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Medication reconciliation policy analysis: A collaborative project with the principal hospital in Cayman Islands health system

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Medication Reconciliation: A Collaborative Policy Analysis with a Hospital in Cayman Islands Health System

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Abstract

Medication errors, readmissions, and chronic disease management complications are modifiable healthcare problems. Standardized Medication Reconciliation (Med Rec) policies can impact healthcare organizations' patient safety by reducing these medication errors, decreasing readmission rates, enhance the management of chronic disease while also offering fiscal stewardship for healthcare systems. Medication management standardized policies are an expectation of systems aiming to gain Joint Commission (JC) accreditation. The principal hospital of the Cayman Islands does not have a medication reconciliation policy. Using The Eightfold Path to More Effective Problem Solving, multiple policy options that offer evidence-based recommendations were reviewed for consideration of a standardized Med Rec policy within the principal hospital organization. The analysis identified that clarity in Med Rec guidelines with standardized workflows offers the most cohesive policy development for the principal hospital in the Cayman Islands. The standardized Med Rec process offers the principal hospital in the Cayman Islands an enhancement in patient safety by reducing medication errors, readmissions, and chronic disease management for the local community and organization.

Keywords: Medication Reconciliation, Medication Safety, Joint Commission, Organization culture, Leadership structure, policy analysis

Medication Reconciliation Policy Analysis: A Collaborative Project with the Principal Hospital in Cayman Islands Health System

Medication discrepancies and adverse drug events (ADEs) remain among healthcare's most prevalent patient safety concerns. One in five persons experience a medication-related error in healthcare (NORC at the University of Chicago and IHI/NPSF Lucian Leape Institute, 2017). In Barnsteniers' (2008) seminal bookshelf report, The Institute of Medicine (IOM) reported that patients were exposed to one medication-related error per day of care. The Centers for Disease Control and Prevention (CDC) (2021) reports that medication discrepancies cause approximately 1.3 million emergency visits annually. Over 40% of these errors were associated with inadequacy of Med Rec, and 20% caused harm to the patient (Barnsteiner, 2008).

Standardized Med Rec in healthcare defines a collaborative process to prevent medication safety discrepancies (Barnsteiner, 2008). Med Rec is an all-inclusive, comprehensive list of the patient’s current home and newly ordered acute care medications. The list includes prescriptions, over-the-counter drugs, all supplements, and any new medications prescribed.

State the Problem

The principal healthcare organization in the Cayman Islands lacks a standardized Med Rec policy. This is concerning because the JC (2021) for Accreditation has identified that hospital medication management remains a primary concern. The scope of the local problem is unknown, and it is unclear which policy changes might be useful.

Thus, this policy analysis will address medication safety at the principal healthcare organization in the Cayman Islands to understand the problem and evaluate which policies are best suited to improve the problem locally. The investigator will assess the problem and evaluate Med Rec policies using The Eightfold Path to More Effective Problem-Solving methodology to identify the most relevant recommendations for this organization to improve Med Rec management (Bardach & Patashnick, 2020). Cayman Island's geographic, political, historical, and cultural characteristics were considered, and local evidence was gathered, as part of this policy analysis per the method (Bardach & Patashnick, 2020). A literature review is also required for the method and provides background information (Bardach & Patashnick, 2020).

Review of Literature

ADEs and Medication Discrepancies Defined

ADEs are defined as an event that causes harm to a patient secondary to exposure to medication (Agency for Healthcare Research and Quality, 2019). *Medication discrepancies* are defined as an error that occurs at any step of medication management, from the time of order until the time the patient receives medication (Agency for Healthcare Research and Quality, 2019). The terms medication discrepancies and ADEs are sometimes used interchangeably in the literature, and exact definitions vary. The term "medication discrepancies" best fits the ideas of this project and is used throughout this document. For this review of the literature, both ADEs and medication discrepancies are covered when the information is relevant, and the term used matches the source.

ADEs and Medication Discrepancies are Problematic

The literature examines patient safety and the financial burden of medication discrepancies on healthcare organizations. Medication discrepancies increase hospital admissions, prolong the length of stays, increase patient management expenses, and increase facility mortality rates (Rasool et al., 2020). Further, a study examining Med Rec errors revealed that 91% of Med Rec errors are clinically significant, and up to 2% are severe and potentially life-threatening (Harper et al., 2021). Da Silva and Krishnamurthy (2016), along with Moura et al. (2009), found that Med Rec strategies have decreased medication discrepancies financial burden in the United States from 177.4 billion dollars to 21 billion dollars over thirteen years of strategic efforts to reduce medication discrepancies. Although the problem of medication discrepancies affects patients and institutions globally, some specific populations are at a higher risk.

The problem of medication discrepancies affects people of all ages, but elderly patients may be at the highest risk. A study of pediatric patients found that 13% of reviewed patients had at least one medication discrepancy; of these, 85% were potentially causing harm (Abu Farha et al., 2018). Among elderly patients, one study found that 87% had at least one medication discrepancy at the time of discharge (Graabaek et al., 2019).

Additionally, there are moments in care that are at higher risk than others. A study about Med Rec specifically identified discharge as a time of concern for medication discrepancies and all transitions in care, including admission and any patient movement within the facility (Harper et al., 2021). Harper et al. (2021) identified admission as the most frequent time for discrepancies. In this study, almost 70% of events occurred during admission transcription of the medication list. A Med Rec review

after a transition in care led to most of the event discoveries (Harper et al., 2021). Although there are several suggested solutions to the problem of medication discrepancies, Med Rec is the most evidenced.

Medication Reconciliation is a Recommended Solution

The literature identifies the potential patient safety benefits of using a standardized Med Rec process and policy. As Duguid (2022) wrote, using a formalized structured approach involving patients and healthcare providers while being conducted in an environment of shared accountability, Med Rec can reduce the morbidity and mortality of medication errors that occur at interruptions in care. Med Rec is a cost-effective use of the health dollar and a critical element of patient safety (Duguid, 2022).

Several literature reviews highlight the benefits of Med Rec as a solution to the problem of medication discrepancies. Pevnick & Schnipper (2017) noted after a robust review of research that morbidity, mortality, and cost associated with ADEs are caused by inadequate Med Rec policies specifically. The same authors found that interventions including interdisciplinary teams of physicians, nurses, and medical assistants increased the occurrence of Med Rec documentation from only 9% to 91% in visits post-intervention. Surveying patients' post-visit increased patient knowledge of their medication list from 19% to 94% (Pevnick & Schnipper, 2017). As polypharmacy grows and the complexity of medication increases, it is essential for leaders to develop methods to improve and track Med Rec processes to ensure requirements are met for accreditation, cost-effectiveness, and patient safety.

Mekonnen et al. (2016) completed a systematic review summarizing pharmacy-led Med Rec programs' effects in hospitals. Twenty-one thousand three hundred forty-two patients from 17 studies were included in randomized controlled trials. The Med Rec process included completing Med Rec at any transition in care, discharge with patient counseling, and a post-visit follow-up call within 30 days. Overall, the efforts improved healthcare utilization and patient medication safety, supporting pharmacy-led Med Rec programs (Mekonnen et al., 2016).

A second meta-analysis of 11 studies to look at pharmacy-led Med Rec resulted in a statistically significant reduction in medication discrepancies (Choi & Kim, 2019). Patients who were present for care with several comorbidities and numerous medications benefited the most. Choi and Kim (2019) identified a 68% reduction of discrepancies between a pharmacy-led versus usual-led (physicians and nurses) Med Rec process in emergency departments of hospitals.

A final systematic review examined hospital improvements associated with electronic medication reconciliation (eMedRec) utilized via the electronic health record (Wang et al., 2018). Thirteen studies demonstrated a reduction in common medication discrepancies such as omission, dose, and frequency errors. At the same time, the authors concluded that research is still needed to identify if the effects are associated with eMedRec compared to other Med Rec programs in practice (Wang et al., 2018).

To summarize, standardized Med Rec policies are evidence-based tools to assist healthcare providers and keep patients safe. Med Rec policies streamline processes in workflow while promoting patient safety and system-wide stewardship in healthcare,

resulting in fewer medication discrepancies. There are a variety of Med Rec policies and needs, and there are recommended best practices for implementing Med Rec.

