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# Increasing Patient Participation in the Medication Reconciliation Process

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Increasing Patient Participation in  
the Medication Reconciliation Process

CNL Project

Andrea Idudhe

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## Abstract

It is estimated, that ambulatory care settings have a 25% adverse drug events (ADEs) rate, and 39% of those event were preventable errors (Taché, Sönnichsen, and Ashcroft, 2011). Considering many adverse drug events are related to medication errors, preventing medication errors is fundamental to improving patient safety and outcomes. Medication reconciliation is the process of identifying and resolving medication discrepancies that occur, during transitions in care. Patient participation is a key component to the medication reconciliation process. With the intent to improve patient participation, a patient awareness intervention was implemented in the cardiology outpatient clinic. Data was collected using microsystem assessments, staff /patient medication reconciliation questionnaires. The intervention includes the use of patient posters, brochures and pre-appointment phone call reminders to bring in their medications. The barriers to implementing the patient awareness intervention in this clinic were in part related to resistance to change and lack of understanding of the medication reconciliation process. The barriers to this process will be further discussed, in this paper. The patient pre-appointment phone calls resulted in a 7% increase in patients bringing in their medications. As a result, the care providers were able to verify and reconcile the patient medications at the appointment.

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**Statement of the Problem**

Medication reconciliation is the process of identifying and resolving medication discrepancies that occur during transitions in care. In the medication reconciliation process, a comparison is made between the medications a patient is taking and those that are currently ordered or found in the medical record. Medication reconciliation is commonly done by pharmacists, nurses, and physicians. The primary purpose of medication reconciliation is to prevent medication discrepancies. Some medication discrepancies are detrimental to patient safety and may result in injury or death.

Rationale

The care system setting is an urban cardiology clinic within a city and county hospital. While assessing the microsystem, it was apparent that this clinic has a high patient volume and diverse patient population. The diverse patient population in this clinic includes many low-income, homeless, and medically indigent residents of the city. Ten percent of patients that visit outpatient services at the hospital are uninsured (SFGH, n.d.). The complexity of caring for a large volume of patients, with fragmented care and limited resources, is challenging to providers in the clinic. On any given day, there are between four to five providers that are scheduled for patient appointments. Each provider will have approximately six to eight patients during a short four hour clinic. With such a rigid schedule, providers often feel rushed and patients are often unsatisfied with their wait time in the lobby (average 30 minutes). Due to the diversity of the patient population, there are often communication barriers to providing patient care. In this

clinic, translator services are commonly used to communicate. The languages commonly spoken include: English, Spanish, Cantonese, Mandarin, Tagalog and Russian. The average patient age is 59 years old and 60 percent of the patients are male. The most common cardiac conditions in the clinic are congestive heart failure (CHF), coronary artery disease (CAD) and atrial fibrillation. Between 2012 and 2013 congestive heart failure was one of the top 10 diagnoses at this hospital (SFGH, n.d.).

Taking into consideration the challenges that are faced in this clinic, providers find it difficult to do medication reconciliation and patient education. In a medication reconciliation questionnaire, completed by providers and Registered Nurses (RNs), all of the staff members (7/7) found the current medication reconciliation process to be “difficult” or “very difficult” (see Appendix A for the staff medication reconciliation survey results). Although, most of the staff reported they “usually” (4/7) complete medication reconciliation, ideally medication reconciliation would be done every visit.

Patients are an important component to the medication reconciliation process. When providers were asked about the barriers to completing medication reconciliation 4 out of 7 responded that patients are not bringing their medication. In the same survey, 3 out of 7 providers stated that patients do not remember or they are confused about their medications. As medications are extremely important to the management of heart conditions, patients should be aware of the name and purpose of their medications. Medication reconciliation is also an opportunity to educate the patients on their condition and medications. When patients bring in their medications, the providers have an opportunity to identify and correct medication discrepancies. If medication discrepancies are not identified and rectified, patient safety is at

risk. It is important that the patients, providers, and nurses are involved in medication reconciliation process, and make it a priority.

### **Literature Review**

The intention of this literature review is to explore the problems with medication reconciliation and identify interventions that result in improvement of the medication reconciliation process and patient outcomes in ambulatory care settings. The current research on medication reconciliation is largely focused on health education, transitions in patient care, and health care staff interventions. In inpatient and ambulatory settings, medication reconciliation is a process for resolving medication discrepancies. Kwan, Lo, Sampson, & Shojania (2013) summarized current research on the effectiveness of medication reconciliation interventions in hospital settings. These findings suggest that unintended medication discrepancies are common but are rarely clinically significant. Pharmacist performed 17 of the 20 interventions, compared to the three interventions done by nurses and physicians. Pharmacists often had a significant role in successful interventions. However, most hospitals have few pharmacists and some medication reconciliation interventions take them away from other important tasks.

