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Implementation of a Standardized Medication Reconciliation Protocol in a Psychiatric Stabilization Setting

Sara Robinson
University of New Hampshire

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Sara A. Robinson

Department of Nursing, University of New Hampshire

Faculty & Practice Mentor: Marcy Ainslie, EdD, APRN, FNP

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Abstract

BACKGROUND: Medication errors are a prevalent patient safety concern across healthcare settings. High-quality medication reconciliation is an intervention and expected standard of care that can help to prevent adverse drug events. This quality improvement project focused on implementing a standardized medication reconciliation protocol on a short-stay psychiatric unit.

INTERVENTION: An evidence-based toolkit supported by the Agency for Healthcare Research and Quality (AHRQ), Medications at Transitions and Clinical Handoffs (MATCH) was selected as the framework for developing and implementing this protocol.

Congruent with the evidence-based toolkit recommendations, baseline data collection and needs assessment provided context for tailoring the intervention to the unit's needs. A mixed-methods approach incorporated both qualitative and quantitative, varied sources of data from semi-structured staff interviews, workflow observation, manual retrospective chart reviews, and staff training attendance and pre-post test performance. The intervention included staff education and training on best practices for medication reconciliation and interviewing techniques; training for use of electronic health record features to capture completion; recommendations for policy revisions to support adherence and consistency; provision of a standardized workflow incorporating best practices for medication reconciliation, and a detailed recommendation of how to fully digitize this process to utilize a single source document when the technology becomes available.

RESULTS: The educational training sessions were attended by 57% of nurses employed on the unit. Manual retrospective chart reviews were completed at baseline and after providing the interventions. From baseline to post-intervention, there was a 9% decrease in the frequency of medication discrepancies. The results demonstrate a need for continual oversight and

reinforcement of the electronic capture of medication reconciliations to support ongoing medication safety.

CONCLUSIONS: Persons with severe mental illness are particularly vulnerable for medication errors during periods of transitional care. Short-stay psychiatric admissions provide an opportunity to clarify, educate, and communicate medication regimes across care teams to improve care outcomes. Standardized medication reconciliation protocols during psychiatric stabilization stays can improve medication safety and patient care outcomes.

Keywords: medication reconciliation, medication safety, quality improvement, medication errors, psychiatric stabilization

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Stabilization Setting

Medication safety is of utmost importance in healthcare settings in the United States; The Joint Commission has identified improving medication safety across inpatient and ambulatory settings as a key priority (Patient Safety Network, 2019b; Patient Safety Network, 2019c; The Joint Commission, 2022). Prevention of adverse drug events is a key area of focus for the commission and other national organizations supporting high-quality, safe healthcare (Patient Safety Network, 2019b; The Joint Commission, 2022).

Medication errors can be broadly defined as an error at any step along the pathway from prescribing to a patient receiving medication (Patient Safety Network, 2019b). The pathway includes steps of prescribing, transcribing, dispensing, and administration, involving several healthcare professionals throughout these steps. Adverse drug events are preventable, and if an error is caught before medication administration, that becomes a potential adverse drug event or a "near miss" (Patient Safety Network, 2019b). With each step of this process and the potential involvement of multiple internal and external systems, there is room for potential error (Tariq et al., 2022). However, this also provides an opportunity for multidisciplinary support and collaboration to identify and address potential errors (Gleason et al., 2010). It is estimated that nearly half of adverse drug events are preventable (Patient Safety Network, 2019b). Approximately 50% of hospital admissions related to adverse drug events could have been avoided (Andrus & Anderson, 2015).

Problem Description

Medication errors occur frequently across different types of healthcare settings, and an estimated one-third to two-thirds of inpatients have at least one unexplained discrepancy in

admissions medication history (Gleason et al., 2010; Schnipper et al., 2018). The potential risk to

patients persists beyond an inpatient stay, as adverse drug events that may be related to

medication errors are the most common type of adverse event after hospital discharge (Patient

Safety Network, 2019c). In addition to the potential for harm to patients, there is a significant

financial cost associated with medication errors. It is estimated that adverse drug events

occurring during inpatient hospitalizations cost between 1.56 to 5.6 billion dollars annually

(Slight et al., 2018). These potentiate increased healthcare costs and burdens on individuals and

greater healthcare systems.

A report by the Institute of Medicine (IOM) found that 50% of all medication errors and

up to 20% of adverse drug events occur due to poor communication during transitions of care

(Institute for Healthcare Improvement [IHI], 2006). Medication errors around transitions of care

(unit admission or discharge) are a significant contributor to adverse patient outcomes and

overall increased spending (Rangachari et al., 2020). Care transitions elevate the risk of

medication errors, as clinicians and patients may not have access to updated, current medication

lists promptly (Rangachari et al., 2020). The absence of a reliable medication list can cause

errors related to inadvertent addition, omission, or duplication, along with other errors

(Rangachari et al., 2020). Inaccurate medication lists can potentiate errors and patient harm, and

medication reconciliation is a strategy to address and mitigate these risks. The perceived culture

of workplace safety within a healthcare organization impacts the potential for medication errors

(Patient Safety Network, 2019a). Healthcare agencies with perceived poor safety culture by staff

are shown to be inclined to have higher error rates (Patient Safety Network, 2019a).

Medication reconciliation can be defined as a process of obtaining and documenting a

comprehensive, current, accurate list of patient medications and comparing the list to medication

orders throughout the continuum of care to ensure congruence (Lehnbom et al., 2014). The

Institute for Healthcare Improvement (IHI) expands this definition of medication reconciliation

further, defining it as "the process of creating the most accurate list possible of all medicines a

patient is taking, including drug name, frequency, dose, and route, and comparing that list

against the provider's admission, transfer, and/or discharge order to provide correct medications

to the patient at all transition points within the organization" (Institute for Healthcare

Improvement [IHI], 2006). Effective medication reconciliations can potentially identify and

prevent up to 85% of medication discrepancies (Gleason et al., 2010). Time is a highly valuable

resource in healthcare settings. Effective medication reconciliation can be completed on

admission within 15 to 30 minutes (Gleason et al., 2010). Another study evaluating a multi-site

medication reconciliation quality improvement initiative determined that taking a comprehensive

and detailed patient medication history takes 21 minutes (Schnipper et al., 2018).

Medication reconciliation is a process measure endorsed by the National Committee for

Quality Assurance and the National Quality Forum (NQF) as an indicator of patient safety

(National Quality Forum [NQF], 2016). Medication reconciliation has been an identified

intervention to help prevent avoidable adverse drug events (Schnipper et al., 2018; Institute for

Healthcare Improvement, 2022). However, operationalizing these processes is not without

challenges and barriers from an agency standpoint, especially looking at how existing workflows

and documentation systems may not be conducive to facilitating this process.

Best practice indicates the completion of high-quality medication reconciliation on

admission and discharge and communicating the accurate discharge medication list to receiving

providers (Patient Safety Network, 2019c; Schnipper et al., 2018). Integrating these best

practices into unit workflow requires substantial planning, time, staff training, and ongoing

evaluation to establish a sustainable solution (Gleason et al., 2012). Lack of clarity in who is responsible for steps of the process or variations in when or how steps occur or who is completing them can further contribute to confusion, inefficiency, and potential errors (Rangachari et al., 2020). Simply capturing the occurrence of medication reconciliation completion does not guarantee accuracy or quality (National Quality Forum, 2016). Implementing consistent medication reconciliation processes is an area of improvement for many healthcare settings across the nation (Patient Safety Network, 2019c).

While various health settings in New Hampshire may need to improve medication reconciliation processes, this project is focused on an acute psychiatric stabilization unit. This unit was selected due to the added complexity of short-term stays for patients. This includes but is not limited to factors such as patients having multiple comorbidities, multiple uncoordinated care teams across medical and behavioral health, and patient self-care skills can be greatly impacted by components of the underlying psychiatric diagnoses. During acute symptomatic exacerbations such as during hospitalization, patients' ability to provide an adequate medication history may be impaired due to the cognitive impact of their condition (Alshehri et al., 2017; Brownlie et al., 2014). Patients with psychiatric conditions are disproportionately impacted by barriers related to social determinants of health (Alegria et al., 2018), which can further intensify the potential negative impact of the aforementioned factors. The involvement of multiple prescribers and multiple pharmacies increases the likelihood of medication interactions and adverse events (Gleason et al., 2010).

Polypharmacy increases the likelihood of medication interactions and adverse events (Alshehri et al., 2017; Brownlie et al., 2014; Gleason et al., 2012). The number of medications prescribed has been identified to be a significant predictor of adverse drug events as well

(Andrus & Anderson, 2015; Scott et al., 2015). Seeing multiple prescribers is not uncommon for patients being treated for psychiatric conditions, as the psychiatric patient population is at a higher risk of medical illness and comorbidity when compared with the general population (Druss et al., 2011). Certain psychiatric medications can potentially exacerbate or cause medical conditions that require intervention, such as additional medications.

The *New Hampshire 10-Year Mental Health Plan* published in 2019 emphasized the need for a more coordinated mental health care system in the state, including the need for a coordinated continuum of care services and supported transitions (New Hampshire Department of Health and Human Services [NH DHHS], 2019). Medication reconciliation is an example of an effective and important intervention that contributes to patient safety and coordinated smooth care transitions. Effective care transitions can allow patients to remain in the least restrictive setting, outside of the hospital, to maintain recovery. Difficulty with medication adherence is a known contributor to psychiatric readmissions occurring within 30 days of discharge (Han et al., 2020).

New Hampshire has higher psychiatric readmission rates at 30 days and 180 days when compared with the national average readmission rates (Substance Abuse and Mental Health Services Administration [SAMHSA], 2018). State expenditures for inpatient psychiatric care in New Hampshire are higher than the national average and comprise a larger percentage of total expenditures than the national average (SAMHSA, 2018). The average cost of inpatient psychiatric care per day is $2,912 (Human Services Research Institute, 2017). Spending related to hospital readmissions, medication errors, and failed transitions of care are all contributors driving up unnecessary costs in New Hampshire. Proper medication reconciliation and related patient education have the potential to address all three of those contributing factors.

Available Knowledge

Medication reconciliation has strong literature support for its efficacy, role in facilitating

safe patient care, and minimizing adverse events (Patient Safety Network, 2019c). It has been an

identified intervention to help prevent avoidable adverse drug events (Institute for Healthcare

Improvement [IHI], 2022; Schnipper et al., 2018). Barriers to effective medication reconciliation

practices include but are not limited to the resource-intensive nature of medication

reconciliations, challenges incorporated into existing workflows, and competing quality

improvement priorities within agencies (Patient Safety Network, 2019c).

A comprehensive review of the literature facilitated the identification of protocols and

processes for medication reconciliation, showing a range of possible interventions and systems.