Med Rec Best Practices

Analysts consider numerous factors when evaluating Med Rec practices. The Institute for Healthcare Improvement (IHI) (2022) primary focus of Med Rec is to identify the most accurate list of all medications a patient takes. The list must include the patient's name, dosage, frequency, and route to ensure correct medications are being ordered and provided for patients (Midelfort, 2022). Recommendations include chart reviews to assess if the medication list exists, its accuracy, and the extent to which the list is helpful for patient care.

The IHI provides a tool for assessing Med Rec with step-by-step instructions for tallying the number of unreconciled medication errors to establish a baseline (NORC at the University of Chicago and IHI/NPSF Lucian Leape Institute, 2017). The IHI tool recommends forming a multidisciplinary team (minimum of a nurse, pharmacist, and physician) and selecting around 30 random charts for review. Next, divide the charts among team members to review. During the review, each team member aims to identify discrepancies in orders, compare all medication ordered with the patient's home medications, scan for other evidence to reveal errors or omissions, and review past ADEs. Team members also search for errors between the most recent discharge medications and the current list. Moreover, for transfer patients, the team scans for continued medications that cannot be prescribed in a new location. Finally, the team tallies errors found from unreconciled medications.

Another method for assessing Med Rec practices is to interview stakeholders. Interviewing both healthcare leaders and non-leaders may be beneficial. The literature shows that few healthcare leaders are aware of or involved in the process of Med Rec (Aires-Moreno et al., 2020). This is important because it is often the leaders who make decisions about policy. Thus, it is important to get insights from both leaders and others as part of policy analysis. Gaining insight from various sources aligns well with the implementation framework for this project.

Implementation Framework

The Eightfold Path to More Effective Problem Solving (The Eightfold Path) was used to evaluate the problem and analyze potential policies (Bardach & Patashnick, 2020). The Eightfold Path is often used in health policy with minor adaptations. The policy analysis method is comprised of eight iterative steps. They are described here linearly but often occur repeatedly in the process (Bardach & Patashnick, 2020). The initial step (Step 1) is to define the circumstances that have created the problem, which gives a reason for completing the work and directions for gathering evidence (Step 2). Evidence gathered includes reviewing the literature and gathering data (Bardach & Patashnick, 2020). The third step (Step 3) includes the construction of alternatives, identifying different policy recommendations to analyze the potential benefits, risks, and outcomes of recommendations for a thorough evaluation of equity and efficiency of policy (Step 4). The fifth step (Step 5) will project the outcomes of each recommendation leading into the sixth step (Step 6), which confronts the trade-offs of recommendations to determine the best path for the most successful policy outcomes. The seventh step (Step

7) allows the researcher to stop, focus, narrow, deepen and decide through a ciphering process what recommendations can provide the most impact to solve or mitigate the policy problem. Lastly, the eighth step (Step 8) allows the researcher to tell the story. The story includes each earlier step to share with the stakeholders, but to be the most impactful it needs to be designed to meet the audience, leaders, and reader's needs.

Summary

The reviewed literature highlights an apparent global problem with medication discrepancies and describes evidence and processes for analyzing and implementing Med Rec practices and policies as a solution. Further, the literature identifies patient safety as a direct consequence of unsafe medication practices. An overview of the local context is needed to better understand the local problem and guide policy recommendations.

Define the Context

Regulatory/Accreditation

Joint Commission (JC) (2022) originated in 1951 when multiple medical associations merged to form standards in healthcare for quality improvement and patient safety aims in the United States. Joint Commission International (JCI) was created in 1998 as a not-for-profit private affiliate of JC (The Joint Commission [JC], 2022). JCI (2022) is an extension of JC, which aims to meet the goals of healthcare quality improvement and patient safety globally using the same JC standards. JCI works to enhance healthcare in over sixty countries outside the United States to ensure quality healthcare worldwide (Joint Commission International [JCI], 2022a).

JC (2022) standards are created and used to measure, assess, and improve healthcare organizations' performance. The standards are used as an evaluative program to set expectations for organizational performance. JC standards are developed using healthcare professionals, topic experts, consumers, and government agencies who utilize literature and seek a consensus by a Board of Commissioners. Annually JC collects data regarding current patient safety concerns. Using this data, the National Patient Safety Goals (NPGS) are created. The NPSG is tailored to meet specific program needs; for example, specific goals are created for hospitals (JC, 2022).

JC (2022) standards are fundamental in the evaluation process to aid international hospitals' abilities to measure, assess, and improve quality of healthcare outside the United States. JC standards are created using information from healthcare organizations, expert informants, literature, and guidelines. Using this information, JC requires hospitals to collect data as part of the quality improvement efforts that guide leadership to select evidence-based measures that are specific to their organization and patient populations. Around 2006 the International Patient Safety Goals (IPSG) were developed to identify and focus on specific problem areas in healthcare around the globe to enhance patient safety. JCI and WHO currently promote these goals worldwide (JCI, 2022a).

One of the National Patient Safety Goals (NPSG) developed by the JC is maintaining and communicating accurate medication information for everyone served (Joint Commission, 2021). JC encourages organizations to document patient medication regimens, strive to complete accurate Med Rec during admissions and at any transition time for patients, compare and reconcile all medications identified, update patient records

and provide documentation on new or changed medications (Ross, 2021). The rationale for this NPSG goal is that current evidence supports that medication discrepancies negatively affect patient outcomes. Med Rec is intended to identify and resolve medication management discrepancies in healthcare organizations to impact patient safety (TJC, 2022). The NPSG goals have yet to be achieved, and medication discrepancies remain an area of concern at the principal hospital. The principal hospital utilizes the IPSG developed by the JCI (2022b), which also aligns to improve effective communication and the safety of high-risk medications in hospitals. Although there is a significant overlap between NPSG and IPSG goals for medication management, the NPSG goals are more specific and thus are used throughout this proposal.

The World Health Organization (WHO) has recommended a standardized medication management policy in hospitals. The WHO guidelines encourage healthcare to obtain the best possible medication history (The World Health Organization [WHO], 2006). They have established international recommendations, standards, and guidelines to impact global patient safety. Notably, one of the most extensive contributions to medication discrepancies is the lack of standardized Med Rec policies within public, private, or community healthcare settings.

The Global Patient Safety Action Plan developed by the WHO (2021) in 2021 is to strategically aid global healthcare efforts to policy actions for all healthcare domains in efforts to eliminate avoidable harm during healthcare services. Healthcare services where no one is harmed and every patient is given safe and respectful care, every time, everywhere is the vision of the global action plan (WHO, 2021).

Out of two hundred registered healthcare facilities in the Cayman Islands, only three (two acute care hospitals, and one laboratory) are currently recognized with JCI accreditation. Research revealed two facilities that publicly display patient outcome indicators, leaving 98.5% of the facilities without data or significant statistics to examine existing Med Rec ("Country Reports," 2022). Other industries have identified that standardized processes ease the onboarding burden, and boost output and productivity while providing concise, simple workflows that lead to efficiency, accuracy, and improved employee satisfaction (Smith, 2020).

Geographic

The Cayman Islands consist of three islands situated in the western Caribbean Sea. The Cayman Islands are a developing country about 102 square miles in size ("Country Reports," 2022). The climate is tropical with cool, dry winters. Environmental issues continue, as Caymanians have no natural freshwater source; they depend on rainwater catchment (Boxall, 2021). Additional water treatment depends on an island specific reverse osmosis system.

Political/Historic

The Cayman Islands are currently a British dependency, overseen by the United Kingdom ("Country Reports," 2022). The Health System on the islands is complex. The framework of the health system includes legislation and regulations from the government. Healthcare in the Cayman Islands is partially funded by the government. The Cayman News Service (CNS) library reports that the Cayman Islands National Insurance Company Limited (CINICO) offers insurance policies to locals for premiums with few

denials for coverage. The insurance has limitations on location of coverage. Most care must be provided on the islands unless preauthorized to leave for care in the United States, Jamaica, Canada, or any other country ("Office of the Auditor General Cayman Islands," 2017). Other funds are collected as an out-of-pocket expense to the patients. Tourists are required to pay out of pocket or purchase short-term health coverage while on the islands (Elphinstone, 2022).