This study also suggests that medication reconciliation alone does not reduce 30 day readmission rates. In combination with other interventions, medication reconciliation may be more effective at reducing these rates. Since, medication reconciliation is required for hospital accreditation and widely used in hospital-based settings, these findings are unexpected. This information is significant to further research on the effectiveness of medication reconciliation interventions. The fact that there were only three nurse and physician interventions studied is

concerning and may be a result of the lack of research on these intervention. This review acknowledged the limited research on medication reconciliation in an ambulatory setting.

Mueller, Cunningham-Sponsler, Kripalani & Schnipper (2012), conducted a review of hospital-based medication reconciliation to identify effective practices. There were 26 studies reviewed. The studies evaluated pharmacist interventions (n=17), information technology interventions (n=6) and five other interventions. These studies were focused on reducing medication discrepancies, potential adverse drug events, and actual adverse drug events. Interventions that were successful typically included pharmacy staff and a focus on high risk patients.

In the pharmacist interventions, the comparison group received “usual care”. Usual care does not include other medication reconciliation interventions. Therefore, the success of the pharmacist interventions does not prove to be superior to other interventions. In various studies reviewed, the high-risk patients had variable definitions. The high risk patients were defined as 1) older patients between the age of 55-80 years, 2) polypharmacy with between 4 and 13 medications, and 3) have three or more co-morbid conditions. Studies that included interventions that involved targeting high-risk groups, had evident institutional support, and identified a defined population group were successful at reducing medication discrepancies. In further research, the success of interventions that are focused on specific patient populations should be studied.

Most clinicians would agree that patient participation and an accurate and complete medication list are important components of the medication reconciliation process. A prospective study conducted by, Nassaralla et al. (2009) evaluated patient medication lists for

completeness and accuracy in four Mayo Clinic Rochester clinics. Prior to the intervention baseline data was obtained from the electronic medical record (EMR) to determine completeness and accuracy of the patient medications lists. A complete list included the medication name, dose, frequency and route of each medication. An accurate list was complete and the medications in the EMR matched what the patient was taking at home. Before the intervention, patients received an appointment confirmation letter prior, which reminded them to bring their medications to their appointments. These letters were only sent to patients that had appointments seven days in advance. Many appointments in these clinics were made for the same-day or the next day. Therefore, this intervention was not very effective because it did not reach many of the patients.

In August of 2006, a Licensed Practice Nurse (LPN) education intervention was implemented to improve the accuracy of the EMR medication lists. Each LPN received feedback on the accuracy of the medication lists they entered into the EMR, prior to the intervention. LPNs were made aware of the types of inaccuracies that were found in the EMR lists. In May 2007, a patient awareness intervention, receptionist started calling the patients a day before their appointments to remind them to bring their medications or an up-to-date medication list. This medication reminder was also highlighted in the appointment confirmation letters. Also, brochures were put in the patient waiting rooms to stress the importance of knowing their medications. LPNs were asked to 1) educate patients on the importance of their medications, 2) encourage patients to bring their medications to appointments and 3) give each patient a brochure. Physicians were asked to do the medication reconciliation in the EMR and provide the patients with a correct and accurate copy of the medication list.



After the LPN and patient awareness interventions the completeness of medication lists improved from 23.1% to 37.7% ( $p = 0.087$ ) and the accuracy of medication list improved from 11.5% to 29% ( $p=0.014$ ) (Nassaralla et al., 2009). The results of this study show the importance in patient awareness and participation in accordance with staff education. The combination of patient and staff interventions resulted in a positive change and improved safety and quality of care.

Sarzynsky, Luz, Zhou, & Rios-Bedoya (2014) conducted a cross-sectional pilot study at a community geriatric clinic in Michigan. The question the researchers hoped to answer was “Does accuracy improve if patients “brown bag” their medications for appointments?”. The study used the term “brown baggers” or “BBs” to identify patients that brought at least one medication and “non-brown baggers” or “NBBs” were patients that did not bring any medications to appointments. There were three medication lists generated for each patient: patient chart list, a list obtained for a point-of-care interview and telephone list. The medications listed in the patient charts were compared to the telephone list (obtained from a post-appointment telephone interview) (Sarzynsky et al., 2014).

