no differences between BBs and NBBs. Chart lists contained two to three times more discrepancies than lists generated at POC. Lists generated by semi-structured interviewing, regardless of BB status, are more accurate than chart lists

Wolff, C. M., Nowacki, A. S., Yeh, J. Y., & Hickner, J. M. (2014). A randomized controlled trial of two interventions to improve medication reconciliation. ***The Journal of the American Board of Family Medicine*****,** ***27*****(3), 347-355. doi: 10.3122/jabfm.2014.03.130240**	To assess the impact of 2 interventions on agreement between electronic medical record medication lists and what patients report actually taking	Factorial randomized trial	Sample: 440 patients visiting 20 primary care physicians, 367 completed the study Setting: 2 Cleveland Clinic family health centers	Data Collection: patient criteria: English speaking, 18 and older, taking at least 2 medications. Randomization using a block approach so each set of 4 patients was assigned to 1 of the 4 groups in a random order. Study coordinator listened to each recording to determine whether the MA asked the proper question and the duration of the medication review. A pharmacist conducted a detailed telephone interview with patients and/or caregivers, and noted any discrepancies Data Analysis: REDCap (Research Electronic Data Capture) tool was used. Descriptive statistics to summarize data	Agreement rates between medication lists and patient report for the 4 study groups: 67.4% in the no intervention group, 66.7% in the printed list only group, 58.1% in the open-ended question only group, and 75.6% in the combined intervention group. Both a printed list and beginning a medication discussion with an open-ended question were required before any significant increase in agreement was observed. Neither intervention alone improved the agreement between patient-reported and EMR medication lists. However, the significant interaction of the 3 interventions suggests that efforts toward improving medication list agreement are more likely to succeed when they use a multistep approach

Lainer, M., Mann, E., & Sönnichsen, A. (2013). Information technology interventions to improve medication safety in primary care: a systematic review. ***International Journal for Quality in Health Care, 25*****(5), 590-598. doi: 10.1093/intqc/mzt043**	To provide a systematic review about the effects of information technology (IT) interventions on medication safety	Systematic review	Sample: 3918 studies Setting: primary care	Data Collection: study selection criteria: randomized control trials (RCTs), if interventions based on IT, preformed in primary care and outcomes reported on medication safety Data Analysis: Two reviewers independently screened titles and abstracts of studies. A third reviewer was involved if consensus could not be reach when there were discrepancies between two reviewers.	10 RCTs met the inclusion criteria, of the six studies evaluating computerized provider order entry (CPOE) with clinical decision support (CDS), only 3 studies effectively reduced unsafe prescribing. Both pharmacist-led IT interventions decreased the prescription of potentially inappropriate medication or unsafe prescribing in pregnancy. No reduction of ADEs was achieved by a web program or a TeleWatch system intervention. CPOE with CDS was effective if targeted at a limited number of potentially inappropriate medications. IT interventions with inter-professional communication appear to be effective.
Mason, N. A. (2011). Polypharmacy and medication-related complications in the chronic kidney disease patient. ***Current***	To review the recent literature regarding medication-related problems in CKD and propose initiatives for addressing these problems through a structured review process and use of	Literature review	Sample: unknown Setting: outpatient and inpatient	Data Collection: unknown Data Analysis: unknown	Medication-related problems include therapeutic issues as well as non-adherence and medical record discrepancies, such as: untreated condition, unneeded medication, suboptimal drug selection, subtherapeutic dosage, over-