Cayman Islands' healthcare options include private and public sectors. Private entities include two hospitals and many small specialty clinics for primary care in cardiology, endocrinology, gastroenterology, neurology, obstetrics, gynecology, nephrology, pediatrics, pulmonary, and others (Elphinstone, 2022). Public sectors include the priority hospital in Grand Cayman along with a smaller facility on Cayman Brac to provide care to locals and ex-pats on all islands (Elphinstone, 2022).

The principal facility aims to prioritize health by promoting health and well-being throughout the life course, strengthening health system governance, organizations, and management to achieve universal health while building safe, healthy, and resilient environments that respond to threats and emergencies causing public health concerns (WHO, n.d.). As in the United States, healthcare has taken center stage in the Cayman Islands during the global pandemic. Healthcare on the Islands includes hospitals, pharmacies, clinics, laboratories, and private practices (Boxall, 2021).

Financial

The Cayman Islands Gross Domestic Product (GDP) consists of 92.5% services, 7.2% industry, and 0.3% is from agriculture on the islands. Industries on the islands

include tourism, which accounts for 75% of the total GDP, finance, and banking, including over two hundred institutions, furniture, construction, construction materials, and insurance (“Country Reports,” 2022). The economy depends on the 65,000 companies registered in the Cayman Islands. Agriculture includes vegetables, fruit, turtle farming, and livestock, with 90% of all food and consumer goods provided as imports from outside sources (“Country Reports,” 2022).

According to the CNS library (2017), public and private sectors comprise the Cayman Islands' healthcare system. The principal hospital on the islands provides direct public funding for specific populations, as per the government's statute. Health insurance is required, and local employers must cover fifty percent of the premiums for adult employees and ensure coverage for their dependents. Self-employed people are accountable for the total premium cost. After regulations were established, audits revealed that 94 percent of persons had coverage ("Office of the Auditor General Cayman Islands," 2017).

Cultural

Minimally 65,000 people of many ethnicities inhabit the Cayman Islands, with almost 38,000 Caymanians. The latest statistics show that 100% of the urban population consists of 40% mixed, 20% white, 20% Black, and another 20% are expatriates of various ethnic groups where the primary language is English (“Cayman Islands,” 2022).

Gender inequalities remain a focus in the Cayman Islands as the gender-based economic income gap remains prevalent, with males earning more income and securing more administration managerial positions in the workforce (Gender Equity, 2012). The

islands continue a long history of politeness and modesty in relationships among all people. Although equality has risen as a focus for many cultures, homosexuality remains illegal in the Cayman Islands ("Cayman Islands," 2022). The principal hospital maintains a mission to provide the highest quality healthcare and improve the well-being of persons in the Cayman Islands by providing access to care and sustainability while maintaining a focus on patients by utilizing highly skilled staff and collaborative partnerships (Cayman Islands Health Services Authority, 2022).

Other Organizational Context

The principal hospital is the largest public healthcare organization located in the capital of Grand Cayman, Georgetown. It aspires to be the provider of choice in the Caymans, offering the safest care with the best patient experience possible. Currently, the hospital is working to gain insight and advance with accreditation from the JC. To meet the requirements for JC, policy, and procedures are at the forefront of review.

Specific data for the principal hospital is limited and focused on the process, not outcomes. In a JC mock survey performed in December 2019, a lack of Med Rec policies and processes resulted in an action plan for medication management use. The action plan identified opportunities for improvement. The existing policies have been identified as duplicative and need standardized formulation for ease of reading and following for staff by JC mock surveyor (The Joint Commission [TJC], 2022). Medication orders were identified as incomplete, lacking indications, start and end times, specifics on as-needed (PRN) administrations, and inappropriateness in the details of medication review. As of

2022, a straightforward process and policy for Med Rec have yet to be formally implemented. All concerns can be addressed through Med Rec (TJC, 2022).

The principal hospital uses Cerner as its electronic health record (EHR). Cerner is a leader in digital medical care as one of the major EHR companies. The Cerner Corporation (2022) reports that Cerner offers more than 40 specialty areas of focus that offer task automation and simple recording to decrease time at EHR and increase time with patients. Cerner has been a leading EHR company for four decades. Cerner currently serves more than 30 countries and is utilized in over 25,000 healthcare organizations (Oracle Cerner, 2022).

Additionally, the organization desires to progress in the medication reconciliation process. The current leaders designated to work on this process presented input for inclusion in consideration of policy recommendations (Medford, 2022). The same author reports that these recommendations reflected the goals of collaboration using a team approach, including clinicians and technology experts, alongside necessary assessments, and training of all staff. The key components included the necessity to obtain the most up-to-date medication list from patients using a standard process written in an official policy (Medford, 2022). The request included the process to be pharmacy led to ensure clinical expertise and utilizing the increased staffing approvals to meet JC requirements (Medford, 2022).

Summary

The principal hospital aspires to obtain JC accreditation. This policy analysis aligns with the expected medication management safety protocols required to meet

compliance and the NPSGs/IPSGs for patient safety outcomes. This policy analysis aims to compare Med Rec policy alternatives by describing their similarities and differences, contrasting their likelihood of affecting outcomes, and contrasting tradeoffs among the options for the principal hospital in the Cayman Islands. Additional local evidence is needed to guide the analysis further.

Search for Evidence

Methods/Study Design

The method for this overall project was a policy analysis (described prior). Among other steps described prior, policy analysis involves summarizing gray and academic literature, analyzing the context, and gathering evidence to inform a policy decision. As part of gathering evidence for this policy analysis, local evidence was obtained at the principal hospital in the Cayman Islands. That local evidence was then used to inform the policy analysis. Thus, the purpose of this section is to describe the methods for gathering and analyzing local evidence.

A primarily quantitative approach was used, although informal narrative data was also collected. The primary question guiding evidence collection was to describe factors relevant to developing a Med Rec policy at the principal hospital in the Cayman Islands. The following purpose and aims guided the methods for answering the question.

Purpose/Aims

The broader purpose of this project was to evaluate data and policy to guide a policy analysis of Med Rec at a principal hospital in the Cayman Islands. The specific aims of gathering local evidence were:

I. To describe related local context such as whether there were informal mechanisms for medication management in the setting.

II. To describe the current state of documenting medications in the setting.

The following content in this section relates specifically to gathering data to inform Aims I & II.

Team Involved

The primary investigator collaborated with a team at the principal hospital site for over a year. This work included at minimum monthly, and often weekly, virtual meetings with site leadership and staff. In addition, the primary investigator first traveled to the site (before data collection) in January 2022. During this visit, the primary investigator decided to focus on the problem of Med Rec policy. The team involved included the primary investigator, a nursing doctoral student. The primary preceptor for the primary investigator was the principal organization's professional development manager, and the project chair, a graduate faculty member of the primary investigators' university. The primary investigator brings strong expertise in quality improvement methods such as chart review and has sustained relationships with the site leadership. The primary preceptor has longstanding close ties with the organization and deep expertise working in the setting and culture. The project chair is an expert researcher with experience in policy analysis.

Permission was obtained by site leadership to gather local evidence and complete the policy analysis. Ethics review board approval was granted for the primary investigator at the principal site along with Institutional Review Board approval from

James Madison University. The ethics review board is equivocal to the United States Institutional Review Board.

Data Collection

Data collection took place at one single center, the principal healthcare facility in the Cayman Islands. The principal facility, located in the central hub of Grand Cayman is near the capital of the Cayman Islands and off the western shore.

Quantitative Data

Chart reviews provided the primary data source for quantitative data. Charts were included if the patient was currently admitted to the principal site and had been in the hospital for at least twenty-four hours. Incomplete charts were excluded, for example, if the patient is in the process of being admitted.

Chart reviews were used to gather data using questions based on evidence of high-quality medication administration practices (see literature review section prior). A form based on this evidence was developed by the primary investigator and used to review each chart (See form in Appendix A).