Specific programs that were evaluated in-depth include MedManage (Jarrett et al., 2019),

Medications at Transitions and Clinical Handoffs [MATCH] (Gleason et al., 2012), and the

Multi-Center Medication Reconciliation Quality Improvement Study [MARQUIS] (Schnipper et

al., 2018), amongst others. The selected framework for the basis of this quality improvement

initiative is the Medications at Transitions and Clinical Handoffs (MATCH) toolkit, which is

evidence-based and supported by the Agency for Healthcare Quality and Research (AHRQ)

(Gleason et al., 2012). The MATCH toolkit provides a comprehensive guide from planning

through implementation and evaluation to address medication reconciliation process

improvements and incorporate a revised process into the workflow for sustained utilization

(Gleason et al., 2012). The MATCH toolkit provides a comprehensive, systematic approach

informed by continuous cycle quality improvement to implement sustainable protocols for

accurate, comprehensive medication reconciliation. MATCH can be integrated into an electronic

health record (EHR) (Gleason et al., 2012). The MATCH framework has been utilized in diverse

settings throughout the United States, with robust literature describing implementation and outcomes (Gleason et al., 2010; Jarrett et al., 2020).

A central concept of the MATCH framework is the use of a single, reliable medication list referred to as the "One Source of Truth" document (Gleason et al., 2012). This facilitates a streamlined documentation source and helps to minimize potential errors related to transcription and entering changes into multiple systems. It allows for the patient to have one reliable medication list that will then ideally follow them throughout the continuum of care. Obtaining accurate patient medication histories historically has relied on individual clinicians' interviewing skills, which is specifically addressed within the MATCH toolkit to provide best practices for interviewing to obtain a comprehensive medication history (Gleason et al., 2010; Gleason et al., 2012). The steps provided for implementing MATCH are further outlined in Appendix A.

Rationale

There is a palpable gap between national-level recommendations for widespread, consistent medication reconciliation and the successful integration of systems and policies to support this happening reliably (Schnipper et al., 2018). In a study by Rangachari et al. (2020), some identified barriers to consistent medication reconciliation processes included: the need for additional education, staff ownership and accountability, the process of care, IT-related challenges, workforce training, and workflow issues related to documentation. Technology alone is not reliable to address the need for comprehensive medication reconciliation (Gleason et al., 2010), and thoughtful effort to integrate supportive and reliable systems outside of information technology is needed for feasible and sustainable implementation. Clear agency policies and procedures for staff to follow are important from a risk management perspective as well (Irving, 2014). Having a clearly stated expectation that is documented in policy clarifies what otherwise

may not be identified as required or a standard of care, for example completing a medication

reconciliation, and how that process needs to be done.

To implement a successful medication reconciliation protocol, adhering to

recommendations for reliable system implementation will support sustainable practice change.

A reliable system can be successfully reproduced by multiple individuals in the healthcare team

(Frankel et al., 2017). The IHI White Paper (Frankel et al., 2017) *A Framework for Safe,*

Reliable, and Effective Care highlights four foundational concepts to promote the reliability of

intervention/process implementation in practice. These are standardization, simplification,

reduced autonomy, and highlighting deviations from the protocol (Frankel et al., 2017). These

principles guided the development and implementation of a standardized medication

reconciliation protocol.

Continuous quality improvement has been identified as a model supporting improved

quality of care and reduced healthcare costs (Hill et al., 2020). A continuous quality

improvement model was utilized for this project, adapting the intervention accordingly

throughout the process to address feedback and areas in need of improvement. Key aspects of

this model include looking at organizational-level systems and processes rather than

overemphasizing the individuals within the system being evaluated (Hill et al., 2020). Engaging

with individuals to empower involvement in identifying problems and facilitating solutions is a

manifestation of this model (Hill et al., 2020), and this was addressed throughout the project.

Following the Plan, Do, Study, Act (PDSA) model for quality improvement (Frankel et

al., 2017), throughout the intervention testing, modification, and repeating the PDSA process

was continually facilitated. This was imperative to establish systematic improvement within the

agency's framework to implement a realistic intervention. The initial plan for standardized

workflow was introduced to the unit medical director along with findings from the initial

baseline data collection period. Feedback was addressed and incorporated to modify accordingly,

utilizing the PDSA model to promote a realistic and sustainable intervention.

The MATCH toolkit provided an evidence-based system and planning overview for

successful implementation, evaluation, and ongoing process improvement for this project

(Gleason et al., 2012). The framework was used from the early planning stages throughout the

intervention and evaluation to provide a strong supportive rationale for the changes and

recommendations to existing policy and procedure.

Specific aims

The purpose of this project is to implement a reliable, standardized medication

reconciliation process to ensure accuracy and increase accountability. The specific aims of this

project are:

1) Assess nurses' ability to identify medication reconciliation best practices and develop

digital documentation competency of these processes following participation in a constructed

educational session.

2) Demonstrate the extent to which implementing a standardized workflow and policy

revision, aligned with medication reconciliation best practices, can result in increased completion

of high-quality medication reconciliations at admission.

Methods

Context

Acute psychiatric stabilization in New Hampshire is largely provided by designated

receiving facilities (New Hampshire Department of Health and Human Services [NH DHHS],

2022). A designated receiving facility (DRF) is a hospital-based psychiatric unit or a non-

hospital-based residential treatment program that has been designated by the New Hampshire

(NH) Department of Health and Human Services (NH DHHS) to provide care and treatment to patients in need of acute psychiatric hospitalization within the state mental health services system in New Hampshire (NH DHHS, 2022; The General Court of New Hampshire, n.d.). There are seven DRF facilities in New Hampshire (NH DHHS, 2022). The Cypress Center unit is a 16-bed DRF unit serving adult populations in New Hampshire and is the site of this quality improvement initiative. The Cypress Center unit is the highest level of care within the Mental Health Center of Greater Manchester (MHCGM), which is one of ten New Hampshire Community Mental Health Centers (Mental Health Center of Greater Manchester, 2022). While MHCGM serves the geographic catchment area surrounding Manchester, NH, the DRF unit is not bound by catchment area enrollment regulations and therefore serves a broader patient population in the state. The Cypress Center unit is the only DRF facility that is not hospital-based in the state. It is described as an alternative to hospitalization, providing short-term stabilization for patients with the most acute severity of psychiatric symptoms (Mental Health Center of Greater Manchester [MHCGM], 2022). The median length of stay during a survey period of 2016-2017 was found to be 4 to 5 days, which is shorter compared with other state DRFs (Human Services Research Institute, 2017). Average stays are noted by the agency to be 3-7 days (Mental Health Center of Greater Manchester, 2022).

The Cypress Center unit has on-site nursing and mental health counselor coverage 24/7 and daily rounding of psychiatric providers, psychiatric-mental health nurse practitioners (PMHNP), and psychiatrists. Pharmacy services are provided in-house on weekdays from 9 am-5 pm. An off-site retail pharmacy is used to obtain necessary medications in the evenings and on weekends. The in-house pharmacy can access the electronic medical record (EMR) record, while orders called into the off-site retail pharmacy do not have this same internal quality checkpoint.

One challenge faced by the agency leadership, administration, and unit teams is the shift from paper to digital charting of medication orders, care documentation, and medication administration. Lewin's theory of change describes the organizational change as a force field (Shirey, 2013). Analyzing the force field, as Lewin conceptualizes it, assesses the presence of forces that are driving and resisting change (Costello, 2010). To facilitate effective change, the driving forces must increase to overcome the resisting forces (Costello, 2010; Shirey, 2013). Consideration of this theory was applied throughout the project. During the needs assessment period, the nursing staff is observed to be frozen with resistance to change.

The overall purpose of this project was to provide medication reconciliation training to nursing staff, standardize medication reconciliation workflow, and clarify the expectation of this process through revised policies. The intervention implemented through this quality improvement project is divided into two stages. Each will be described in further detail congruent with the SQUIRE 2.0 format (SQUIRE, 2015).

Needs and Situational Assessment

Preliminary data was collected for a baseline needs assessment. Both qualitative and quantitative data were gathered, utilizing a mixed-methods approach. Baseline needs assessment included semi-structured informal staff interviews, patient chart reviews, workflow observations, and auditing of existing unit policies. Medication variance reports were monitored throughout the project period. These qualitative and quantitative indices provided actionable information for the development and implementation of this project, along with providing assessment methods for the outcome of the intervention.

Semi-structured interviews with staff at baseline demonstrated that the existing workflow lacks clear expectations and consistency, including whom the responsible parties are for

completing certain tasks. There is significant variation in how orders are relayed to nursing staff

and subsequently entered into the documentation system. Because of the duplicate

documentation processes, medications for each patient are entered into the paper chart,

OrderConnect™ EMR, and the nursing MAR binder. The pharmacy information sheets that are

part of the admissions process were all missing some, if not all information, during the initial

baseline review period. There was no clear documentation or expectation of verifying a

medication list with the patient's pharmacy. Additionally, though medication lists may be

received from the Emergency Department (E.D.), no clear documentation or process is

demonstrating a nursing staff review and reconciliation of that information and medication list.

Further detail of thematic coding (Reavy, 2016) based on the findings from the staff interviews is

in Appendix B.

  Through semi-structured interviews, unit nurses consistently described concerns with

transitioning to fully electronic systems, including responsiveness of new technology and

difficulty integrating it into the existing workflow. This has resulted in documentation happening

on paper and in the EMR for the past year. All medication active orders are noted in four

different places: a physical paper chart order sheet, OrderConnect™ electronic orders, paper

Medication Administration Record (MAR) binder, and electronic administration record (EAR) in

OrderConnect™. Any change of medication will then need to be noted in all locations. This

duplicate documentation is inefficient and increases the likelihood of errors (Callen et al., 2010).

Multiple steps in medication processes introduce multiple possible entry points for error

(MacDowell et al., 2021).

  Based on the staff interviews, policy review, and workflow observation during baseline

needs assessment, it was apparent that medication reconciliation is not occurring consistently

during admission or before discharge. There is no documented workflow pathway, standardized

process for completion, or designated location to document the completion of high-quality

medication reconciliation. There is significant variation in how nurses approach this process, and

there is a lack of supportive policy to require and expect this.

The absence of medication reconciliation as a requirement for staff on admission

checklists is notable (Cypress Center, 2018). Within the agency's *Admission/Discharge* policy

document, the process of medication reconciliation is not noted to be the responsibility of the

prescriber or the nurse; it is not directly linked to any specific member or member(s) of the care

team (Cypress Center, 2020). Existing admissions documents in paper charts do not have

consistent initials or other indicators of which staff member completed the document and when

which further creates accountability and communication gaps. In the event of missed or incorrect

information, it is more difficult to track the source without this clear notation of staff who

completed the paperwork.