***Opinion in Nephrology and Hypertension*, *20*(5), 492-497. doi: 10.1097/MNH.0b013e328349c261**	patient-centered adherence-promoting strategies.		dosage, adverse drug reaction, drug interaction, failure to receive therapy due to nonadhereance, cost or accessibility, inadequate laboratory monitoring, failure to meet treatment goals, medication record discrepancies, and education needed (patient or healthcare professional). Medication-related problems are best addressed using a structured, interdisciplinary, patient-centered approach of medication review conducted by a pharmacist. Structured medication optimization and reconciliation process: Obtain an accurate medication history; assess for medication-related problems using the medication history, medical record, refill records and lab data; evaluate adherence and potential barriers to adherence; reconcile patient's home medication use with the medical record; assess or establish the monitoring plan; document updated medication list, other findings and the plan

					in the medical record.
Lang, S., Garrido, M. V., & Heintze, C. (2016). Patients' views of adverse events in primary and ambulatory care: A systematic review to assess methods and the content of what patients consider to be adverse events. *BMC Family Practice*, *17*(1), 6. doi: 10.1186/s12875-016-0408-0	To produce a comprehensive summary of the published literature assessing patients' views on adverse events	A systematic review	Sample: 19 studies Setting: primary and ambulatory care	Data Collection: use of data base searches (MEDLINE, OvidSP, CINAHL, Cochrane Library, PsycInfo, ScienceDIrect) with additional reference and hand searching. Search strategy MeSH-term relating to adverse events, incident reporting, and outpatient care. Studies exclusively based on hospital data as well as the professionals' point of view was excluded. Data Analysis: included articles were abstracted for publication metadata, country, type of healthcare setting, sociodemographic characteristics of sample and results concerning patients' perspective on adverse events. Methods used to interrogate participants' opinions were analyzed using an adapted version of Schwartz's interview structure. Structured or unstructured questions and open- or close-ended answers were used to specify to which extent patients were free to express their opinion.	An important field of patient participation in prevention of adverse events was proposed in the medication process. Communication problems were shown to have implications on the occurrence of technical medical aspects (errors in diagnosis) and patients' satisfaction of their care. Communication factors played an important role in the occurrence and consequence of adverse events and patients' satisfaction Unsatisfied patients were more likely to recognize adverse events. Efficient communication could have positive consequences in different ways: direct prevention of adverse events, reducing psychological distress for the patients, increased patient satisfaction and therefore reduced susceptibility to adverse

			events., misinterpretation of normal challenges in diagnosis or treatment. Studies emphasized patients' role in ensuring medication safety in primary care. Suggested actions: monitoring side effects, ensuring the correct medication dose and uncovering dispensing errors.
Mason, N. A., & Bakus, J. L. (2010). Strategies for reducing polypharmacy and other medication-related problems in chronic kidney disease. *Seminars in Dialysis, 23*(1), 55-61. doi: 10.1111/j.1525-139X.2009.00629.x	Sample: unknown Setting: inpatient and outpatient	Data Collection: unknown Data Analysis: unknown	A process for medication reconciliation and optimization: 1.Obtain an accurate medication list from the patient 2.Evaluate whether all medications are medically necessary (extra medication) or whether any medications need to be added) medication omission) 3.Assess whether current therapy represents the "drug of choice" or each indication, individualized for each patient 4.Evaluate the medication dosage and regimen. 5.Screen for drug interactions and adverse effects 6.Assess the monitoring plan 7.Determine whether there

					are any barriers to patient adherence 8.Identify and resolve any discrepancies between the medication list obtained from the patient and the medical record
Olaniyan, J. O., Ghaleb, M., Dhillon, S., & Robinson, P. (2015). Safety of medication use in primary care. ***International Journal of Pharmacy Practice*****, *23*(1), 3-20. doi: 10.1111/ijpp.12120**	To estimate the scale of medication errors as a problem across the medicines management system in primary care To review studies addressing the rates of medication errors To identify studies on interventions to prevent medication errors in primary care	Systematic review	Sample: 33 studies estimating the incidence of medication errors, 26 studies evaluating the impact of error-prevention interventions in primary care. Setting: Primary care	Data Collection: A systematic search of the literature in PubMed (MEDLINE), International Pharmaceutical Abstracts (IPA), Embase, PsycINFO, PASCAL, Science Direct, Scopus, Web of Knowledge, and CINAHL PLUS from 1999 to November, 2012. Bibliographies of relevant publications were searched for additional studies. Data Analysis: Search results were exported to Endnote X5 to remove duplicates. Articles titles and abstracts were reviewed for relevance and then clarify any ambiguities.	Medication errors are common with error rates between <1% and >90% The prescribing stage is the most susceptible. Elderly (>65 years) and children (<18 years) are more likely to experience significance errors. Individual interventions demonstrated marginal improvements in medication safety when implemented on their own. Targeting the more susceptible population groups and the most dangerous aspects of the system may be a more effective approach to error management and prevention. Co-implementation of existing interventions at points within the system may offer time- and cost-effective