To summarize, the chart review looked at the time the patient arrived at the primary site, the initial review time of the medication list, and the time medications were documented (Item A). Further, the review looked at whether the Med Rec list aligned with current patient medication orders (Item B), the location of the medication list in the chart (Item C), the credentials of the person documenting the medication list (Item D), and a clear identifier for the provider of any changes to the list (Item E). The review also checked whether there was documentation of the patient's medication history (Item F),

whether the medication list was updated with each new order (Item G), and a count of reviewed charts that lack any medication list (Item H). Finally, the review observed if there were clear identifiers for each provider to note if a medication should be continued, changed, or discontinued (Item I).

Narrative Data

Narrative data was collected through informal conversations with stakeholders. A purposive sample of stakeholders who had information about Med Rec was obtained. Purposive sampling is common in qualitative research and particularly in qualitative descriptive research (Doyle et al., 2020). It would have been ideal to sample the medical record manager, a risk manager, a chief pharmacist, the director of training and education, a safety officer, a compliance manager, nurse managers, and nurses. There was no guarantee a representative from each of these roles was available or willing to participate in interviews. Participants were approached by the researcher and asked to participate in an interview (see recruitment script below under consent). If a “yes” was received, the researcher moved forward with the questions or scheduled another time to talk so as not to interrupt the workflow and to provide privacy. Participants were included if they were licensed healthcare workers and excluded if they are unlicensed employees. Attempts were made to interview a variety of stakeholders from various positions (leadership/non-leadership) and disciplines. No audio/video recording or transcriptions of interviews occurred.

If the stakeholder agreed to answer questions, a semi-structured interview followed. Semi-structured interviews are the most common form of data collection in

qualitative descriptive methods (Doyle et al., 2020). The following questions created by the primary researcher` guided the interviews.

1. What is your current knowledge of Med Rec policy?
2. What is the current practice of Med Rec?
3. Where are new medication orders documented on patients?
4. Is the Med Rec updated on admission, transfers, and before discharge?
5. Are patients provided with an up-to-date list of medications at discharge?
6. What are the fiscal risks and benefits of a standardized Med Rec policy?
7. What are the current gaps in the Med Rec policy?
8. What are the effects of Med Rec on patients?
9. Any other comments on Med Rec you want to share?

The researcher took thematic notes about the participant responses, writing only relevant content to the primary research question. No participant direct quotes were used. Participants were only asked about the process for Med Rec specifically. Notes were written documents that only the researcher can access (see data security procedures below).

Sample Size

The goal was to include at least 30 inpatient charts from various units and 10 or more participant interviews. Regarding chart reviews, there may be feasibility limitations to consider. Yet, if possible, chart samples were to be obtained from each inpatient unit. Outpatient charts do not meet the inclusion criteria (described prior). Regarding interviews, exact sample numbers were decided in collaboration with leadership at the

site with both the feasibility and usefulness of data considered. Ideally, the participant sample would include a medical record manager, a risk manager, a chief pharmacist, the director of training and education, a safety officer, a compliance manager, nurse managers, and nurses. Data saturation was sought in keeping with qualitative descriptive analysis best practices (Doyle et al., 2020).

Table 1

Timeline

Task	Start	Duration
Project planning/proposal development	Spring 2022	Summer 2022
Proposal Approval by the DNP team	Spring 2022	Spring 2022
Ethics Review (HSA)	Summer 2022	Summer 2022
IRB (JMU)	Summer 2022	Summer 2022
Data Collection	July 15th, 2022	July 28th, 2022
Data Analysis	Fall 2022	Fall 2022
Writing, results, discussion, implications	Fall 2022	Fall 2022
Final presentation/dissemination	Fall 2022	Fall 2022

Ethical Considerations

Informed Consent

The researchers requested to waive informed consent for chart reviews. No patient identifiers were collected. The reviews collected information about current Med Rec and medication administration practices/procedures only.

Informed consent was obtained verbally for narrative data. The primary investigator introduced themselves and said something like "I would like to ask you about how a patient's medication list is recorded here. I will take notes about your answers but will not record your name. You can answer any questions you wish or not. The reason I am asking these questions is to learn more about how medication lists are recorded to hopefully recommend a policy that helps us know about a patient's correct medications before they are given. Is it ok if I ask you some questions?"

If the participant responded, “yes” (giving verbal consent), the researcher continued with the interview. If the participant responded “no” the researcher thanked them for their time and asked no further questions. Participation was voluntary, and the participant could decide not to answer questions. Total time per participant involvement was expected to be 30 minutes or less for conversations.

Participant Risks & Burdens and how to Minimize them

Performing the chart reviews presented no more than an everyday risk to the chart owners. The primary investigator viewed the chart owner’s information, which it would not have otherwise been. Any risk associated with this was mitigated by the primary investigator undergoing confidentiality training and by securing IRB approval for all procedures. Further, the primary investigator viewed only the information needed to

complete the review, and only anonymous data and process-focused data were collected. Chart reviews are standard practice in healthcare and practice that the primary investigator has experience with.

Regarding the narrative conversations, the conversations did not include any sensitive, embarrassing, or upsetting topics. Permission to ask questions was obtained verbally before the conversations occurred, and the participant could refuse to answer any questions. Responses were noted anonymously and securely, and only rough notes were kept (not verbatim notes or recordings).

Researcher Risks/Benefits

There were only minor risks to the primary investigator associated with this project. The primary investigator traveled to the Cayman Islands and spent time in the principal hospital. The risks associated with travel and time in the hospital were like the risks of everyday activities. The risks were low, and the primary investigator assumed all liability associated with these small risks. The study's benefits to the researcher were the completion of doctoral studies and the satisfaction of positively affecting the principal healthcare system by providing information from the analysis with recommendations for best practices. None of the investigators had conflicts of interest to disclose related to this work.

Data Storage and Deletion of Data

The data collected is void of any personal identifiers of any patient, investigator, or participant. The primary investigator recorded all data collected on written documents in narrative or form completion. All data collection documents were stored in a locked

briefcase while on the islands and in a locked private office space upon return to the USA. After the data were sorted the individual forms were destroyed.

Analysis Plan

Quantitative and narrative data were analyzed.

Quantitative Analysis

Quantitative data were analyzed using descriptive analysis for most items. Counts and percentages were used for categorical items. For continuous items, some analysis options included mean, median, mode, percentage, frequency, and range.

Time until medication documentation was calculated by subtracting the time the medication list was created from the time the patient arrived on-site using time stamps within the EHR (Item A). The time until the review of medications was calculated by subtracting the time the medication list was reviewed from the time the patient arrived at the primary site (Item A). The average time was calculated (means and medians). The alignment (Item B) was assessed by reviewing current medication orders with the current Med Rec list documented in each record and counts/percentages of yes (aligned) and no (not aligned) was determined.

The following categorical variables' results were counted, and percentages were calculated to give a sense of the whole. The location of the medication list in each chart was recorded and organized by category (Item C). The provider’s credentials documented the medication list was recorded and organized by category (Item D). Evaluation of a clear identifier for providers to be alerted if a medication change has occurred followed and was recorded as “yes” (clearly identified) or “no” (not clearly identified) (Item E).

There was a review to locate a clear historical list of medications in each record and documented as yes (clear historical medication list) and no (lacking a clear historical medication list. If yes, where the documentation occurred was noted and grouped according to category (Item F). There was a review for accuracy in each medication list by comparing it to active medication orders and recorded as yes (accurate) or no (not accurate) (Item G). If yes, then where the documentation occurred was noted and grouped according to category. The reviewer identified any record that was missing from a medication list to find omissions and indicate yes (omissions) or no (no omissions) (Item H). No medical record numbers were collected, only a total number of charts. The reviewer looked for clear identifiers in each chart for the provider to know if medication had been continued, changed, or discontinued and noted yes (clear alterations) or no (not clear alterations).

Quantitative data are presented using tables and graphs to help visualize the chart review's findings and guide policy decisions. A table was used to illustrate the broad findings.