The unit policy indicates that a variance report must be completed for any medication

error (Cypress Center, 2022); however, the existing system leaves ample room for missed

reporting or not capturing the occurrence of an error. During the baseline needs assessment

period, it became evident that the variance report was not capturing all discrepancies. This was

addressed immediately with the relevant unit staff and leadership. This resulted from an error in

communication within the nursing unit as to who was accountable for tracking discrepancies and

a lack of understanding that both medication administration and documentation errors were

variances to be reported. The variance reports did not capture potential adverse drug events or

near misses, which are medication errors that are caught before the medication is administered to

the patient (Patient Safety Network, 2019b). For example, if a medication listed on the patient's

E.D. discharge documentation is not listed on the unit medication list, whether the omission is

intentional or unintentional. There is a lack of clear documentation to acknowledge the

discrepancy or change of medication. Part of the existing workflow deficiency is a lack of clear

policies and expectations for the completion of this process. Furthermore, without clear

processes, there will not be reliable data on which to monitor continued quality improvement.

   An extensive literature review was completed to identify best practices for medication

reconciliation most appropriate for this setting. Through this process, the evidence-based

Medications at Transitions and Clinical Handoffs (MATCH) toolkit by the Agency for

Healthcare Research and Quality (AHRQ) was identified as the best framework for developing

the intervention (Gleason et al., 2012; Jarrett et al., 2020). The MATCH toolkit document

(Gleason et al., 2012) provides a comprehensive overview of planning, implementation, and

evaluation that can be adapted accordingly to agency-specific characteristics and needs. The

MATCH toolkit involves steps or processes further outlined in Appendix A (Gleason et al.,

2012; Jarrett et al., 2020).

   The project work was informed by initial baseline needs assessment data, chart reviews,

policy reviews, and semi-structured informal staff interviews. Chart reviews were completed for

baseline needs assessment via manual retrospective evaluation, which is recommended by the

MATCH toolkit (Gleason et al., 2012). Although time-consuming, manual retrospective

evaluations provide valuable information including specific information about discrepancies,

types of medications involved in discrepancies, and other details (Gleason et al., 2012). Audits,

such as chart reviews, are a valuable tool supported by continuous quality improvement models

to facilitate meaningful change (Hill et al., 2020). Retrospective chart review of patient medical

records provides an evaluative method to assess patient safety, and its use for obtaining objective

data has been established (Hammer et al., 2019). These reviews provide additional context and

information that is often not captured in incident reports and other agency-level data systems

(Hammer et al., 2019). A detailed description of the chart review components is available in

Appendix C.

The number of completed medication reconciliations was evaluated before the

implementation of a standardized workflow and quantified based on patient chart reviews using

manual retrospective evaluation. Based on this process and review, it was determined that the

baseline frequency of completed, documented medication reconciliations was 0%. If some

aspects of medication reconciliation were occurring, inconsistent location of documentation

prohibited the ability to confirm completion.

Baseline patient chart reviews demonstrated the presence of discrepancies across data

sources when comparing the patient's paper chart medication orders with those documented in

the electronic system, OrderConnect™. Within the baseline chart reviews, 59% of the charts

reviewed had at least one discrepancy. Further representation of the frequency of discrepancies

found in chart reviews is provided in Table 1.

Table 1

Baseline Needs Assessment Chart Reviews Discrepancy Frequency Table

Number of discrepancies per chart	Number of charts N = 27	Frequency of discrepancy %
0	n= 11	41%
1	n= 8	30%
2	n= 5	18%
3+	n= 3	11%

The categories of medication discrepancies used for this project were adapted from those

provided by the MATCH toolkit (Gleason et al., 2012) and include omission, commission,

different dose/route/frequency, different medication, and others. Further explication of the

discrepancy categories with additional defining criteria is in Appendix D. A further extrapolation

of the frequency of different medication discrepancy categories found during baseline needs

assessment is presented in Table 2.

Table 2

Frequency of Medication Discrepancy by Category in Baseline Chart Reviews

Discrepancy category	Baseline frequency of discrepancies N=27	Baseline %
Omission	n= 11	41%
Commission	n= 0	0%
Different dose, route, or frequency	n= 9	33%
Different medication	n= 1	4%
Other	n= 6	22%

The interventions, measures, and analyses are further collated and organized into two

project stages. Stage 1 addresses unit staff training and policy development. Stage 2 addresses

the standardized workflow for medication reconciliation and streamlined documentation.

Stage 1

Intervention

Stage one lays the groundwork for effective medication reconciliation implementation.

Policies are developed and implemented to promote accountability and nursing staff are educated

on the best practices of medication reconciliation, as well as how to operationalize this skill in

the digital EAR.

Medication Reconciliation Staff Educational Session. A presentation covering best

practices of medication reconciliation was created and presented to the nursing staff. The initial

presentation was provided in person with a PowerPoint visual; a recorded version of the

presentation was shared with staff unable to attend the live session to support the agency in using

this content for future training needs. Staff completing the recorded training provided completion

confirmation by email. Continuous quality improvement initiatives that include face-to-face

training tend to have more efficacy when compared with other modalities (Hill et al., 2020).

Priority areas for staff education were identified based on the MATCH toolkit (Gleason et al.,

2012) recommendations for training. This included interviewing best practices for obtaining a

comprehensive medication reconciliation, along with principles of documentation congruent with

MATCH (Gleason et al., 2012). Background information about medication errors and the

opportunity high-quality mediation reconciliation offers to mitigate and prevent errors were

discussed. The incorporation of a visual tool to support medication reconciliation as

recommended by Jarrett et al. (2019) was included to support the integration of patient

interviewing techniques to obtain a well-detailed medication history. A detailed outline of the

educational session content can be found in Appendix E. Furthermore, the ability of the EAR

software to document the completion of medication reconciliations was identified as a feature

that was available but not known to staff, and therefore it was not being utilized. A brief video

overview of how to complete and record a medication reconciliation in the OrderConnect™

digital medication documentation system was recorded and shared with all nursing staff as well.

Study of the Intervention

For the live education session, four pre- and post-test questions were administered to

participants to measure the effectiveness of meeting session learning objectives. The pre-and

post-test questions were the same on both assessments, but participants were blinded to that until

they were in the process of taking the post-test. The first three questions were multiple choice,

each one with four possible response options. The final question was an open-ended, short-

response question. Each participant's response to a question was coded as either correct or

incorrect. The total number of correct responses was recorded with a possible range of 0-4, and

percentages of 0-100%. The results of the live session participants' pre-and post-test data are

further discussed in the Results section of this report.

Additionally, the proportion of nurses who participated in either the live or recorded training videos was measured to determine how many nurses received the training, relative to the total number of nurses employed. This was further stratified to specifically look at how these percentages compared as far as the full-time nurses and per diem nurses. Overall, 57% of nurses employed on the unit engaged in either the live or recorded training videos. The full-time nursing staff engagement was 78%, and per diem nursing staff engagement was 30%.

Analytic Approach

Descriptive statistics, such as frequencies and percentages are reported. For the staff education session, attendance will be captured to analyze the percentage of nursing staff directly receiving the educational intervention relative to the number of nursing staff employed on the unit, including further stratification by full-time or per diem status. This will again be calculated to account for the confirmation of staff viewing recorded video to capture the percentage of staff reached, and stratified by full-time and per diem status, along with cumulatively. For the live staff education session, pre-and post-test evaluations were administered to determine the effectiveness of the intervention. Measures of central tendency compared the means of pre-test and post-test scores (Reavy, 2016). These were one-group pre-post-test data, as there was only one intervention group and no control group (Reavy, 2016).

Policy work. In response to the baseline needs assessment audit of unit policies relevant to this project, recommendations for additions and revisions to existing policies were identified. Areas of the policy were identified and reviewed for congruence with evidence-based practice recommendations as supported by AHRQ, the MATCH toolkit protocol. Highlighting the gap in what is stated policy that is incongruent with evidence-based practice provided a strong basis for support of the recommended changes to existing policy. To provide a feasible and sustainable

intervention, the recommendations provided were limited in focus and scope to incorporate

implementation science to minimize barriers (Reavy, 2016). A review of the policies before, and

after the recommendations have been submitted, will determine the congruence of adhering to

recommendations. See Appendix F for the policy recommendations that were provided to agency

leadership for consideration.

Stage 2

Intervention

Stage 2 incorporates the development and implementation of a standardized workflow for

medication reconciliation and streamlined documentation, supported by the evidence-based

MATCH toolkit (Gleason et al., 2012). As advised by the MATCH protocol (Gleason et al.,

2012), a flowchart was developed to provide an overview of the existing system before the

introduction of the new, standardized workflow. While the existing system was in place,

completing the process not clearly documented or demonstrated in any of the charts reviewed. A

flowchart representation of the workflow before the project is in Figure 1.

Figure 1

Flowchart Illustrating the Workflow Before Project Implementation
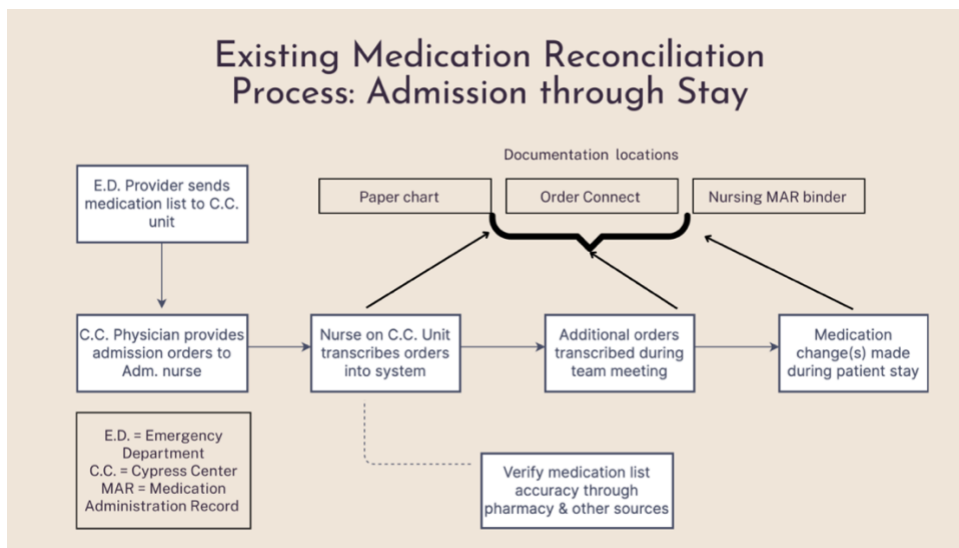
In comparing the existing system with recommended evidence-based practice and

contextualizing it for the specific unit needs, a revised workflow was developed. This

standardized workflow recommendation supported by MATCH (Gleason et al., 2012) is

represented visually on a flow chart in Figure 2.