					options to improving medication safety in primary care. Interventions to reduce medication errors are recommended.
Bregnhøj, L., Thirstrup, S., Kristensen, M. B., Bjerrum, L., & Sonne, J. (2009). Combined intervention programme reduces inappropriate prescribing in elderly patients exposed to polypharmacy in primary care. ***European Journal of Clinical Pharmacology*****, *65*(2), 199-207.**	To investigate whether a combined intervention consisting of an interactive educational meeting for general practitioners plus recommendations on specific patients would improve the overall appropriateness of prescribing compared to an interactive educational meeting alone or no intervention	Randomized, controlled intervention study	Sample: 41 general practitioners (GPs), 166 patients Setting: primary health care in Copenhagen County, Denmark	Data Collection: for each patient, 3 month of prescription data were collected before and after the intervention. Based on the data, GPs were asked to provide detailed information on patients' medical history before and after the intervention. The GPs were randomized to 3 interventions: a combined intervention, a single intervention, or a control group. Data Analysis: Kruskal-Wallis test and median test, chi-square test. The Wilcoxon signed rank test was used to test for significant changes in patient Medication Appropriateness Index (MAI) and number of the mediations in the intervention groups.	Medication appropriateness improved in the combined intervention group but not in the single intervention group. The mean change in MAI and number of medications was -5 [95% confidence interval (CI) -7.3 to -2.6] and -1.03 (95% CI -1.7 to -0.30) in the combined intervention group compared with the group with the educational meeting only and the no intervention group. A combined intervention consisting of an interactive educational meeting plus recommendations given by a clinical pharmacologists/pharmacists concerning specific patients can improve the appropriateness of prescribing among elderly patients exposed to polypharmacy.

Cullinan, S., O'Mahony, D., & Byrne, S. (2016). Application of the structured history taking of medication use tool to optimise prescribing for older patients and reduce adverse events. *International Journal of Clinical Pharmacy*, *38*(2), 374-379.	To determine whether application of Structured HIstory taking of Medication use (SHiM) tool could optimize older patients' prescriptions on admission to hospital, and in turn reduce adverse events, compared to standard care.	Prospective observational study as a sub-study of an ongoing, larger randomized controlled trial	Sample: 123 patients > age of 65 Setting: hospital setting, emergency department	Data Collection: 100 patients > age of 65 presenting at the emergency department with an acute illness, >= 3 chronic medical disorders and not under the care of a geriatrician were included in the study. A modified of SHiM consisting of 18 questions was used to obtain accurate drug histories. Researchers conducted a structured interview with patients within 72 hours of arrival to the emergency department, after the attending physician has obtained a medication list via standard methods. Discrepancies between the two lists were recorded and classified, and the clinical relevance of the discrepancies was determined. Data Analysis: statistical analyses were performed in IBM SPSS Statistics version 22. Descriptive statistics were applied to summarize the baseline characteristics and to describe the number and type of discrepancies.	200 discrepancies were identified. 90 patients (73%) had at least one discrepancy with a median of 1.0 discrepancy per patient. 53 (26.5%) were classified as 'unlikely to cause patient discomfort or clinical deterioration', 145 (72.5%) as 'having potential to cause moderate discomfort or clinical deterioration', and 2 (1%) as 'having potential to cause severe discomfort or clinical deterioration'. Of the 200 discrepancies identified, 2 (1%) resulted in adverse events. The results suggest SHiM is an effective medication reconciliation tool and does identify discrepancies with potential for patient harm.