Narrative Analysis

Utilizing the goals of the primary healthcare agency, the narrative analysis focused on describing the current state of documenting medications in the setting and describing the related local context. The following steps of descriptive analysis recommended by Doyle et al. (2020) were used to analyze the gathered data. Initially, the data was collected. Next, it was reviewed and sorted by given codes, adding comments and reflections, as necessary. Next, the data was reviewed to identify similarities such as

phrases, themes, relationships, or sequences. Finally, the data was generalized to identify consistency to determine useful constructs for Med Rec. It is important to communicate both the findings and the analysis process to the principal hospital, and methods for visualizing findings to enhance communication as described in the section on storytelling.

Results

Quantitative

A full 50 charts were reviewed, of which 39 had notable data on the variables described below. For the other 11eleven charts, no data was documented relevant to these variables. These 11 charts did not have any identifiable list of medications to review for inclusion. To provide clarity about the results, these 11 charts were not included in the calculations below. However, it is important to note that 22% of the original 50 charts had no relevant Med Rec information, which represents a critical area for potential change. An accurate Med Rec process is obtaining an all-inclusive list of patients' current home and newly ordered medications. These 11 had no basis for understanding the comprehensive picture. The remaining 78% of charts had some helpful information and the information from those charts is described in the following. See Table 2 for a summary of continuous variables.

For the charts with relevant information, the time between the patient's arrival at the institution and the first medication documented (Item A) was reviewed and calculated in minutes. Calculations demonstrated that the mean time between when a patient arrived at the institution till a medication was documented in the chart was 714.72 minutes (about 12 hours). The minimum time till medication documentation was about one hour

(specifically 61 minutes) and the maximum was about 90 hours (specifically 5,371 minutes). The standard deviation was about 16 hours (specifically 941.51 minutes), demonstrating important variability in time till medications were first documented. Thus, the median time may best reflect the time till the first medication documentation, and the median time was 7.2 hours (exactly 432 minutes).

The time between the patient's arrival at the institution and the first medication list review for alignment with the most current medication list was assessed (Item B). Only one chart noted a review date and time, thus summary statistics could not be calculated for that variable. The review that occurred happened after about 20 hours (specifically 1228 minutes).

The total number of medications documented in the chart (Item J) (including home medications and currently ordered medications) per patient was reviewed. Notable for application, medication numbers were averaged yet, are interval-level data. The mean number of medications was 33.44, with a minimum of one medication, and a maximum of 139 medications. A standard deviation of thirty-nine demonstrates a wide variation in medications documented in each patient chart. Thus, the median may best reflect the number of medications, and the median was 25 medications.

Table 2

Summary Statistics Table for Documentation and Number of Medications

Variable	*M*	*SD*	*n*	SE_M	Min	Max
Time in Minutes Till Documentation	714.72	940.51	39	150.60	61.00	5,371.00

Number of Medications	33.44	25.08	39	4.02	1.00	139.00

Descriptive statistics of categorical variables are summarized in Table 3 for the 39 charts that include any relevant information. For the 39 charts that included any information that can help depict Med Red, the location where the medication list was documented (Item C) and the provider who did that documenting (Item D) were clear in 100% of those charts. The physician was consistently the documenting provider and documentation occurred in the physician's note. Yet, 98% of the charts showed misalignment between the ordered medications and the charted information (Item B). Meaning, that nearly all the reviewed charts did not have a comprehensive list that aligned to currently ordered medications, therefore these charts demonstrated inaccurate Med Rec.

In 100% of the 39 charts that included relevant information, there was no indicator for the care team that a change in the list had been made (Item E). Over half, 56% or 28 of the 39 relevant charts had a historical list to compare current medications to (Item F). In 62% (n=31) of 39 charts reviewed, there was no indication that the medication list had been updated with new medication or changed orders (Item G).

Table 3

Chart Review Findings for Categorical Variables

Variable	*n*	*%*
Does the medication list align with the medication ordered		

No, they do not align	38	98
Yes	1	2
Location of a medication list		
Physician notes	39	100
The provider who documented medications		
Physician	39	100
Indicator to notify the provider of the change in the list.		
No notification	39	100
Historical medication list present		
The historical medication list absent	11	22
Yes	28	56
Historical medication list documentation place		
Physician note	28	56
No list is present.	11	22
Is the medication list updated with new orders?		
Not updated with new orders	31	62
Yes, updated with new orders	8	16
Location of the updated list		
MD Note	31	62
No updated list	8	16
Clear identifier of provider in charge		
No	39	100

Note. Due to rounding errors, percentages may not equal 100%.

Narrative

Thirteen voluntary participants discussed medication reconciliation with the primary investigator. The participants met inclusive criteria as licensed, employed persons of the principal hospital in the Cayman Islands, and participants consisted of organization leaders, nurses, physicians, and pharmacists.

When asked, "What is your current knowledge of Med Rec policy?" participants' had differing perceptions. Some participants thought there was a comprehensive policy,

and others mentioned that a policy was under development or absent. Several participants described how they reconciled medications instead of talking about a policy, corroborating that no policy exists. For this, there was variety in how participants attempted to reconcile medications. One person mentioned that there were efforts to reconcile medications on admission, and another agreed and specified that the physician was responsible for reconciling medications on admission. Another participant indicated that the pharmacy reconciled the medicines sent to them.

Participants expanded on practices when asked explicitly about Med Rec practices in a second question. Like thoughts on the policy, there was significant variability in the respondents' perceptions of current Med Rec practices. Some participants did not think a standard process existed, while others agreed and verbally expanded their perception of what the process should be and that it was needed. A few respondents expressed that an informal process exists with no official guidance and inconsistencies in how the process was executed.

When participants were asked, "Where are new medication orders documented on patients?" most participants related the location of the medication list in a patient's chart to one of three places. One, the EHR, 2 the medication administration record (MAR) that was embedded into the EHR, or 3 a hard copy in the chart that a few providers continue to utilize.

When the investigator asked participants if staff reconciled medication lists on admission, transfers, and before discharge, there were differences of opinion about these updates. Nearly one-quarter of the participants responded "yes"; Med Rec occurred at all

crucial times of transitions in care, the admission, the transfer, and at discharge, while half responded that "no", the list is not updated at all or only on admission. At the same time, the final quarter of participants was unsure if staff updated the list at care intervals.

The researcher asked whether patients were given an up-to-date list of medications at discharge. There was comprehensive awareness among the participants that the staff does not give patients an updated medication list at discharge time. Although a few participants did not know whether the list was provided at discharge or not. One respondent described the education patients get on new or changed medications at discharge.

When asked about the fiscal costs and benefits of a standardized Med Rec policy, most respondents noted that the only financial cost of a Med Rec policy would include initial investments to improve the process, education, and compliance after the policy completion. Notably, a few participants mentioned risks of expense associated with the lack of a policy and process for Med Rec. This list included the cost of duplication in prescribing, ordering, processing, and ADEs related to these practices.

The researcher also wanted to know about the current gaps in the Med Rec policy. Participants responded with some variety in their perceptions regarding gaps in the current Med Rec policy. Some respondents recognized the absence of any official policy. Other participants recognize a system-wide lack of knowledge regarding Med Rec, the process, or a policy. In contrast, a few others verbalized concern over compliance and patient inclusion or an official Med Rec policy.

Lastly, the researcher asked participants about the potential effects of a Med Rec policy. There were many participants who felt a Med Rec policy would positively affect the patient population. Patient safety was the most discussed topic, with a notation to the potential to decrease medical-related expenses while improving every patient's knowledge of medications and disease processes to improve chronic care management.

When asked if there was anything further, participants responded that there were considerable concerns regarding Med Rec, the current process, the lack of a unified policy, and the effects this may have on local citizens. Considerations include the necessity of a policy, the ease of integration with current EHR, and how the process can affect the public health of local communities positively.

Table 4

Narrative Ideas by Question

Question	**Ideas**
What is your current knowledge of Med Rec policy	There is no Med Rec policy.
	There is a Med Rec policy in place.
	Med Rec policy is in development.
	Med Rec was completed without an official policy.
What is the current practice of Med Rec?	There is no current process.
	Physicians complete the Med Rec process.
	There is an unofficial process for Med Rec.
	The process is inconsistent.