Figure 2

Flowchart of the New Standardized Workflow Supported by MATCH (Gleason et al., 2012)
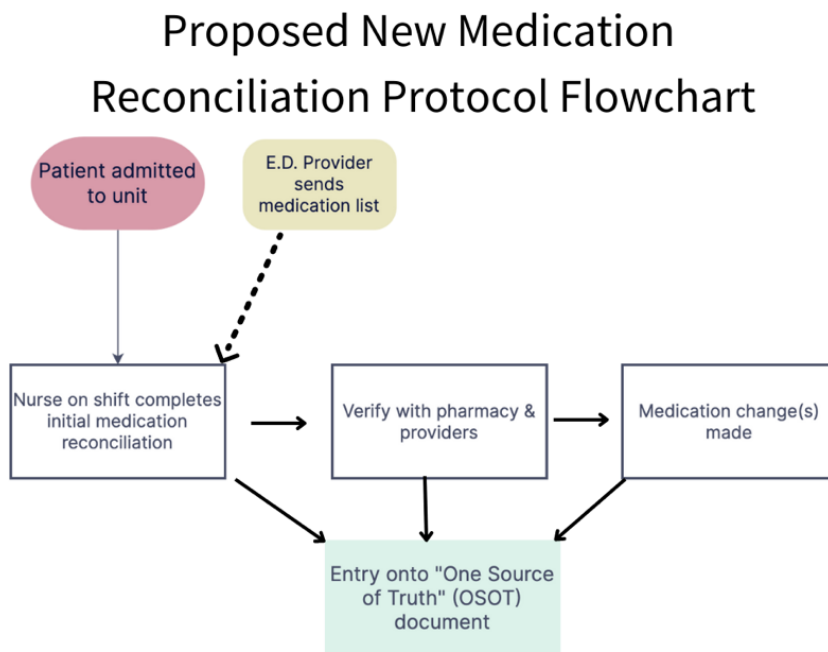
The agency has a functioning digital ordering system for medications, but the electronic

administration record (EAR) does not function in a way that supports the recommended

streamlined workflow. This is due to limitations in the ability to customize forms and features

within the system that would adhere to best practices as supported by MATCH (Gleason et al.,

2012). However, per information technology and quality improvement staff, these features are

expected to be incorporated into a 2023 software upgrade and made available to the agency at

this time. Per agency leadership's request, the digital ordering system was used as a single source

of order, while medication administration documentation will continue to be on paper due to

technological limitations that are expected to be resolved in mid-2023. For this reason,

documentation is transitioned from 4 to 2 sites with a plan under future recommendations of how

to transition to a single source document, consistent with MATCH recommendations (Gleason et

al., 2012) when the technology becomes available.

Completion of Medication Reconciliations. The new standardized workflow expects

the admitting nurse will complete the initial medication reconciliation based on available record

review, including emergency department discharge documentation, and using the patient

interview. The medication reconciliation will be documented in the OrderConnect™ system, and

eventually, when single source documentation can be supported by the technology, this will

further streamline the process. The process can be completed by any nurse on the unit, as they

will all have been trained on completing high-quality medication reconciliations and how to

document accordingly in OrderConnect™ via the training videos. Within the OrderConnect™

system, there is a medication reconciliation tab that provides a way to measure the frequency of

completion and to document a double-check. The system has a checkbox with a pop-up reminder

prompt that populates the screen until the "I have reconciled medications" box is acknowledged.

The system then time stamps, dates, and signs with the name of the staff member completing

this. Having the ability to capture this within the EHR provides agency quality improvement

staff with a more streamlined method to analyze the frequency of completion, and gain insight

from the patterns and analytics associated.

Part of the MATCH toolkit (Gleason et al., 2012) recommendations includes staff

education and training on best practices for patient interviewing to obtain a high-quality

medication reconciliation. A combination of open-ended and closed-ended questions is

recommended to obtain the most detailed information within the interview (Gleason et al., 2012).

For congruence with MATCH, the sources of information including patient interviews or other

sources should be documented so that it is clear where the information came from. This includes

verifying with the outpatient pharmacy and other members of the patient's care team (Boswell et

al., 2015). Best practices for interviewing to obtain a detailed medication reconciliation will be

incorporated into a standard admission interview, including the use of a visual tool to prompt

essentially a head-to-toe review of patient medications. An example of this visual prompt tool,

adapted from an example provided by Jarrett et al. (2019), is in Appendix G. This approach

naturally aligns with the existing medical assessment on admission, which facilitates efficiently

incorporating this process into existing workflows.

Study of the Intervention

Chart reviews were completed over the course of several different days and different

shifts on both weekdays and weekends. This was done to capture a more heterogeneous sample

to evaluate the contributions of multiple staff members and to have more admissions and

discharges and as a result additional patient charts available to review. The timeframe for chart

reviews allowed for more total patient charts to be included given the short average length of

stay on the unit.

Chart reviews compared orders in the patient's paper chart with the orders documented

electronically in OrderConnect™. The medication lists were compared directly for congruence.

A discrepancy was defined as an error (of commission, omission, or otherwise) within the

documentation pathway from prescription to documentation. The discrepancies were further

assigned a category, and those categories are further explained in Appendix D. The calculation of

the discrepancy rate involved the number of discrepancies found in a patient's chart per the

number of charts reviewed. Additionally, the rate of charts containing more than one discrepancy

was calculated. The frequency of specific medication discrepancy categories was calculated and evaluated as well. After the implementation of the standardized workflow, the completion of medication reconciliations was evaluated again following the same pre-intervention chart review process, and those findings are further discussed in the Results section of this report.

Analytic Approach

During the chart review process, patients' paper chart medication orders were directly compared with the digital order entered in the OrderConnect™ system. The congruency of medication lists was noted; if an inconsistency between the two records was discovered, this was noted to be the presence of a discrepancy. Medication discrepancies were then categorized by the type of discrepancy, and these categories are further explicated in Appendix D. Since the medication orders were the subject of the review and not the administration record, the discrepancies captured are reflective of the documented orders and not what was administered to the patient. Therefore, the type of discrepancy was a more appropriate measure than the potential level of error or harm rating (Gleason et al., 2010). If more than one discrepancy was noted in a patient's chart, the rate of charts with multiple discrepancies was calculated as well. Descriptive statistics, such as frequencies and percentages were reported. These statistics provide discrepancy rates within a patient's chart in the context of total charts reviewed, the frequency of charts with more than one discrepancy, and the frequency of discrepancy categories. Since the protocol for chart reviews was consistent, this allowed for direct comparison with the findings from the baseline chart reviews.

Ethical Considerations

The proposal for this quality improvement initiative was reviewed by the University of New Hampshire (UNH) Department of Nursing Quality Review committee. According to the

review committee, based on the SQUIRE 2.0 guidelines (SQUIRE, 2015) for the determination

of quality improvement and research activities, the proposal was indicated to meet the standards

for a quality improvement project. As such, the Quality Review committee determined that this

project did not constitute research, and therefore did not require review by the UNH Institutional

Review Board for the Protection of Human Subjects. The review committee noted in the quality

improvement determination letter dated May 16, 2022, that there were no potential conflicts of

interest (financial, professional, or institutional). The project lead does not have any potentially

relevant conflicts of interest and is not employed by the agency where the project is being

implemented.

<div align="center">**Results**</div>

Adapting to barriers and challenges in quality improvement work requires continuous

learning, which informs a flexible approach to project implementation and process improvements

(Harris et al., 2020). Given the complexity of quality improvement work in the healthcare

setting, with multiple potential challenges, even a well-planned project can encounter many

different barriers kinds of barriers. Modifications were made throughout the project in response

to barriers encountered to continue facilitating progress and movement, utilizing principles of

continuous quality improvement. From the initial project proposal, adaptations were related to

but were not limited to, the following: organizational resistance to change, competing for agency

priorities, technology barriers, and disconnected internal organizational communication. Initially,

the planned intervention included medication reconciliation processes completed at both

admission and discharge. However, several months into the project work agency leadership

requested that only admission be looked at, and not incorporated discharge into the project work.

Therefore, this was changed partway through the project period and is a derivation from the initial proposal.

During the project, it became apparent that although the nursing staff was continuing to document both on paper and digitally, the quality improvement staff was not aware that this was still happening on the unit. This was discussed during one of the stakeholder meetings. Addressing this facilitated an unanticipated benefit, helping to improve communication between these groups and to underscore the need for more frequent communication. Although duplicate documentation was not the specific focus of this project, it was determined to be a variable contributing to medication discrepancies and increased workload burden on staff. Transcription of medication orders across systems increases the likelihood of error (Callen et al., 2010). Addressing the duplicate documentation was a secondary outcome within the project, as it was a key component to address to move towards a more streamlined system. To better support long-term agency goals of moving to fully digital systems, the project lead facilitated focused discussions with the nursing staff. The discussion was focused on barriers related to the future fully digital system transition, providing actionable information for the agency staff interfacing with the technology to address areas of need. This helped to identify whether there is a need for electronic system-specific adjustments or if perhaps it suggests a need for further staff training in using the software. These findings were collated and provided to agency leadership.

During the project, it was discovered that the existing unit variance report was not capturing all medication discrepancies. This was due to variable reporting and additional variances being captured on an individual basis that was not being reported on the unit-level report. Though this was not part of the planned intervention, this was addressed immediately with the relevant unit staff and leadership. This resulted from an error in communication within

the nursing unit as to who was accountable for tracking discrepancies and a lack of

understanding that both medication administration and documentation errors were variances to
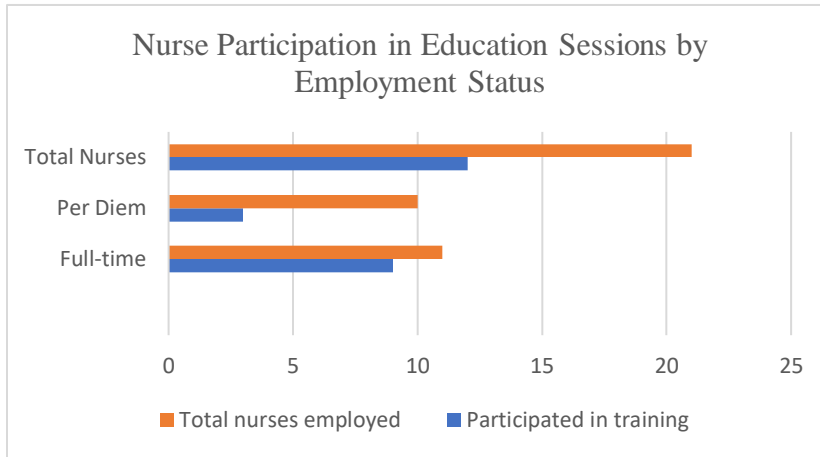
be reported.

Given that medication reconciliation is an area of priority for patient safety and there are

related measures for the agency to be monitoring, addressing this process in a comprehensive

way will help the agency to improve in meeting certain measures. By streamlining the process

and providing best practices for completion, the staff is supported by increased self-efficacy via

training. The training videos were recorded to be more broadly generalizable for training

outpatient staff as well as staff on the unit. The existence of a "medication reconciliation" tab in

the OrderConnect™ was not a commonly known feature by the unit leadership, and therefore the

floor nurses. Addressing this knowledge gap and providing a software-specific overview video

has helped to facilitate the use of the integrated feature. Electronic capture of completion will

assist the agency in recording frequency, better assessing meeting these measures and

benchmarks, and identifying areas of need for further training or support. Streamlining this

process to provide education to staff has potential benefits not only in the short-term but also

longer term. Strong medication reconciliations that are completed well follow patients

throughout their continuum of care and have the potential to improve care outcomes.