Jäger, C., Freund, T., Steinhäuser, J., Stock, C., Krisam, J., Kauffmann-Kolle, P., …, & Szecsenyi, J. (2017). Impact of a tailored program on the implementation of evidence-based recommendations for multimorbid patients with polypharmacy in primary care practices-results of a cluster-randomized controlled trial. *Implementation Science*, *12*(8), 1-13. doi: 10.1186/s13012-016-0535-y	To assess the effect of a tailored program to improve the implementation of three important processes of care for this patient group: (a) structured medication counseling including brown bag reviews, (b) the use of medication lists, and (c) structured medication reviews to reduce potentially inappropriate medication.	A cluster-randomized controlled trial with a follow-up time of 9 months.	Sample: 21 general practitioners (GPs) (10 intervention group, 11-control group), 273 patients (130 - intervention group, 143- control group) Setting: General practice –centered care contract of one large German health insurance, Germany	Data Collection: Recruitment of practices from May 2013 to August 2013, recruitment of patients from September 2013 to December 2013. In the end of 2014, the intervention started with the workshop and the handing over resources of the participants. On 15th of Oct 2014, the intervention ended with the database closure for documentation of medication counseling. Then follow up data of patients GPs were collected. Data Analysis: intervention-to-treat approach was used. All statistical tests were two-sided and a significance level of alpha =0.05 was used	The increase in the degree of implementation was 4.2 percentage points higher in the intervention group compared to the control group. Two of the indicators were significantly improved in the intervention group: medication counseling (p=0.017) and brown bag review (p=0.013). Secondary outcomes showed effect on patients' self-reported use of medication lists when buying drugs in the pharmacy (p=0.03). The tailored program may improve implementation of medication counseling and brown bag review where as the use of medication lists and medication reviews did not improve.

Moral, R. R., de Torres, L. A. P., Ortega, L. P., Larumbe, M. C., Villalobos, A. R., García, J. A. F., ... & Study, C. G. A. A. (2015). Effectiveness of motivational interviewing to improve therapeutic adherence in patients over 65 years old with chronic diseases: a cluster randomized clinical trial in primary care. ***Patient Education And Counseling*****,** ***98*****(8), 977-983.**	To evaluate the effectiveness of motivational interviewing (MI) in improving medication adherence in older patients being treated by polypharmacy.	Cluster randomized clinical trial	Sample: 16 primary care centers, 27 health care providers (32 experimental (EG) or control group (CG), 154 patients (70 EG, 84 CG). Setting: primary care centers	Data Collection: interventions in both groups include MI training program and review of patient treatments. Providers in the EG carried out MI, whereas those in CG used an "advice approach". Three follow-up visits were completed, at 15 days and at 3 and 6 months. Medication adherence in both groups was compared. Data Analysis: Student T-test and chi-squared test were used for analyzing differences between groups at baseline, McNemar's test for assessing adherence, Absolute Risk Reduction, Relative Risk Reduction, and Number Needed to Treat were also calculated.	The proportion of subjects changing to adherence was 7.6% higher in the EG ($p<0.001$). Therapeutic adherence was higher for patients in EG (OR=2.84)., women (OR=0.24) and those with high educational levels (OR=3.93). A face-to-face motivational approach in primary care helps elderly patients with chronic diseases who are being treated by polypharmacy to achieve an improved level of treatment adherence than traditional strategies of providing information and advice.
Roth, M. T., Ivey, J. L., Esserman, D. A., Crisp, G., Kurz, J., & Weinberger, M. (2013). Individualized medication assessment and planning: optimizing medication use in older adults in	To test the feasibility and effectiveness of an individualized Medication Assessment and Planning (iMAP) program integrated within a primary care practice on the number and prevalence of medication-related problems (MRPs) and acute health services utilization.	Prospective, observational pilot study	Sample: 64 patients aged 65 years and older who were taking at least 5 medications Setting: community-based primary care medical practice	Data Collection: pharmacist reviews the patient's medical record, and at a face-to-face visit, the pharmacist conducts the comprehensive medication review, talking with patients about their medications, and systematically assessing all medications for appropriateness, effectiveness, safety, affordability and convenience. The information is used to identify potential MRPs and	Significant reduction in mean number of MRPs/patient (4.2 at baseline vs 1.0 at 6 mo, $p<0.0001$). The prevalence of MRPs at 6 months compared with baseline was also significant ($p<0.0008$). Acute health services utilization was assessed by medical record abstraction. The 64 patients experienced