Where are new medication orders documented on patients?	Documented in Cerner/EHR.
	Documented in the current eMAR
	Documented on a hard copy.
Is the Med Rec updated on admission, transfers, and before discharge?	It is updated Admission/Transfers/Discharge
	No, Med Rec is not updated.
	Yes, it is updated.
	Med Rec should be updated.
Are patients provided with an up-to-date list at discharge	Yes, they are provided with an up-to-date list.
	No, they are not provided with an up-to-date list.
	Unsure if an accurate list is provided.
What are the fiscal risks and benefits of a standardized Med Rec policy?	There are none.
	There is a cost associated with the process, policy, and education.
	There are cost savings related to med errors (omission and duplication).
What are the current gaps in the Med Rec policy?	A need to improve patient safety and experience.
	There is a lack of knowledge.
	There is a lack of compliance.
	A need to meet JCI Standards
	There is no Process/Policy
What are the effects of Med Rec on patients?	A lack of patient inclusion.
	Poor patient outcomes.

	Increased healthcare costs.
Any other comments on Med Rec you want to share?	Med Rec is a necessity.
	Med Rec is possible with Cerner EHR updates
	Med Rec can facilitate public health concerns.

Policy Options

Current Practice

Based on the data collected, current Med Rec practices vary among each provider and location in the institution. The volume of incomplete information analyzed the specific current practice challenges, 11 charts (22% of reviewed charts) had no information about a medication list or the Med Rec process.

Among the charts with some information about Med Rec, there was a wide variety. None of the 50 charts reflected a medication list for a patient before admission. One of the 50 charts reviewed was found to have a medication list that aligned with the current medication orders. There is no standardized communication method used among providers or healthcare team members. During chart reviews, there was no identifiable distinction between an old medication list, the new list, or the current medications ordered. Currently, most physicians are documenting a medication list in the physician notes section of each chart. Others are developing a hard copy of patient medications that reside in the pharmacy for review by a pharmacist as medications are ordered for the inpatient populations. These lists are reviewed after a patient arrives at the organization and are often not updated or altered during hospitalization. There is no process for providing an updated list to the patient at the time of discharge to comply with patient

education expectations. The variety of workflow, role responsibilities, and evaluation of Med Rec was clear in both chart reviews and narrative data.

Draft Policy

A draft policy was created by hospital staff and presented during a collaborative meeting between the primary researcher and the principal hospital. The draft policy includes an initial preamble, purpose, scope, responsible parties, definitions, and a draft step-by-step policy and procedure for inpatient and ambulatory settings for the principal hospital.

It specifies that Med Rec should begin when the “episode of care” initiates. The policy purpose is to compare new and modified medications with current or home medications. The proposed policy suggests that Med Rec may look different depending on the setting of care.

The proposed policy designates providers and pharmacists as responsible for Med Rec. There is no description of the role nor specifics about who is responsible for which steps. The Medical Director is designated as being responsible for overseeing Med Rec implementation. The policy clearly involves patients and families as able. "Med Rec" and "Medication" are each defined.

The policy instructs that all clinical areas must develop and comply with Med Rec procedures to ensure safe medication practices are present at patient care transitions. Providers are encouraged to review all medication lists before any treatment or medication administration that may be affected by medicines, thus allowing for the identification of potential ADEs. Providers are to update the medication list to reflect all

changes before ceasing care for each patient. In the event of changes, providers are instructed to provide the patient, family, or caregiver with the new medication list along with methods to manage the medications on the list.

The proposed policy also includes procedures to be followed. The initial procedure expects the patient's current medication list to be obtained, verified, and recorded in the medication history in the EHR at the time of initial assessment. The proposed policy does not identify the party responsible for this step. The second step consists of five specified aims to reconcile medications. Initially develop the current list of medications, second develop a list of medications to be prescribed, third compare the two lists, fourth make clinical decisions on the two lists and lastly communicate the new list to appropriate caregivers and the patient. The next step in the proposed procedures is instructions to create the most complete list of medications including dose, strength, and frequency from the patient or family member present. This step identifies the provider to conduct the review as a part of the Med Rec process. The following step in the procedure is that the Med Rec occurs within 48 hours of a patient needing an acute care admission and at "reasonable intervals" for patients remaining after discharge. Next, the proposal instructs that during all care transitions, the healthcare team members will document and communicate to all "applicable" team members within the organization, as well as the community pharmacist who are involved in patient care of any changes to the medication list including additions, the rationale for change, a complete list of what the patient should be taking after transitioning out of acute care and ensure a copy of the discharge medication list remains in the patient chart. The patient will receive a complete list of

medications and instructions to share it with all providers. Lastly, the draft procedure defines that Med Rec should not delay any patient treatment or transfer indicating the receiving facility may complete a Med Rec. The draft policy also includes recommendations for ambulatory services that mimic inpatient expectations. The draft policy was cross-referenced in development with the national medication management guidelines from two thousand eighteen and the JC manual, seventh edition. Using the proposed policy and procedure to refine policy recommendations allows alignment with organizational structure, current practice, and workflow.

World Health Policy

The World Health Assembly (WHA) 2021 adopted an action plan to prevent avoidable harm to patients in healthcare that the WHO created (WHO, 2021). One strategy involves the WHO action on Patient Safety ("High5s") initiative. This initiative is an internationally coordinated system protocol to implement enhanced safety policy and protocols globally in healthcare WHO, 2021). WHO defines medication reconciliation as, "Medication reconciliation is the formal process in which health care professionals' partner with patients to ensure accurate and complete medication information transfer at interfaces of care." (WHO, 2021).

The WHO developed recommended practice guidelines that were created and reviewed by the WHO review committee that utilizes evidence-based decision-making to develop and publish the highest quality healthcare recommendations to impact and meet international healthcare standards (WHO, 2022). The policy can be found at: https://www.who.int/publications/m/item/high5s-standard-operating-protocol-

medication-reconciliation and identifies implementation processes of Med Rec at admission, during internal transfers, and when a patient is discharged using the WHO developed guiding principles (WHO, 2021). The WHO recommends the following guiding principles (Quoted from "High5s Standard Operating Protocol: Medication Reconciliation", 2022 page 7-8):

1. An up-to-date and accurate patient medication list is essential to ensure safe prescribing in any setting.
2. A formal structured process for reconciling medications should be in place across all interfaces of care.
3. Medication reconciliation on admission is the foundation for reconciliation throughout the episode of care.
4. Medication reconciliation is integrated into existing processes for medication management and patient flow.
5. The process of medication reconciliation is one of shared accountability with staff aware of their roles and responsibilities.
6. Patients and families are involved in medication reconciliation.
7. Staff responsible for reconciling medicines are trained to obtain the best possible medication history (BPMH) and reconcile medicines.

The process should be an integral part of medication management and patient care (WHO, 2021). The following recommendations are all derived from the WHO recommended process. The process has shared accountabilities among staff, patients, and