Education session

The impact of the staff education session was measured for both the live and recorded

sessions. The number of attendees of the live session relative to the total number of nurses

employed on the unit provided a sense of initial reach, with 57% of nurses employed on the unit

engaging in either the live or recorded training during the study period. Further visualization of

the nurses' participation stratified by position is presented in Figure 3.

Figure 3

Nurse Participation in Education Sessions by Employment Status

Nurse Participation in Education Sessions by Employment Status

[Bar chart titled "Nurse Participation in Education Sessions by Employment Status" showing horizontal bars for Total Nurses, Per Diem, and Full-time categories. Legend: Total nurses employed (orange), Participated in training (blue). X-axis ranges from 0 to 25.]

Live session participants' pre- and post-test performance were assessed, and those results are further detailed in Figure 4. For the recorded session, nurses were asked to confirm via email that they had viewed the videos, but a pre-and post-test were not administered for the asynchronous views, which was a limitation of this project.

Figure 4

Participants' Pre- and Post-Test Performance from Live Education Session

Participants' Pre- and Post-Test Scores

[Bar chart titled "Participants' Pre- and Post-Test Scores" showing Participant 1, Participant 2, and Participant 3 with pre-test (blue) and post-test (orange) percentages. Y-axis ranges from 0% to 120%. Legend: Pre-test percentage of questions answered correctly (blue), Post-test percentage of questions answered correctly (orange).]
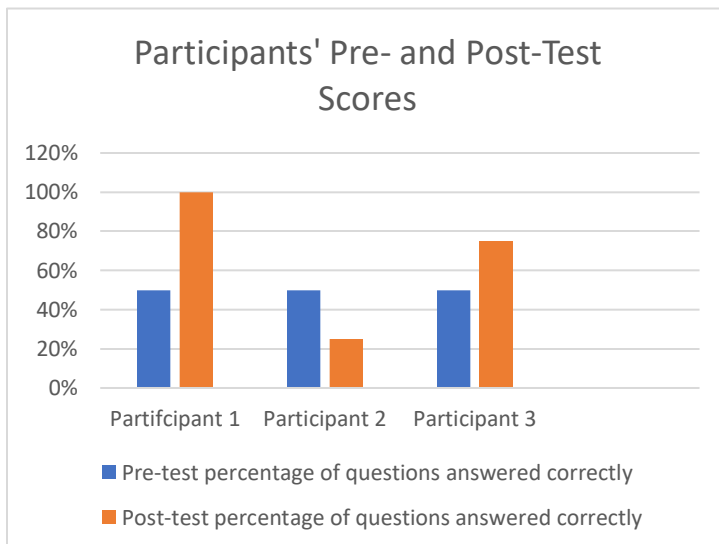
Several nurses additionally reached out with unsolicited feedback that was favorable and appreciative of the information and content; this was an unexpected benefit. Engaging the nurses with the training videos is just one aspect of effectively integrating medication reconciliation into the workflow. Supportive policies in place on the unit will be imperative in ensuring this is done consistently, with added accountability. Leadership seemed

supportive of the training but did not mandate the training for the nurses. Without the training being mandatory for staff, 100% engagement of nurses was not possible. The project lead with permission of agency leadership facilitated an incentive for participation with a raffle for a gift card for those that viewed and confirmed viewing the videos. Nursing unit leadership showed the videos during a staff meeting as well.

Chart Reviews

Manual chart reviews were completed again after the educational training session and videos were shared, along with the policy recommendations, the introduction of using the OrderConnect™ medication reconciliation tab, and the standardized workflow. Since the medication reconciliation tab was not known to unit staff nurses and leadership before the project, medication reconciliation completion was done manually for the baseline needs assessment. For the chart reviews after providing the stated interventions, the use of the tab to verify medication reconciliation completion was incorporated into the chart review component items. Agency-level data was not made available after this project.

During the pre-intervention period, 27 charts were reviewed to establish a baseline, and in post-intervention, 28 charts were reviewed to assess impact. The period of post-implementation chart reviews demonstrated that duplicate documentation on both paper and digital systems has continued. Discrepancies between paper and electronic records, and other inconsistencies remain prevalent, though there were some favorable improvements noted. The post-intervention chart reviews found that 50% of charts had a discrepancy, which is a 9% improvement from the baseline needs assessment discrepancy rate of 59%. The frequency distribution of discrepancies found in the chart reviews both pre- and post-intervention are presented visually in Table 3.

Table 3

Frequency Distribution of Discrepancies Comparing Pre- and Post-Intervention

Number of discrepancies found per chart	Number of charts reviewed pre-intervention N = 27		Number of charts reviewed post-intervention N = 28		Rate of change (pre to post)
	Pre-intervention discrepancy frequency	Pre-intervention discrepancy rate % (n/N)	Post-intervention discrepancy frequency	Post-intervention discrepancy rate% (n/N)	
0	n=11	41%	n=14	50%	+9%
1	n=8	30%	n=8	29%	-1%
2	n=5	18%	n=4	14%	-4%
3+	n=3	11%	n=2	7%	-4%
Total	n=27		n=23		

As with the baseline chart review data, the prevalence of different medication discrepancy categories was calculated. The post-implementation data period most frequently had "other" category discrepancies. The frequency distribution of discrepancy categories from the pre-implementation and post-implementation chart reviews are presented in Table 4.

Table 4

Discrepancy Category Frequency Distribution: Pre- and Post-Intervention Comparison

Discrepancy category	Pre-intervention frequency, n	Pre-intervention %	Post-intervention frequency, n	Post-intervention %	Rate of change
Omission	11	41%	5	22%	-19%
Commission	0	0%	1	4%	+4%
Different dose, route, or frequency	9	33%	1	4%	-29%
Different medication	1	4%	0	0%	-4%
Other	6	22%	16	70%	+48%
Total	27		23		

There was a significant increase in the frequency "other" category discrepancies during the post-intervention chart reviews. This finding is most likely related to the number of prescriptions for long-acting injectables during this timeframe, which were found to be the most common medication linked to a discrepancy, with the category type most often being "other." This would often be related to the absence of certain directions or the absence of or unclarity with the date due for the next injection. There were favorable trends overall with the discrepancy frequency comparing pre- to post-intervention chart review findings. This data is presented visually in Figure 5.

Figure 5

Overall Discrepancy Rate in Chart Review Findings Comparing Baseline and Results
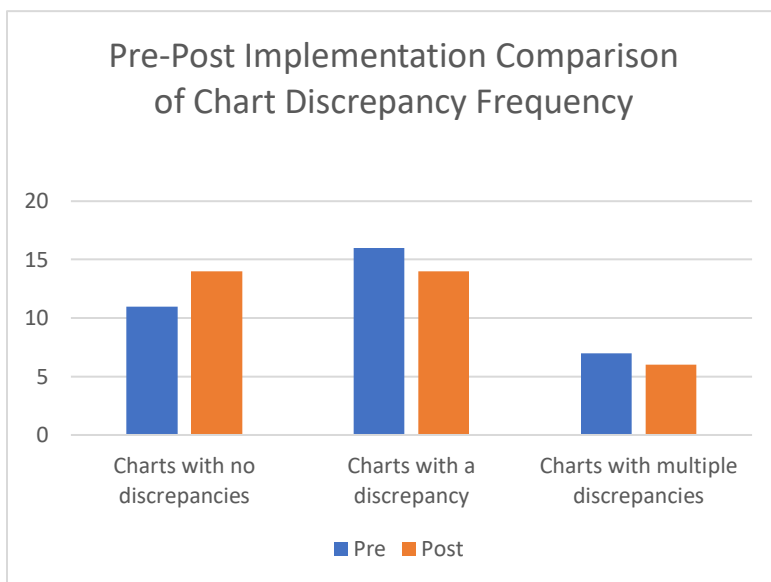
The discrepancy rate per patient, comprising all collected data (pre-and post) was determined to be 1.47. During the chart review process, a pattern emerged that some types of medications were more often linked to a discrepancy. The most common medications linked with discrepancies were antibiotics and long-acting injectable medications; the latter, most often were antipsychotics. Over the course of both review periods, 18 discrepancies were related to long-acting injectable medications. This was by far the most common specific medication linked to discrepancies. The second most frequent was antibiotics, which were related to 5 discrepancies throughout both review periods.

Medication Reconciliation Completion

There was no ongoing quality assessment process identified that would ensure medication reconciliations were completed before the project. For the baseline needs assessment, determining the frequency of medication reconciliation completion was evaluated manually. After the introduction of the OrderConnect™ feature for the medication reconciliation tab and training video for nurses on how to use it, data for the completion of medication reconciliations could be captured electronically. During the post-intervention chart reviews, the use of the OrderConnect™ medication reconciliation tab check box was obtained manually by the project lead. The charts reviewed during post-implementation were evaluated individually to see if this was completed; none of the charts reviewed during this period indicated completion of medication reconciliation using the tab. To obtain a broader assessment of use patterns, the aggregate data was sought to confirm the representation of the collected sample. Manual review does not provide staff-specific metrics to assess for patterns or themes related to staff who did or did not participate in the training. Agency aggregate data could provide additional information about the potential impact of participating in the training on staff utilization of the medication reconciliation tab in OrderConnect™.

Medication Variances

The number of medication variances on the unit, which is captured monthly, was evaluated for one year. This predated the official project period. As previously discussed, there was an impactful finding during the project which likely impacted the reporting and therefore several variances on record. The data for the project period was not obtained, but the utility of the information was noted to be limited given the apparent variability in reporting practices that was identified during the project.

Policy Recommendations

       To determine the impact of policy recommendations, unit policies related to medication and admissions protocols were reviewed at the end of the project period to determine changes, if any, and the congruence with the recommendations provided. The policy was co-created with the unit-specific leadership team and is now following the process of full leadership and committee reviews, which on average takes 3-6 months.

Cost-Benefit Analysis

       An effective medication reconciliation process has the potential to identify and prevent up to 85% of medication discrepancies (Gleason et al., 2010). When considering the important value of time, an effective medication reconciliation can be completed on admission within 15 to 30 minutes (Gleason et al., 2010; Jarrett et al., 2019; Schnipper et al., 2018). Considering the context of the duplicate documentation occurring on this unit currently, time could be reallocated to more productive use of time and efforts to complete high-quality medication reconciliation, rather than time spent documenting in multiple places. Estimates vary, but facility-specific savings for a hospital could be up to $11.4 million annually when utilizing a well-structured medication reconciliation process (Jarrett et al., 2019).