the primary care setting. ***Pharmacotherapy : The Journal of Human Pharmacology and Drug Therapy*****,** ***33*****(8), 787-797.**				develop an individualized medication assessment and plan. Then the pharmacist communicates the plan to the primary care provider. Once consensus is reached, the pharmacist implements the plan and provides education to the patients. Then reconcile the medication and documentation. Data Analysis: Generalized linear mixed model to assess a change from baseline to 6 months for the number and prevalence of MRPs. Descriptive statistics for prevalence and average number of MRPs. SAS software version 9.2	a rate of 8.3 events/100 person-months (64 total events) during he 12 month pre-study period. During the 6 month-study period , the same patients experienced 5.4 events/ 100 person-months (20 total events). Noted a reduction in acute health services utilization of 35%. iMAP has the potential to address the burden of managing and continuously monitoring multiple medications in medically complex older adults.
Wittink, M. N., Yilmaz, S., Walsh, P., Chapman, B., & Duberstein, P. (2016). Customized Care: An intervention to Improve Communication and health outcomes in multimorbidity. ***Contemporary Clinical Trials Communications*****,** ***4*****, 214-221.**	To examine the effect of Customized Care on patient-primary care provider (PCP) communication and patient health outcome, including depression, anxiety, and functional outcomes.	Randomized clinical pilot study	Sample: 60 patients and 12 PCPs were enrolled over 6 months Setting: primary care clinics	Data Collection: Patients were randomized to intervention or usual care via embedded computer program and block randomization by PCP was used. Participants completed an assessment of their confidence communicating about day-to-day challenges with their PCP using item adapted from the perceived competence scale. Immediately after the visit, patients again completed the communication confidence items and 2 assessments of their perceptions of asymmetry in the patient-PCP relationship: perceived autonomy support items. Assessment again at 4 and 8-	Customized Care intervention comprises two components: 1.A computer-based discussion prioritization tool designed to empower patients to communicate their health related priorities. 2.A customized question prompt list tailored to these priorities. It is expected that Customized Care will improve patient-PCP communication about day-to-day challenges, which can lead to better health

	week telephone follow up. Audio record was used at visits. Data Analysis: Coding manual was developed to compare the intervention and usual care groups. All audio-recorded visits were transcribed by a certified medical transcriptionist.	outcomes.

APPENDIX B:

THE STRUCTURE REVIEW CHECKLIST

THE STRUCTURED REVIEW CHECKLIST

(Adopted from Mason and Bakus (2010))

- Obtain an **accurate medication list** from the patient
- Evaluate whether all medications are medically necessary (**extra medication**) or whether any medications need to be added (medication omission)
- Assess whether current therapy represents the "**drug of choice**" for each indication, individualized for each patient
- Evaluate the **medication dosage and regimen**
- Screen for **drug interactions and adverse effects**
- Assess the **monitoring plan**
- Determine whether there are any **barriers to patient adherence**
- Identify and **resolve any discrepancies** between the medication list obtained from the patient and the medical record

APPENDIX C:

IRB APPROVALS

Human Subjects
Protection Program

1618 E. Helen St.
P.O.Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
http://rgw.arizona.edu/compliance/home

Date:	September 20, 2017
Principal Investigator:	Tyanne Tuyen Van
Protocol Number:	1709833478
Protocol Title:	Medication Management in Primary Care: A Structured Review Checklist for Primary Care Providers
Determination:	Human Subjects Review not Required

The project listed above does not require oversight by the University of Arizona because the project does not meet the definition of 'research' and/or 'human subject'.