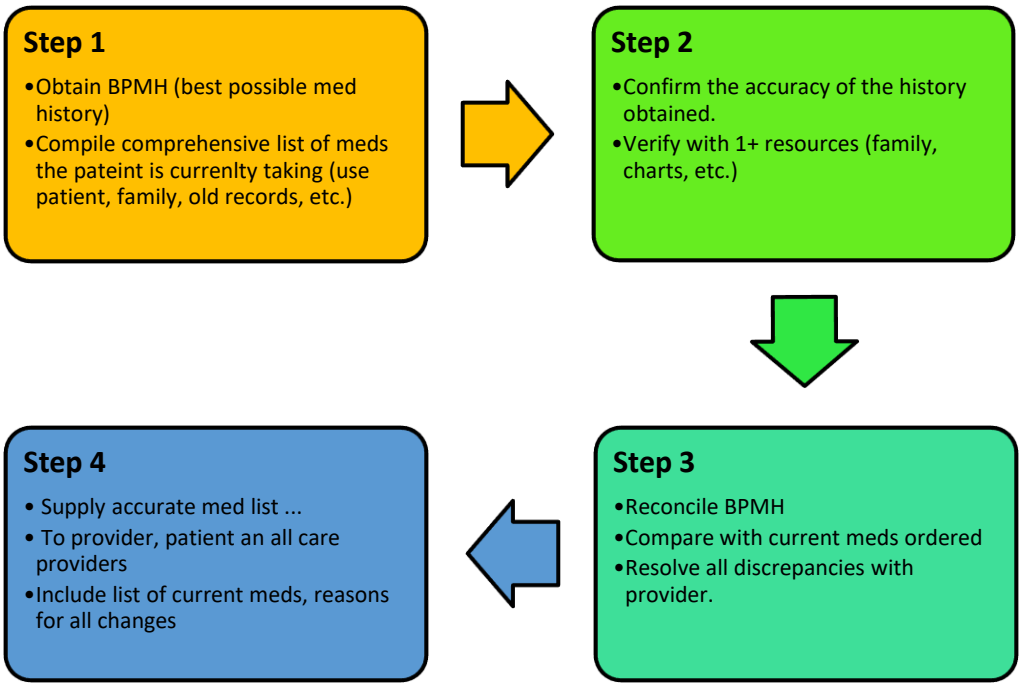
families, and standardization is required to decrease the risk of failure and missing patients in the process. Patients and families must be included in the process and be educated about the importance of keeping an up-to-date medication list or bringing their medications when they seek healthcare. Patients and families should also be encouraged to speak up if there is a mistake in their medicine. Accountable staff must be trained and competent to obtain the best possible medication list. Initial training is needed, followed by training for unfamiliar staff. Training should include how to interview patients to obtain an accurate medication list for Med Rec and critical thinking skills needed to analyze medications. It is important for there to be oversight of the implementation to facilitate consistency and accuracy. Assigning one person who oversees an implementation team can help with accountability. The WHO proposes a work plan for Med Rec policy development and implementation that encourages risk assessment of the proposed process and points to pilot testing as a low-stakes way to test the plan. The spread methodology (a method to determine the timing and sequence to implement the pilot study in other areas of organization) is encouraged to implement pilot-tested ideas more broadly.

The WHO recommends a specific communication plan (WHO, 2021). Initially, the plan for Med Rec should be announced organization-wide and the rationale for the implementation explained. During the policy implementation staff should be regularly updated on the changes and any related outcomes. Materials can be developed for implementing staff members to ease the transition to new practices. It is essential to recognize the work and accomplishments of staff.

Figure 1 below illustrates detailed specifications for the steps in the Med Rec based on the WHO High 5s Standard Operating Protocol (WHO SOP). Refer to the WHO website linked above for additional workflow process mapping for admission, transfer, and discharge Med Rec processes.

Figure 1

WHO-Based Workflow, Steps in the Med Rec Process



AHRQ Toolkit

The Agency for Healthcare Research and Quality (AHRQ) offers a second potential Med Rec policy option. The following information all comes from AHRQ recommendations (Agency for Healthcare Research and Quality [AHRQ], 2022). The policy can be found https://www.ahrq.gov/patient-safety/settings/hospital/match/chapter-3.html and identifies guiding principles for organizations to follow to design successful

Med Rec processes. The AHRQ recommends these guiding principles (Quoted from AHRQ para 2, 2022):

1. Develop a single medication list ("One Source of Truth"), shared by all disciplines for documenting the patient's current medications.
2. Clearly define roles and responsibilities for each discipline involved in medication reconciliation.
3. Standardize and simplify the medication reconciliation process throughout the organization and eliminate unnecessary redundancies (the flowchart of the current process can help you identify these redundancies).
4. Make the right thing to do the easiest thing to do within the patterns of normal practice.
5. Develop effective prompts or reminders for consistent behavior if true forcing functions (i.e., required reconciliation step presented to the physician during admission order entry within an electronic health record [EHR] are not possible.
6. Educate patients and their families or caregivers on medication reconciliation and the significant role they play in the process.
7. Ensure process design meets all pertinent local laws or regulatory requirements. Linking medication reconciliation to other strategic goals (e.g., heart failure publicly reported process of care measures related to discharge instructions on medications) and/or other initiatives (e.g., a hospital project working on improving patient satisfaction related to pain management or patient

communication regarding medications) when appropriate can also strengthen the importance of this process.

Per the AHRQ (2022), it is imperative to realize local key elements of Med Rec before starting, specifically how to focus the policy on the acute care setting using an EHR. Obtaining the best up-to-date medication list is a thorough process that must include the patient, provider, and other resources (family, care providers, etc.) as needed. The Med Rec must be an integral part of all handoffs and communications when a patient transitions throughout healthcare systems. The patient has a key role in Med Rec. It must be recognized to provide necessary patient education to ensure the patient keeps an updated medication list, ensures all providers have a list and is aware of the need to bring medications when receiving healthcare needs. Collaboration among providers and looking for ways to identify Med Rec as a value-added service (i.e., daily rounds) will ensure compliance and sustainability for Med Rec in healthcare organizations.

Project the Outcomes

Current Practice

Med Rec policies streamline processes in workflow while promoting patient safety and system-wide stewardship in healthcare, resulting in fewer medication discrepancies. Therefore, the potential for worsening patient outcomes remains if the current practice is continued with no modifications. Current practice lacks the organizational process and JC standards; thus, another likely outcome is failure to achieve JCI accreditation. As previously mentioned, standardized Med Rec policies are

evidence-based tools to assist healthcare providers and keep patients safe. Thus, another likely outcome is healthcare provider frustration, noncompliance, and confusion.

Draft Policy

The draft policy guides the initiation of a streamlined Med Rec process. It is an excellent start and the likely outcome of initiating the draft policy is major improvements to the current practice. It is possible JCI accreditation can be achieved with the draft policy. Yet, the draft policy leaves areas of variability among individual healthcare providers, thus potentially leading to a lack of staff compliance and more variability in the medication list obtained. JC standards identify efforts that must be taken to obtain the most accurate medication list; thus, the draft policy also leaves the potential to not meet the JCI accreditation process. Practice variability was a major finding of the evidence gathered in this work and the draft policy alone, while providing extremely helpful changes, falls short of fully tackling that variability. Indeed, it encourages some variation.

World Health Policy

The WHO SOP offers a standardized, evidence-based, process to implement focused Med Rec processes and policy needs. Specifically for the principal hospital, the WHO SOP can aid in the policy development of a standardized Med Rec. The WHO SOP was found to improve the quality of medication histories obtained, resolution of medication discrepancies, the process raised awareness of medication safety, and had overall effectiveness in minimizing potential medication errors (WHO, 2022). Adopting WHO SOP would allow the principal hospital to meet JC criteria and make additional

enhancements in the organization's patient safety efforts during the JCI accreditation journey.

AHRQ Toolkit

The AHRQ toolkit offers a set of guidelines to manage the development of a standardized Med Rec process and policy. The AHRQ suggests the medication list be one source edited by all healthcare disciplines to maintain an active current up to date list of medications. This one source creates interdisciplinary communication and requires a comparison to be made when care is initiated. The guidelines recommend a clear delineation of the roles and responsibilities of Med Rec practices. Lastly, the AHRQ recommends utilizing the current workflow to integrate the Med Rec to enhance compliance and sustainability of implementation proofs. The AHRQ policy guidelines would allow the principal hospital to meet JC criteria and more for JCI accreditation Med Rec standards in care.

Apply Evaluative Criteria

Because the institutions focus is on obtaining JCI accreditation, each policy option is evaluated against JC standards that meet JCI accreditation requirements.