The providers in this clinic had no standard practice for requesting patients to bring their medications to appointments. Some of the patients were told to bring all of their medications and others were told to bring specific medications. The lack of homogeneity resulted in a variation in patients’ brown bagging their medications. In this clinic, 72 percent of the patients were brown baggers and 39 percent of those brown baggers brought all of their medications (Sarzynsky et al., 2014). It is interesting that all of the brown baggers perceived that the physician reviewed their medications compared with only 62 percent of the non-brown baggers.

The review of the medication lists showed no significant difference in the accuracy of the medication lists of the brown baggers and non-brown baggers. Sarzynsky et al. (2014) suggest, brown bagging is not an appropriate intervention alone and should be used in conjunction with other interventions such as detailed instructions, in-depth patient interview, and medication list updates when necessary.

Lee, Nishimura, Ngu, Tieu, and Auerbach (2013) suggest patient reported medication lists are often incomplete and have discrepancies. A total of 94 patients were included in the study and 82 (87%) personal medication lists were evaluated. Most patient reported lists were incomplete (56%; 46/82) omitting at least one medication verbally reported. A majority of patient's personal lists (94%; (77/82) had at least one discrepancy with clinic medication lists. There was an average of four discrepancies per patient list. Taking more than 10 medications was a risk factor for having an incomplete medication list. Engaging and educating patients on importance of keeping an accurate medication list was suggested.

Finkelstein, Liu, Jani, Rosenthal, and Poghosyan (2013) conducted a study in an urban primary care clinic, investigating patient preferences over various appointment reminders systems in ambulatory settings. The modes of communication included in the survey phone calls, cell phone calls, text messages, e-mails and direct mail. Patient preferences for methods of communication for appointment reminders varied. The most preferred method of communication was cell phone calls (1). The following rank order for reminders services were home phone calls (2), text messages (3), and emails/direct mail (4). The results of the study suggest that appointment reminder services may improve if patient preferences are taken into consideration. Direct mail reminders are the least preferred by patients yet, many clinics continue to use them. Although most patients preferred phone calls, Thirty-one percent of the

patients did not have an active home phone line (Finkelstein et al., 2013). To improve the effectiveness of reminder systems it is important to determine the technology that is available to the individual patient.

### **Pre-Intervention**

Prior to determining an appropriate intervention, an outpatient microsystem assessment was completed. This assessment gave insight to the purpose, patients, professionals, processes and patterns of the clinic. Hospital data was obtained to identify useful statistics and general information. To achieve understanding of the clinic, staff satisfaction survey (see Appendix C) was used to determine staff satisfaction with work place, processes, patient care and co-workers. Staff medication reconciliation questionnaires were used to determine knowledge of the process, barriers to conducting medication reconciliation, and how the process could be improved. Patients were given a questionnaire to evaluate patient awareness, poly-pharmacy usage, habits for bringing medication and/or medication lists to appointments, and their barriers to bringing their medications to appointments (see Appendix D).

The results of the aforementioned surveys were evidence of the need for an intervention to improve the medication reconciliation process. Patients were given a pre-intervention survey to determine if they recalled 1) receiving a telephone appointment reminder and 2) being told to bring their medications (see Appendix E). These patients were also asked if they brought their medications to their appointment. Only 33% of the patients recalled receiving a phone call and 13% of those patients recalled being reminded to bring their medications to their appointment. Nearly half of the patients (53%) brought their medications to their appointment.

### **Project Timeline**

This is the medication reconciliation project timeline (see Appendix F for Gantt chart).

Microsystem Assessment: August 20-November 20 (Continuous)

Medication Reconciliation Observation: September 16-September 24

Staff Questionnaires: September 24-September 30

Patient Questionnaires: October 1-October 8

Telephone/Letters Intervention: October 21-November 4

Data Collection and Analysis: September 16-November 12

Posters/Brochures Intervention: November 25

### **Intervention**

With the goal of improving patient awareness of the medication reconciliation process, telephone appointment reminders were used to communicate with patients prior to their appointments. The intervention took place on three separate appointment days. One business day prior to the appointment, patients received a phone call reminder of the date and time of their appointment. During this phone call, patients were asked to bring their medications to their appointment. Patient awareness and education brochures (English and Spanish) were ordered from Joint Commission Resources to be given to patients. The brochure, titled “Speak Up: Help Avoid Mistakes with Your Medicines” has questions and answers to help patients prevent mistakes with their medicines. For example, the brochure includes answers to “What should you know about your medicines”, “What can you do at the hospital or clinic to help avoid mistakes

with your medicines” and “Who is responsible for your medicines”. This brochure also includes a detachable medication list for the patient. In addition to the brochures, posters with the same title of the brochure will be placed in the waiting room.