- **Not Research as defined by 45 CFR 46.102(d):** As presented, the activities described above do not meet the definition of research as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge".
- **Not Human Subjects Research as defined by 45 CFR 46.102(f):** As presented, the activities described above do not meet the definition of research involving human subjects as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention ***or*** interaction with the individual, or identifiable private information".

Note: Modifications to projects not requiring human subjects review that change the nature of the project should be submitted to the Human Subjects Protection Program (HSPP) for a new determination (e.g. addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the research question). Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

October 6, 2017

Tyanne Van, DNP

RE: NRDUC Project: 1709833478: Medication Management in Primary Care: A Structured Review Checklist for Primary Care Providers
New Project UA Determination of Human Research Application Version 2016-07; forwarded to Non-Research Data Use Committee on 9/20/2017
Non-Research Data Use Committee Evaluation: Approved on 10/6/2017

Dear Tyanne Van,

Thank you for your submission of the UA Determination of Human Research Form which outlined the above noted project. On 9/20/17 UA IRB concluded that this project was not research and subsequently forwarded it to the Banner Health Non-Research Data Use Committee (NRDUC) for oversight and review.

The project information you provided was reviewed and subsequently approved on October 6, 2017 by the BH NRDUC. Should you have any questions or concerns please feel free to reach out to the NRDUC chair at any time.

PLEASE NOTE

The NRDUC determination is based on the information you provided to the committee on your application version 2016-07 and supporting documents forwarded to the NRDUC on 9/20/2017. If the project is modified in any way, including re-analysis of data, the determination is no longer valid. You must resubmit the project to the NRDUC for review and approval.

Please note: As part of continuing process improvement, random audits could be conducted to assess compliance and adherence with submitted/approved applications.

A copy of this letter will be placed in the NRDUC project file.

Sincerely,

Kristen Eversole, BS, RHIA, CHPC
Banner Health Privacy Program Director – University Medicine, NRDUC Chair

APPENDIX D:

DESCRIPTIVE LETTER OF INTENT

DESCRIPTIVE LETTER OF INTENT

Dear valued health care provider,

My name is Tyanne Van and I am a Family Nurse Practitioner Student obtaining a Doctorate Degree of Nursing Practice at the University of Arizona College of Nursing. My area of interest is medication management process within primary care settings. For my Doctor of Nursing Practice project, I am conducting a brief online survey of primary care providers practicing in an outpatient setting within Arizona to determine the perceived usefulness, perceived ease of use, and behavioral intention of use regarding The Structured Review Checklist, which is attached to this email. **If you are an Arizona health care provider currently practicing in a primary care setting, please read on!**

Medication discrepancy is one of common medication related problems causing medication errors in health care. The Structured Review Checklist is recommended as a process for evaluation of medication therapy and resolution of medical record discrepancies during medication reconciliation and management to optimize care, reduce medication errors, and decrease health care cost for primary care providers.

In collaboration with my academic advisor, Dr. Shea, I am conducting a brief, electronic survey of Arizona primary care providers to assess the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. I am inviting you to participate in this research study by using the Structured Review Checklist with one patient and then completing the survey. The Structured Review Checklist and the link to the survey are at the bottom of this email. It should take no longer than 15 minutes to complete the survey. Your response will be anonymous.

An Institutional Review Board responsible for human subjects research at the University of Arizona and Banner Health reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Completion of the survey and participation in this project is voluntary. If you complete the survey, you are confirming that you voluntarily consent to participate in this project and you understand that participation is not a condition of employment at Banner Heath. You may complete this survey at work. If you elect to complete the survey on your own time, you will not be paid for your time spent on completing the survey. You are free to stop the survey at any time. There are no compensation for responding nor is there any known risk associated with this study.