       A financial model for medication reconciliation developed by Dr. Steven Meisel and explicated in the MATCH toolkit document (Gleason et al., 2012), utilizes a calculation as follows: (Number of discrepancies per patient) x (number of patients per year that one person can reconcile) x (percent of patients with discrepancies that would result in an ADE) x (percent effectiveness of process) x (cost of average ADE) = (Annual gross cost savings) – (salary of employee) = Annual net savings. Based on the data provided by this unit, the reported number of

medication variances provides a calculation estimate. However, the accuracy of this calculation

was impacted by the discovered variability in medication variance reporting on the unit.

Nurses working in community mental health centers in New Hampshire make on

typically make $25.74-33.47 hourly (Indeed, 2022a); with an average hourly rate of $29.36

(Indeed, 2022b). The cost associated with a preventable adverse drug event can vary based on

many factors and there are varying estimates of the cost per event. Estimated range of cost per

adverse drug event in a community hospital setting has been noted to be between $2,852 and

$8,116 (Slight et al., 2018). The MATCH toolkit provided an estimated cost based on findings

from a 1997 study, which was $4,800 (Gleason et al., 2012). To adjust this for inflation to reflect

the current year 2022, the Consumer Price Index inflation calculator (U.S. Bureau of Labor

Statistics, n.d.) was utilized and the estimated comparable cost is approximately $8,850.

Sufficient staffing and training to complete high-quality medication reconciliations can help to

prevent costly adverse drug events, and readmissions, improve health outcomes, and improve the

risk liability of the organization (Alshehri et al., 2017; Schnipper et al., 2018).

Given the limitations in the data collected and the lack of baseline medication

reconciliation rates before the project, along with the variance reporting inconsistencies, it is

difficult to determine precise cost savings associated with this protocol. However, the cost of not

completing high-quality medication reconciliations is widespread, impacting individual patients,

agencies, and insurance companies, amongst others. There are additionally widespread societal

costs beyond those directly impacted, and this can include loss of quality of life, disability, and

other impactful situations that have been caused by adverse medication events and related

sequelae.

Discussion

As frequently identified through the literature, there is a glaring discrepancy between national-level recommendations and expectations for realistic implementation of these processes, such as medication reconciliation, across healthcare settings (Schnipper et al., 2018). There may be some common barriers, but healthcare facilities have different needs and areas that specifically need support to better address this in a sustainable way. These challenges have been further amplified due to the far-reaching impact of the COVID-19 pandemic (Assistant Secretary for Planning and Evaluation, 2022). This project sought to utilize an evidence-based system, MATCH (Gleason et al., 2012), as a basis for developing a sustainable intervention with adaptation to and consideration of the context and needs of the clinical agency. The project aim was to implement a reliable, standardized medication reconciliation process to ensure accuracy and increase accountability, congruent with recommended foundational aspects of reliable processes as described by the IHI White Paper, *A Framework for Safe, Reliable, and Effective Care* (Frankel et al., 2017). A comprehensive approach including staff education and training, policy recommendations, and qualitative and quantitative data collection aimed to inform and support this process to provide a well-targeted intervention.

Foundational concepts for process implementation into practice as described by the IHI White Paper, *A Framework for Safe, Reliable, and Effective Care* provided a central theme for project-related activities and efforts (Frankel et al., 2017). To plan, implement, and evaluate what will aim to be a sustainable intervention beyond the project period, these concepts were integrated throughout the work: standardization, simplification, reduced autonomy and highlighting deviations from the protocol (Frankel et al., 2017). It was imperative to convey to agency leadership and staff not only what is to be done differently, but the importance of why it

needs to be done this way. This innately presents challenges with how to convey this information in a nonjudgmental way, demonstrating empathy for the complexities of the environment and balancing many requirements and demands beyond solely what this project was focusing on. It was also important to provide a psychologically safe space to allow for meaningful and honest input and reception of feedback (Edmondson, 2019).

Utilizing the Plan, Do, Study, Act (PDSA) model for quality improvement was imperative for making progress and adapting to barriers and needs for change to the original plan as described. A major component of planning a successful project is the gathering of data to provide a comprehensive needs assessment. Synthesizing the information found and presenting it to agency leadership and interdisciplinary stakeholders provided a foundational, shared working knowledge of the prevalence of the problem. As an external project lead, coming in with a focused lens to evaluate a specific issue provides unique perspective and time resources that otherwise may not be allocated internally within an agency.

By nature, quality improvement work is complex and multifaceted. The implementation of a standardized protocol included many aspects, and there is a need for interplay amongst these forces to facilitate adherence. The development of the protocol and education of staff provide important supportive forces to integration. However, the need for congruent policies to support its use and accountability of staff is imperative for reliable adherence to the protocol. Policy writing and revising in the healthcare agency setting is burdensome on leadership, and with competing demands for time and attention, this often leads to a lack of prioritization for reviewing and updating policies (Irving, 2014). The involvement of the project lead as a dedicated individual to look at this specific area in a comprehensive way allowed for the development of a tailored intervention and plan addressing agency needs and context. Systemic

changes informed by these factors are more likely to be sustainable, as opposed to broad

recommendations which may be difficult to incorporate, especially without an agency-specific

champion supporting the change.

      The strengths of this project included agile project management, which was instrumental

to continue the momentum forward, adapting to challenges, and identifying barriers and needs

along the way (Harris et al., 2020). Engaging with stakeholders across departments and roles at

the agency was imperative, along with prioritizing relationship building and looking to gain

understanding from those directly involved, rather than imparting judgment. Spending time

talking with the nurses working on the unit and engaging with them formally and informally was

an additional strength. Challenges in clinical settings are often perpetuated due to a disconnect

between clinical and administrative staff disconnect or miscommunication (Tosanloo et al.,

2019). Some of the findings during the needs assessment and throughout the project period

provided opportunities to facilitate understanding between different departments and roles within

the agency and highlighted some areas for improvement.

      During the project, agency leadership requested that one of the recorded staff educational

video tools be adapted, covering more general settings to use as future training for outpatient

staff as well. This was an unanticipated benefit with the potential for further widespread impact

within this specific agency's greater system. Providing more widely applicable content through

educational training has the potential to benefit additional facilities statewide and even

nationally. Expanding upon education on this matter including best practices could strengthen

this process across facilities, which translates to safer patient care throughout the continuum.

Interpretation

Part of the complexity of accurately measuring the impact of the intervention on outcomes is that there is the potential for benefit beyond what can feasibly be captured or measured. Peripheral and direct impact may be observed beyond the end of the project period by agency staff and leadership. It is difficult to measure the current extent of the value of this work, along with projecting the longer-term potential value given the interplay of many factors. The presentation of baseline needs assessment findings, most notably the chart review results with the frequency of medication discrepancies appeared to be a shock to some agency leadership. Given the previous lack of understanding of the significance and depth of this issue, identifying it, and providing data to indicate how prevalent it is had incredible value alone. A problem that has not been identified is not likely to be solved. Addressing the reasons for this and providing both qualitative and quantitative data demonstrating the need gives actionable information for agency leadership beyond the scope of this project. This project was able to fill gaps in knowledge and communication and provide clarity in accountability for medication reconciliation. This work helped to bridge the gap between clinical staff working on the unit and collaborating staff in other agency roles. During the project, it became evident that there was variation in the process for reporting medication variances. Additionally, data was being collected by an appointed nurse on the unit, reporting their findings to the unit nurse coordinator, but there was a disconnect as to how this information was then integrated to report out to the unit-level variance report.

Although education was provided to staff for using the OrderConnect™ tab to document medication reconciliation completion, manual chart review findings during post-intervention found that this had not been used at all. This is potentially related to a few different factors including a lack of mandatory training requirements for staff, and the absence of an identified champion on the unit to model its utilization consistently. It may also be related

to the lag time of the policy approval to requiring medication reconciliation of staff. As the recommended policies are approved and integrated into the expected standard of care, over time there is potential for more peripheral benefit than was measured within this review period. Larger-scale studies such as the Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS) assessed their study outcomes from 6 months before implementation and up to 25 months after implementation (Schnipper et al., 2018).

Results from this project were comparable to findings from similar studies. Studies evaluating the presence of medication discrepancies have found an estimated range of 30-70% of patient records containing a discrepancy (Gleason et al. 2012; Jarrett et al., 2019). Brownlie et al. (2014) found discrepancies in 56.2% of patient charts, and Jarrett et al. (2019) found that 40% of the charts audited had incomplete or inaccurate medication lists. These findings are comparable with this project, noting 59% of charts having discrepancies on baseline pre-implementation review, and 50% with discrepancies during the post-implementation review period. The duplicate documentation on the unit was potentially a contributor to the higher discrepancy rate findings when compared with other literature. Transcription errors between charts and systems are often traceable as the source of medication errors (Callen et al., 2010).

The most common medication error categories found in comparable literature were errors of omission. Studies by Alshehri et al., (2017), Brownlie et al. (2014), Callen et al. (2010), and (Keers et al., 2015) all found errors of omission to be the most prevalent category of error. The Gleason et al. (2010) results of the MATCH study found that nearly half of the errors identified were omissions. This was comparable to the findings of this project, as errors of omission were the most common discrepancy category during the pre-intervention assessment period. However,

the post-intervention chart reviews review found that "other" category discrepancies were the most prevalent, comprising 70% of the errors during that time.

One particularly interesting finding was the significant increase in the frequency of the "other" medication discrepancy category on post-intervention chart reviews. This may be due to the distribution of medications that tended to be related to not only a discrepancy, but a discrepancy falling within the "other" category. These were most often long-acting injectable medications and antibiotics. Comparing the pre-and post-implementation chart review findings, there were more orders for long-acting injectable medications and antibiotics during the post-implementation review period. Long-acting injectable medications, such as antipsychotics which were the most commonly prescribed class, are a valuable tool aiding adherence to medication and promoting stabilization in patients with severe and persistent mental illness. The benefits of this medication can only be achieved with accurate ordering and administration.

The discrepancy rate per patient was calculated and determined to be 1.47, incorporating both the pre-and post-implementation chart review findings. This was comparable to findings in other literature, with discrepancy rates per patient noted as 3.2 (Andurs & Anderson, 2015), 1.5 (Brownlie et al., 2014), and 1.0 Schnipper et al., (2018). Comparing pre- and post-intervention, other studies looking at the impact of medication reconciliation found that although the frequency of discrepancies increased, many discrepancies were still present (Andrus & Anderson, 2015), which is like the findings of this project. Other studies have found that standardizing a medication reconciliation process improves the accuracy of medication lists substantially, though there is a need for further study to verify the quality and accuracy of medication reconciliation being completed, and not just the fact that it was done (Jarrett et al., 2019). Some studies have demonstrated continuously insufficient capturing of over-the-counter

medications (Jarrett et al., 2019). The staff education and training provided within this project emphasized the importance of asking about over-the-counter medications, and applying MATCH principles (Gleason et al., 2012) to the protocol developed.