Table 5

Comparison of Policies

Policy Evaluation Pugh Matrix Comparison

JC Standards	Medication list before admission	Current Med List	Communication with HCP/Pharm	New medication orders compared to pre-admission medications	Education/ competency for staff and patients	Workflow, Roles, Responsibilities & Evaluation
Current Practice	-	+	-	-	-	-

Draft Policy	-	+	+	+	+	+
WHO	+	++	++	+	+	++
AHRQ	++	++	++	+	+	++

- = JC Standards not met, + = JC Standards met, ++ = Above and beyond JC Standards

Current Practice

As evidenced in the above matrix table, the current practice offers opportunities to support standardized evidence-based criteria for Med Rec practice and policy. The process of obtaining a medication list from patients once admitted to the hospital is part of the current practice. However, there is no standard process that ensures the best possible medication list at the initiation of care was collected. For example, in the emergency department before admission. During data collection, there was no intentional communication between providers regarding Med Rec, and no clear education for patients or the community on Med Rec was provided. There were unofficial roles and responsibilities of whom was to collect the medication list and where it was to be documented. The workflow varied throughout the organization. Current patients and staff have differing levels of understanding of Med Rec's necessity, process, or importance. The current Med Rec practice is likely not going to meet JC standards.

Draft Policy

The draft policy clearly identifies each JC standard to obtain a medication list at the admission of care, maintenance of a current medication list, aims to have improved communication among the healthcare team, is inclusive of the patient and staff education of processes, practice, and medications as well as including the importance of role identify in the Med Rec process. The remaining areas of variability in each focus area of the process allow an opportunity to enhance the overall policy to meet and exceed JC

standards, especially in compliance and evaluation of policy and practice in healthcare policy.

World Health Policy

The WHO SOP recommends collecting an inclusive medication list using a standardized process, initiated at the time care begins. Using a standard process to ensure the medication list is updated and captured at every interval of care. Inclusion of the entire healthcare team, patient, and family members to enhance open communication and knowledge of medications. WHO suggests that the workflows be integrated into current practice for the safest medication management. Example workflows with clearly identified roles and responsibilities are provided for clarity. EHR prompts for reminders are encouraged. The WHO SOP assures to meet JC standards and above from the collaborative work between the WHO and JCI branch of JC to create the High 5 SOP for Med Rec. Evaluation of the WHO Med Rec includes patient impact associated with a standard process, outcome measurements, hospital performance over time, and a comparison with other organizations around the globe. Using event specifics analysis, ADEs can be determined to evaluate and resolve. Lastly, direct observations are encouraged to use in collaboration with SOP to evaluate strategies to improve the efficiency, efficacy, and effectiveness of the standardized approach in this context (WHO, 2022).

AHRQ Toolkit

Med Rec is essential to meet the NPSGs & IPSPs. The AHRQ recognizes many organizations already have a Med Rec process. The AHRQ toolkit was created to review

and improve current processes for Med Rec in hospitals. The AHRQ collaborated with numerous hospitals and JC to create the toolkit. The AHRQ toolkit is based on the Medications at Transitions and Clinical Handoffs (MATCH) Web site. The AHRQ aims to improve patient safety via Med Rec using the toolkit to improve current processes. AHRQ toolkit meets all JC standards as illustrated in the matrix table above. Additionally, the AHRQ determined factors to make Med Rec sustainable by considering the current EHR, be aware no EHR can replace a thorough interview between a patient and care providers. Med Rec must be included in handoffs and every transition of care for patient safety. Patient education is imperative to a successful Med Rec process. Team members should include nurses, physicians, and pharmacists. Med Rec should be implemented as a value-added process utilized to make the best clinical decisions for patient safety (AHRQ, 2022).

Weigh the Outcomes

All four-policy options offer a benefit to a standard Med Rec policy, but WHO and AHRQ offer the most comprehensive benefits to the organization. The direct comparison, using the JC evaluative criteria, shows WHO ranks the highest and that AHRQ options are in second (See Table 5). A positive finding is designated as a plus indicating the policy meets JC standard, while a negative indicates a lack to meet at least one JC standard criterion and a double plus is equivalent to meeting all JC criteria and above.

Current Practice

The current practice poses a significant risk for continued medication discrepancies. Medication organizational expenses are related to the current practice. Extensive variability in practice is also a major problem with current practice, one that is likely to continue. The outcome of simply maintaining current practice is likely not to be the most beneficial for the institution.

Draft Policy

The draft policy has similar limitations to current practice. The draft policy introduces a new written policy with guidance for staff roles and expectations, enhanced communication within the healthcare team, and education. The outcome of solely using the draft policy also lends the opportunity for continued variabilities that can lead to medication discrepancies.

World Health Policy

The WHO SOP offers a safety net for medication management that meets all JC standards. Adopting the WHO SOP is feasible secondary to financial allocations within the organization to improve Med Rec. Additionally, the SOP offers inclusivity for staff, patients, and caregivers.

AHRQ Toolkit

The AHRQ toolkit offers the principal hospital the opportunity to review and revise the current process to collect medication lists from patients. Additionally, the AHRQ toolkit offers simplified guiding principles for the leadership team. Despite

AHRQ toolkit accessibility, feasibility secondary to knowledge deficits in process coordination may limit the potential use for this organization.

Make the Decision

Overall, each policy option offers positive aspects to a successful Med Rec process and policy. Specifically, the analysis-based recommendations are as follows in Table 6. Aspects of each policy option are included.

Table 6

Specific Recommendations

Draft Policy	**WHO**	**ARHQ**
▪ Specify healthcare team roles and responsibilities ▪ EHR integration using Cerner Enhanced Med Rec	▪ SOP ▪ Guiding Principles 1-6 ▪ WHO workflows (adapt to hospital)	▪ Evaluation of process (identify gaps) ▪ Revisions

Based on the analysis, standardization of the Med Rec process is the highest policy priority. The evaluative criteria align with organizational goals to meet strategic plans and JCI accreditation criteria. Analysis revealed gaps, such as practice variability, in the current and draft Med Rec process and policy that would prevent the organization from meeting JCI's patient safety goal to provide safe medication management. Yet, there are positives such as the current practice is to obtain the best possible medication list. The draft policy offers many helpful additional details such as team roles and EHR integration of Med Rec. The WHO SOP offers adjunct steps and direction to ensure the process and policy are efficient, inclusive of all necessary steps, suggests workflows to incorporate

into existing practices, and evaluation methods for revisions regularly to current and draft options.

Utilization of the current practice of obtaining a medication list, the draft policy to identify roles, EHR improvements, and the WHO SOP policy process adoption will provide a guide to develop a robust standardized process and policy for Med Rec. The AHRQ includes specific guidelines to ensure evaluation and revision takes place at an organizational level to meet specific facility needs. These findings will be reported to the site hospital. Reporting the findings is an important ethical step in policy analysis.

Summary and Conclusion

Application of The Eightfold Path to More Effective Problem Solving reveals a mix of current practice, the new draft policy, the addition of the WHO SOP will supply the most comprehensive process and formal policy development for Med Rec at the principal hospital in the Cayman Islands. Using evaluative criteria specific to the JC and WHO's 2021 guidelines, the mix of current practice, the draft policy with the WHO SOP is the most viable policy to adopt. The adoption should improve the process of Med Rec and solidify the creation of an official Med Rec policy. The combined efforts can increase efficiencies as a streamlined process and decrease medication discrepancies. Overall, each improved outcome increases individual patient safety efforts and decreases fiscal expenditures for the organization related to Med Rec.

Appendix A

Chart Review Form: Medication Reconciliation

Item A: Time	
1. Time the patient arrived at the primary site	
2. Initial review time of the medication list	
3. Time medications were documented	
Item B: Alignment	
1. Does the list of medications align with current medication orders?	
Item C: Location	
1. The exact location of the medication list is found in the medical record.	
Item D: Provider	
1. Exact credentials for provider documenting in medication list.	
Item E: Provider Acknowledgement	
1. Does the record have a clear identifier for the provider that indicates a change in the medication list occurred?	
Item F: History	
1. Is there clear documentation of the historical medication list in the record? If yes, where?	
Item G: Accuracy	

1. Has the medication list been updated with new medication orders? If yes, where?	
Item H: Omission 1. During the review, indicate any chart lacking any identifiable medication list to review with a tally mark (i.e., I)	
Item I: Alterations	
1. Are there clear identifiers for the provider to note if medication has been a. Continued b. Changed c. Discontinued	
Item J: Total Medications	
1. Total number of medications on the list in the chart	

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