Attached is the Structured Review Checklist (will be attached in the email that sent out to participants)

Please click on the survey link below and complete the survey by November 3, 2017. Please use the Structured Review Checklist with one patient during the medication reconciliation process and then complete the survey.
https://uarizona.co1.qualtrics.com/jfe/form/SV_a3gVwS2rP4J8V9P

Thank you in advance for your interest and taking the time to assist me in my educational endeavors! If you require additional information or have questions, please contact me at the email address listed below.

Sincerely,

Tyanne Van, BSN, RN
DNP-FNP Student (tvan@email.arizona.edu)
The University of Arizona, College of Nursing

APPENDIX E:

REMINDER EMAIL #1

REMINDER EMAIL #1

Subject: REMINDER: Survey of the Structured Review Checklist

Dear valued health care provider,

You may have already received an email inviting you to participate in the survey regarding the Structured Review Checklist. If you have already use the Structured Review Checklist for one patient and completed the online questionnaire, please accept my thanks and delete this email as no further involvement is required. If you have not completed the questionnaire, please take the time to consider helping me with this important research.

I am inviting you to use the Structured Review Checklist for one patient and complete the online survey (both are attached to this email at the end). The Structured Review Checklist is recommended as a process for evaluation of medication therapy and resolution of medical record discrepancies during medication reconciliation and management to optimize care, reduce medication errors, and decrease health care cost for primary care providers. The electronic survey is to assess the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. It should take no longer than 15 minutes to complete the survey. Your response will be anonymous.

By completing and submitting the survey, you are giving consent for your response to be included in the study. Your participation in this study is voluntary, and you are free to stop the survey at any time. There are no compensation for responding nor is there any known risk associated with this study.

Attached is the Structured Review Checklist (will be attached in the email that sent out to participants)

Please click on the survey link below and complete the survey by November 3, 2017. Please use the Structured Review Checklist with one patient during the medication reconciliation process and then complete the survey.
https://uarizona.co1.qualtrics.com/jfe/form/SV_a3gVwS2rP4J8V9P

Thank you in advance for your interest and taking the time to assist me in my educational endeavors! If you require additional information or have questions, please contact me at the email address listed below.

Sincerely,

Tyanne Van, BSN, RN
DNP-FNP Student (tvan@email.arizona.edu)
The University of Arizona, College of Nursing

APPENDIX F:

REMINDER EMAIL #2

REMINDER EMAIL #2

Subject: REMINDER: Survey of the Structured Review Checklist

Dear valued health care provider,

You may have already received an email inviting you to participate in the survey regarding the Structured Review Checklist. If you have already use the Structured Review Checklist for one patient and completed the online questionnaire, please accept my thanks and delete this email as no further involvement is required. If you have not completed the questionnaire, please take the time to consider helping me with this important research. You have two days to complete the survey and the survey will be close on November 3, 2017.

I am inviting you to use the Structured Review Checklist for one patient and complete the online survey (both are attached to this email at the end). The Structured Review Checklist is recommended as a process for evaluation of medication therapy and resolution of medical record discrepancies during medication reconciliation and management to optimize care, reduce medication errors, and decrease health care cost for primary care providers. The electronic survey is to assess the perceived usefulness, perceived ease of use, and behavioral intention of use regarding the Structured Review Checklist. It should take no longer than 15 minutes to complete the survey. Your response will be anonymous.

By completing and submitting the survey, you are giving consent for your response to be included in the study. Your participation in this study is voluntary, and you are free to stop the survey at any time. There are no compensation for responding nor is there any known risk associated with this study.

Attached is the Structured Review Checklist (will be attached in the email that sent out to participants)

Please click on the survey link below and complete the survey by November 3, 2017. Please use the Structured Review Checklist with one patient during the medication reconciliation process and then complete the survey.
https://uarizona.co1.qualtrics.com/jfe/form/SV_a3gVwS2rP4J8V9P

Thank you in advance for your interest and taking the time to assist me in my educational endeavors! If you require additional information or have questions, please contact me at the email address listed below.