Although this project primarily looked at the participation of unit nurses' role in medication reconciliation, this work prompted the leadership to discuss how the unit's prescribers are completing and documenting this process as well. Through conversations around this, the possibility of the "second step" verification which is recommended to be completed by a prescriber was identified by agency leadership. Second-step checks are recommended by the Institute for Safe Medication Practices (ISMP) (MacDowell et al., 2021). Double-checking has the potential to capture as many as 93% of potential errors. Although the prescriber's role was not the primary aim of the project, this was not further investigated, however, it appears that the project work helped to bring this idea the forefront.

To support the sustainability of this initiative upon completion of the project, continuous quality improvement principles can help to support effective implementation (Hill et al., 2020). Audit and feedback tools, such as those that were used in this intervention, are valuable components of continuous quality improvement but frequency and consistency of support are imperative to effectively integrate initiatives into practice settings (Hill et al., 2020).

Opportunity costs within the context of this project include the need to spend time upfront working on gaining an understanding of the agency's organizational structure, key stakeholders for the initiative, and developing relationships. Additionally, given the redundant documentation systems in use, time spent addressing this issue that can contribute to medication discrepancies and errors within the record was outside of the planned scope of this project. However, given that this issue was potentially contributory, it needed to be addressed but was an

opportunity cost as the time and effort could have been spent elsewhere. The availability of the medication reconciliation tab in the OrderConnect™ system was not identified until late in the project period. Had that been identified earlier, time could have been spent possibly working on other aspects of the project or facilitating a longer period for evaluation of staff utilizing this feature. The discovery of this feature availability was supported by the PDSA cycle, and through communication with additional staff and stakeholders it was brought up to address. This was related to a lack of communication between information technology and clinical staff; although information technology staff knew of the feature's availability, they were unaware of its utility and that nursing was unaware of it. Nurses would have recognized the utility, but did not know that the feature was available to be utilized.

Effective integration of technology to measure and support quality improvement has significant potential benefits for agencies and individuals (Tolf et al., 2020). The provision of feedback in response to findings on a regular, established frequency is imperative to obtain benefits from these systems (Tolf et al., 2020). Feedback should be provided promptly to best facilitate improvement and change when it is needed (Tolf et al., 2020).

Changes that are done incrementally have more potential to last rather than abrupt, sweeping changes. Setting the foundation for change and bringing to the forefront the areas for growth needing to be addressed is a valuable force of "unfreezing," and then "moving and transitioning" as conceptualized in Lewin's theory of change (Shirey, 2013). Recognizing change as a process rather than a static event is imperative in quality improvement work (Shirey, 2013).

Regarding this quality improvement from a zoomed-out, bird's eye view allows for consideration of the potential impact beyond the directly described methods, measures, and data.

Medication reconciliation is a potentially lifesaving intervention that can be done effectively in a

relatively short time. The MATCH toolkit (Gleason et al., 2012) provides a comprehensive

resource that can be adapted to specific settings for the most feasible implementation, as was

done for this quality improvement project.

Limitations

Nationally, a nursing shortage is a multifactorial problem with immediate and long-term

implications (Haddad et al., 2022). The project site has been impacted by staffing challenges, as

many healthcare facilities have. As the current documentation system requires duplicate

documentation, and as a result, more time is spent documenting care in multiple places, this may

be a contributing factor to what is being seen on the unit, and longer-term indications of the need

for increased efficiency. The concern for staff time and desire to minimize additional potential

burden was conveyed by some agency leadership, and this was valid but at times was

challenging to balance the importance of buy-in with the need to make continued progress.

Due to the timeline and scope of the project, the project lead was the sole investigator.

The possibility of investigator bias was considered and addressed throughout, along with seeking

feedback and consultation from the faculty/practice mentor and other stakeholders to address

this. The potential for observation bias by the clinical staff is acknowledged as well, having an

unknown participant within their system and behavior can change secondary to this awareness.

Variations within the data throughout the study period may be related to the impact of the

intervention outright, along with other impacting factors. During the data collection and

implementation phase, the challenge of disclosing findings indicative of systemic inefficiencies

was explored. Blameless reporting in congruence with a psychologically safe environment,

where individuals can comfortably report errors and near-errors, was encouraged and promoted

by the project work (Edmondson, 2019). The reality of staff distress at many levels was

considered and addressed throughout the project. Facilitating a culture of safety within

healthcare is imperative to supporting an environment where staff can report errors or near

misses without fear of punishment (Patient Safety Network, 2019a). Medication safety is the

responsibility of not only the nurse but the system within which they perform these duties. It is

necessary to promote psychological safety around error reporting to facilitate an environment of

transparency and accountability.

Recommendations

Based on the data collected and information gathered throughout the project, several

recommendations are noted for the agency's future consideration. These recommendations are

further outlined as follows:

1) Recommend that the agency complete the review and approval process to finalize and

    integrate policy recommendations (further detailed in Appendix F) and revisions to

    admissions checklist documents, including medication reconciliation on admission.

    Having a supportive policy and a checklist of medication reconciliation to promote

    nursing completion will help promote accountability and sustainability.

2) Consistently incorporate medication reconciliation education into new nursing staff

    orientation and require review of the materials for nurses already employed in the

    agency.

3) Monitor staff use of the medication reconciliation completion tab in OrderConnect™

    by running data reports every month to obtain metrics, review and summarize the

    findings monthly to report out and share with nursing unit leadership and nurses in

    staff meetings. Identify and address ongoing barriers with staff as needed based on

metrics. Consider supporting quarterly chart reviews to assess continued progress. Utilize continuous quality improvement to incorporate necessary changes and adaptations to the process.

4) Remove all notes and communications that are not medication orders from OrderConnect™. Notes that are unrelated to medications are confusing and add unnecessary clutter to an area of the chart that should only be utilized for active medication orders. All notes and communications other than medication orders are to be relocated to the EMR, Avatar.

5) Include Quality Improvement and Information Technology staff representation in unit nursing staff meetings at least quarterly. More frequent, scheduled discussions will help to facilitate improved communication to address changes, questions, concerns, and needs for further training or support as it pertains to digital systems.

6) Upon OrderConnect™ upgrade, utilize a single source of documentation for a patient's updated and accurate medication list. This will streamline documentation and eliminate duplicate documentation processes, achieving the gold standard of 'Single Source Medication Documentation'. Medication orders will be consolidated into one system only, electronic, and frequent check-ins with information technology staff are recommended to ensure there is communication of concerns or challenges with this transition.

7) Expand medication reconciliation to include the discharge process. Per, the MATCH protocol, medication reconciliation best practice ensures accurate medication lists are provided at discharge, including communication of verified medication lists to all providers caring for the patient. While including this in the scope of this current

project was discouraged by the agency at this time, this must be incorporated into the

discharge checklist for adherence to best medication reconciliation practices.

Adopting these recommendations will support the agency's adherence to best practices of

medication reconciliation. Identifying a champion to oversee this continued work or developing

an interdisciplinary group would be beneficial to support the ongoing integration of systematic

improvements (Hill et al., 2020). Having a designated leader or champion to lead meetings,

direct communication, set goals, and facilitate cooperation, has been demonstrated to improve

the efficacy of continuous quality improvement initiatives across settings (Hill et al., 2020). The

ability to continually monitor, adapt when need, and make changes accordingly supports the

sustainability of process improvements (Lennox et al., 2018). Patients, staff, payors, agency all

benefit from improved health outcomes, staff satisfaction, the value of care, and risk

management.

Conclusions

Utilizing evidence-based practice, such as the MATCH toolkit (Gleason et al., 2012), to

support improvements in the workspace is imperative to better serve patient needs and the goals

and priorities of healthcare staff and organizations. Medication safety is a high-priority area

noted by the AHRQ and one of the top National Patient Safety Goals ® noted by The Joint

Commission (The Joint Commission, 2022). Facilitating quality improvement work on an

agency level to integrate changes recommended nationally is imperative to continue to

strengthen the provision of healthcare nationally.

At a state level, providing broader training across settings to support staff self-efficacy in

completing high-quality medication reconciliations, and supporting this with clear policy and

documentation systems is an area worth further exploration. This process is important across

healthcare settings and specialties beyond inpatient psychiatric care settings. A standardized

approach that is widely adopted and agreed upon can help facilitate smoother transitions of care.

Strong medication reconciliations are contagious, in a positive way. An accurate medication list

that is well-communicated to receiving providers and follows the patient throughout their care

will ultimately facilitate better outcomes. Ensuring that the medication list is accurate promotes a

safer environment for patients, individual providers, and agencies where the climate for risk is

increasingly contentious. With the significant healthcare needs in this country, protecting those

who are vulnerable – on both sides, those caring and those being cared for – is integral to

building a safer medical infrastructure for all.

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Appendix A

Overview of the 8-step Process for MATCH (Gleason et al., 2012; Jarrett et al., 2020).

Step	Focus of Step	Key aspects of step
1	Identify & assemble interdisciplinary team	Identify key stakeholders including leadership, quality improvement, clinicians, and information technology
2	Develop flowchart of current medication reconciliation process	Utilize MATCH toolkit guidelines as a framework for assessment of current workflow process and create document indicating the current processes
3	Create plan for improvements	This includes a clear problem statement, goals, and objectives and collaborating with key stakeholders to discuss implementation and evaluate barriers and facilitators of change, along with additional resources needed to support the project.
4	Establish measurement strategy	Assessment of available data that can be collected through HER or other systems to establish starting point. Examples provided by MATCH toolkit include facility readmission rates, adverse drug events for facility, or specific process completion data pertaining to medication reconciliations. Some data may be collected using chart audits/reviews. Establishing baseline data sets the foundation for intervention assessment outcomes data.
5	Design changes to medication reconciliation process	Utilization of process mapping and stakeholder input, informed by baseline data to design the intervention workflow. This will include the medication reconciliation process along with staff education to support integration. Flowchart development.
6	Pilot changes on unit	Pilot phase of implementing the workflow for medication reconciliation. During this time data will be collected to assess intervention efficacy over a prolonged period. Receive input from those involved in the pilot effort.
7	Provide staff education and training	Based on pilot data, adapt intervention to facilitate wider adoption and provide comprehensive staff education and training to support the process' integration into workflow.
8	Assess and evaluate changes	The identified metrics established at baseline will be reviewed to compare to pre-intervention data. There may be some limitations given the brief timeline of the project which will be accounted for and discussed in the findings.

Appendix B

Thematic Coding from Semi-Structured Interviews (Reavy, 2016)

Purpose of evaluation: Interview staff nurses to identify what existing medication reconciliation processes are in place, who is involved in that process, and identify what is working well and what is not working well; this was conducted again at the beginning of the data collection during the process

Participants: Round 1: 5 staff nurses across shifts; Round 2: 6 staff nurses across shifts including referral coordinating RN (referred to below as RC)

Specific	Deductive Reasoning		General
Salient point/question	*Code or label* Round 1 - November	*Code or label* Round 2 - July	*Concepts or themes*
When does medication reconciliation occur?	Hospital/ER Uncertainty	When referral is coordinated by RC Hospital/ER	Discrepancy amongst participants
How often does it occur?	Uncertainty Gap between actual occurrence and how often it "should" occur	Before they are admitted to unit When the nurse has time (calling pharmacy to verify medications cannot be done on all shifts) RC- some of the time, not all of the time	Discrepancy – between actual and what is perceived by other participants Lack of clear expectation/process
Who completes the medication reconciliation?	At one point it was the pharmacy ER staff Not sure	RC nurse RC nurse Per RC nurse – not doing it much of the time RC nurse "not doing it as frequently as [participant] had thought"	Discrepancy and understanding of responsible party is variable, the RC many think is completing but she is not doing that piece very often.

How is the medication reconciliation process completed?	Uncertainty	Obtain medication list from ER, call pharmacy "if time" to verify	RC receives a medication list from hospital; does not call pharmacy herself; def. to treatment team for rec.
		Lack of clear process	
		Varying participants noted to perhaps call pharmacy- may be RC, charge nurse, or med nurse during or after tx team	
What is currently working well?	Paper chart	No identified issues per some participants; not recognizing as a problem	Lack of concern for this as being an issue or priority
What are some areas for potential growth or improvement?	Each nurse has a different system	Not sure what can be done better or differently; contacting the pharmacy does not always help	Participants unable to identify clear solution; demonstrates complexity of problem and lack of understanding of depth and breadth of problem
	Nothing	Differing ideas of how and when this is occurring and who is responsible	
		Equity across shifts	

Appendix C

Chart Review Components

1. Case identification number (Case ID): Number referring to a specific patient case with any protected health information (PHI) removed. To additionally protect patient privacy, medical record numbers were not used as identifiers. IDs were generated to connect back to the correct patient chart to allow for a reliable revisiting of data if needed.

2. Date of review: The date that the chart review was completed by the project lead. Noted to capture the timing relative to the overall project period and stratified into pre- and post-implementation periods. Additionally, some patients' charts were reviewed more than once, though on different dates during the patient's stay.

3. Paper chart orders: written orders in the patient's paper chart were reviewed and compared directly with the electronic orders

4. OrderConnect™ EMR orders: orders documented in the OrderConnect™ EMR system were reviewed and compared directly with the written orders in the patient's paper chart

5. Presence of discrepancy (Yes or no): If there was a discrepancy (defined as an error of varying types within the documentation pathway from prescription to documentation) between the electronic and paper medication lists

6. Discrepancy frequency: If there was a discrepancy found within a patient's chart review, how many discrepancies were identified

7. Discrepancy type (category): categorical classification of the discrepancy found within the patient's chart – omission, commission, different dose/route/frequency, different medication, or other.

8. Medication involved: specific medications or types of medication were noted to assess for patterns if certain types of medication were more commonly involved with discrepancies than others.

9. Medication reconciliation: this was completed manually by the project lead during the baseline needs assessment. After the introduction and training of the OrderConnect™ capability to record this (post-implementation results timeframe only) the presence or absence of this process was reviewed and noted.

Appendix D

Medication Discrepancy Categories
Adapted from the MATCH toolkit (Gleason et al., 2012)

Discrepancy category	Definition
Omission (O)	Patient was taking a medication prior to hospitalization, or medication is documented on one record (paper chart or OrderConnect™ EHR) but not the other. Medication is not ordered on admission or noted on the orders. There is no clinical explanation documented to support omission.
Commission (C)	Medication ordered at admission that the patient did not take before hospitalization. Medication listed on patient's medication list, but was not noted as ordered during the hospital stay and patient did not take prior to hospitalization. No documented clinical explanation to support commission.
Different dose, route, or frequency (D)	Different doses, routes, or frequency of medication were documented between on one record (paper chart or OrderConnect™ EHR) but not the other. No clinical explanation that supports differences.
Different medication ordered (M)	Medication in same therapeutic class ordered on admission or is listed in record that differs from what patient reports or what is documented without explanation. No clinical explanation documented or formulary substation supporting difference.
Other (T)	Medication discrepancy that is not otherwise captured in the above descriptions. This may include lack of clear dates for administration (for example with a long-acting injectable) or a time-bound medication that is not clearly discontinued when it is scheduled to be (for example an antibiotic prescription). Or directions on medication are unclear or contradictory.

Appendix E

Staff Education Session Content Outline

Learning objectives
    By the end of this presentation, nurses will be able to:
1. Apply at least 2 evidence-based strategies for reducing medication errors.
2. Identify at least 1 new interviewing technique that facilitates a high-quality medication reconciliation

Presentation content outline
    a. Introduction – presenter, project, and purpose of the session
        i. Introduce "roadmap," learning objectives
    b. Background information & context
        i. Medication error information, definitions, and frequency
        ii. Medication reconciliation facts
        iii. Discussion of nurse's role; validation of the many demands during shift
    c. Evidence-based framework to support high-quality medication reconciliations, Medications at Transitions and Clinical Handoffs (MATCH) (Gleason et al., 2012)
        i. Three components – obtain, document, verify
        ii. Detailing the aspects of each area and what ought to be included
        iii. Use of specific examples and situations to apply the framework and rationale
        iv. Elaboration on obtaining – interviewing best practices for medication reconciliation
            1. Types of questions to ask, ways to phrase questions, including specific examples
            2. Information that needs to be gathered to support a comprehensive medication reconciliation
        v. Elaboration: obtain → document – strategies and best practices
            1. The use of a standardized template or visual tool, such as the example adapted from Jarrett et al. (2020) can be useful for nurses and patients as a visual reminder
            2. Documentation requirements and accountability, accessibility
        vi. Elaboration: verify – additional verification by another nurse, colleagues, prescriber
            1. Helps to reduce the burden on one individual
            2. Double checks are an effective way to prevent potential errors
            3. After verification, must ensure updated documentation
    d. Summary – MATCH toolkit, "obtain, document, verify"

Appendix F

Policy Change Recommendations

Recommended revision wording – removal is noted via ~~strikethrough~~, and additions are noted in

bold. *Italics* present the rationale for change**.**

Cypress Center Admission/Discharge, Policy Number: 03.03.02

Current policy wording	*Recommended revision*
Pg. 11 criterion b "Upon admission psychiatrist/APRN shall order and oversee medication regime" *There is no clear description of how the medication list is obtained/verified, other than situations when the patient is bringing current medications with them to the unit.* *Also shifting to use of "physician" "APRN" or "physician/APRN" to more inclusive word of "provider" is recommended.*	Pg. 11 criterion b "Upon admission psychiatrist/APRN **(provider)** shall order and oversee medication regime. **The nurse receiving the patient or the admissions nurse will complete and document a comprehensive medication reconciliation as part of the admission process. Psychiatrist/APRN will verify medication reconciliation and confirm accurate medication orders.**"

Medication, Policy Number: 05.0.1.02

Current policy wording	*Recommended revision*
"Cypress Center acute care admissions & discharges"	"Cypress Center acute care admissions & discharges"

1. When a patient is admitted to The Cypress Center, the physician must give/write the admission orders using the Cypress Center Physician Admission Order Sheet (Appendix A): For admission to and while in CC all orders must state the date and the time written. Admission medications can be ordered by either:
 	
a. Handwriting all necessary orders
 	
b. Print the patient's current active orders from Order Connect, review the MHCGM orders, draw an "X" through all non-ISC orders, and through the "Most Recent Prescribing Events" section and initial on the "X". Check the box which states "See attached Order Connect medication list". Then sign, date and time. Any remaining space on the prior order sheet must be crossed out. If a patient is determined able to self-administer, (using Appendix L), the MD/APRN may order medication self-administration from pharmacy-labeled containers only."
	1. When a patient is admitted to The Cypress Center, the physician **or APRN** must give/write the admission orders using the Cypress Center ~~Physician~~ **Provider** Admission Order Sheet (Appendix A): For admission to and while in CC all orders must state the date and the time written. Admission medications can be ordered by ~~either~~:
	
	~~a. Handwriting all necessary orders~~
	
	    a. **Orders shall be entered directly into the Order Connect system by provider or receiving nurse.**
	
	    b. **Once correct medications have been verified and the medication list reconciled by the receiving nurse, the current active orders from Order Connect may be printed to enclosed in the patient's chart**
	
	b. ~~Print the patient's current active orders from Order Connect,~~ **Review** the MHCGM orders, **and in the Order Connect system enter all medication orders, inclusive of**

Recommend revising wording from "physician" to "provider" to be inclusive of the APRN. Also recommend removing the option for handwritten or electronic orders to facilitate the transition to fully electronic orders. Recommend removal of printing patient's current active orders, as those are not consistently up to date or included in all patient charts. To further facilitate streamlined documentation, suggest removing the instructions for paper documentation. When admitted on Cypress Center, all medications including non-ISC must be addressed and ordered within the system, which differs from the outpatient policy.	**non-ISC orders.** ~~draw an "X" through all non-ISC orders, and through the "Most Recent Prescribing Events" section and initial on the "X". Check the box which states "See attached Order Connect medication list". Then sign, date and time. Any remaining space on the prior order sheet must be crossed out.~~ If a patient is determined able to self-administer, (using Appendix L), the ~~MD/APRN~~ **provider** may order medication self-administration from pharmacy-labeled containers only."
Medication reconciliation is not currently specified in the "Medication Policy" pertaining to Cypress Center unit. Recommendation is to add policy to address this. The policy stated for MHCGM is as	When a person is ~~referred~~ **admitted** to ~~MHCGM~~ **Cypress Center** ~~by another healthcare provider/entity or when a CCD (Continuity of Care Document) is received via NHHIO~~, the prescriber or ~~medical assistant~~ **nursing staff** shall conduct a

follows (p. 9): "12. When a person is referred to MHCGM by another healthcare provider/entity or when a CCD (Continuity of Care Document) is received via NHHIO, the prescriber or medical assistant shall conduct a 'Medication Reconciliation' in Avatar." *Addition of specific Medication Reconciliation policy/procedure is recommended, and can be linked to the revised statement as suggested.*	'Medication Reconciliation' in ~~Avatar~~ **OrderConnect**." **See policy [link] for process/procedure for completion.**

Cypress Center Admission/Discharge Checklist

Current policy wording	*Recommended revision*
Currently medication reconciliation is not an item listed on the requirements for Cypress Center admission or discharge	Recommend adding requirement of **Completion and documentation of medication reconciliation** to both the admission & discharge checklists

Appendix G

Visual Prompt Tool for Interviews

Adapted from an example provided by Jarrett et al. (2019)

Do you take any medications for..

Depression, anxiety,
sleep, other
psychiatric

Headache

Eye drops/Eardrops

Allergies/Congestion

Gum or tooth pain

Sore throat

Chest pain
Blood pressure

Heartburn/indigestion
Nausea

Diarrhea/
constipation

Back pain

Difficulty urinating/
Erectile dysfunction?

Cramps/Menopause
Birth control

Muscle or Joint pain

Foot pain

Arthritis or gout

Acne/ Skin Conditions

Current or recent infection

Vitamins, supplements

Lotions, creams, or ointments