Sincerely,

Tyanne Van, BSN, RN
DNP-FNP Student (tvan@email.arizona.edu)
The University of Arizona, College of Nursing

APPENDIX G:

SURVEY ITEMS

SURVEY ITEMS

1. Are you a health care provider who is currently working in a primary care setting?

   Yes

   No [Thanks for your interest, but you are not eligible to proceed through the survey]

Perceived Usefulness

Please mark the one response to each item that best reflects your opinion. There are no right or wrong answers.

Items are scored on Likert-type scales with response options ranging from 1 to 6 as below:

1-Strongly Disagree 2-Disagree 3-Somewhat Disagree 4-Somewhat Agree 5-Agree 6-Strongly Agree

2. Using this Structured Review Checklist would save me time.
3. This Structured Review Checklist enables me to accomplish medication management process more quickly.
4. This Structured Review Checklist addresses my needs during medication management process.
5. Using this Structured Review Checklist improves my job performance.
6. Using this Structured Review Checklist allows me to accomplish more work than would otherwise be possible.
7. Using this Structured Review Checklist enhances my effectiveness during medication management process.
8. Using this Structured Review Checklist improves the quality of medication management process.

9. Using this Structured Review Checklist makes it easier to reconcile medication.
10. Overall, I find that using this Structured Review Checklist is useful for medication management process.

Perceived Ease of Use

Items are scored on Likert-type scales with response options ranging from 1 to 6 as below:

1-Strongly Disagree 2-Disagree 3-Somewhat Disagree 4-Somewhat Agree 5-Agree 6-Strongly Agree

11. I may become confused when I use this Structured Review Checklist.
12. I make errors frequently when I use this Structured Review Checklist.
13. Interacting with this Structured Review Checklist is often frustrating.
14. Interacting with this Structured Review Checklist requires a lot of mental effort from me.
15. I find it easy to recover from errors I encounter while using this Structured Review Checklist.
16. This Structured Review Checklist is rigid and inflexible to interact with.
17. I find it easy to manage the patient's medication reconciliation process with this Structured Review Checklist.
18. The Structured Review Checklist is easy for me to understand and follow.
19. It is easy for me to remember how to perform medication reconciliation using this Structured Review Checklist.
20. This Structured Review Checklist provides helpful guidance in medication management process.
21. Overall, I find this Structured Review Checklist easy to use.

Behavioral intention to use

22. If the Structured Review Checklist was available for regular use during medication management process in electronic health record, would you use it?

    Yes

    No

Feedback

23. Did you use the Structured Review Checklist?

    Yes

    No

24. What would you suggest about the Structured Review Checklist? Please provide your comment below:

    _____

    _____

25. Are you currently using any tool for medication reconciliation in your practice?

    Yes

    No

26. Is there a medication reconciliation process currently available in your practice?

    Yes

    No

Demographics

27. Are you a

    Doctor ____

    Nurse Practitioner _____

    Physician Assistant _____

    Other (Please specify) _____

28. On average, how many hours a month are you in practice

    _____ hours

29. How many years have you been in practice as a doctor or a nurse practitioner

    < 1 year

    1-5 years

    6-10 years

    11-15 years

    16-20 years

    > 20 years

30. What is your age?

    _____ years old

31. What is your gender?

    Male _____

    Female _____

32. What is the highest level of education you have completed? (Please select one)

    Bachelor Degree

Master Degree

DNP Degree

PhD Degree

DNP and PhD (Dual) Degree

Medical Doctor or Doctor of Osteopathic Degree

Other (Specify): _____

33. Which choice best describes your ethnic background? (Please choose one)

Hispanic or Latino

Not Hispanic or Latino

Unknown

34. Which choice best describes your racial background? (Please choose one)

American Indian/Alaskan Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

More than one race

Unknown

Thank you so much for participating and taking time to answer this survey!

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