### **Results**

The primary goal of the intervention was to increase patient participation and improve the medication reconciliation process. As a result of the telephone intervention, the number of patients that brought their medications increased (7%). The providers were able to visually evaluate the medications of 59% of the patients seen. Missed appointment or no show rates also decreased from a monthly average of 29% to 25%. Missed patient appointments result in underutilized medical resources, increased healthcare costs, reductions in care access, clinic inefficiency and decreased provider productivity (Langaga & Lawrence, 2012). No show rates in the cardiology clinic are high and there is room for improvement. No show rates typically range from 15-30% in outpatient clinics (Huang and Zuniga, 2014).

The intervention includes education materials (posters and brochures). The patient brochures and posters have not been placed in the clinic yet. It is expected that this component of the intervention will result in additional improvements in patient participation and health literacy.

### **Barriers**

The barriers to implementing the patient awareness intervention were related to staff and budgetary issues. Appropriate staffing and time are required for the telephone intervention. The intervention required approximately 75 minutes daily. There are usually two unit clerks available to the cardiology clinic, as resource staff. However, the unit clerk

pool is understaffed and unavailable to the clinic at this time. The charge nurse and an administrative staff member will become responsible for continuing this intervention until more staff is available.

Costly interventions such as giving patients medication bags (lunch bags), and automated telephone reminders were not viable options. The clinic has a limited budget with little appropriation of non-essential items.

### **Cost Analysis**

Patient safety interventions are more affordable than medication errors. There are financial consequences that may occur from incomplete medication reconciliation. Actual adverse drug events (ADEs) are a possible consequence to medication discrepancies. The average cost of an ADE is more than \$3,000 and the average cost of a life threatening ADEs is more than \$8,000 (Hug, Keohane, Seger, Yoon & Bates, 2012). Preventable serious or life threatening ADEs, may result in hospital readmission. Unplanned readmissions cost Medicare \$17.4 billion a year, and heart failure (HF) is the most frequent reason for re-hospitalizations (Jencks, Williams, & Coleman, 2009). It is costly for a hospital to have high re-admission rates. Medicare payment reform proposal states, those hospitals with high readmission rates would have 20% of the original admissions payment withheld if a patient is readmitted within 7 days, and 10% withheld if the patient is readmitted in 15 days (Baucus, 2009).

In the cardiology clinic, between July of 2013 and July of 2014, there was an average of 288 cardiology visits and 107 ER referral visits per month (SFGH, 2014). This clinic has an average of 395 patients a month and 4,740 patients a year. Up to 10% of outpatients have an ADE annually and approximately 16% of patients are admitted from an emergency room

(Bourgeois, Shannon, Valim & Mandl, 2010). Therefore, up to 75 (\$474X.16) of the cardiology clinic patients, could have an ADE. Using the average cost of an ADE (\$3,000) and multiplying that by 75, the cost of ADEs may be up to \$225,000 a year.

### **Nursing Relevance**

Nurses are responsible for giving patients safe and effective care. Reducing medication discrepancies leads to improved patient outcomes. Medication reconciliation is not just a task, but an opportunity to educate and have meaningful communication with patients. Through the use of evidence based research, further interventions could be identified and implemented to further the improvements to the medication reconciliation process. As outcome managers, clinical care leaders, educators and team leaders, clinical nurse leaders (CNLs) are accomplished at improving processes in microsystem settings. The Patient Protection and Affordable Care Act will result in more insured patients seeking quality health care. CNLs are prepared nurses that are well-matched for the changes that are occurring in healthcare settings, across the United States.

### **Conclusion and Recommendations**

The medication reconciliation process is challenging. The medication reconciliation process is reliant on the participation and partnership of care providers and patients. Patients are not always aware of the importance of their participation or feel that their involvement is unnecessary. The telephone intervention has been successful at improving patient participation and reducing the no-show rate. The patients appeared to be receptive to receiving phone calls. It is recommended that this intervention is continued and evaluated periodically. This intervention is not sustainable without sufficient staff or an automated reminder system. There is a possibility

that a proposed automated reminder system may be available in 2015. It would be advantageous if a reminder to bring medications or an up-to-date medication list was included in the pre-recorded messages.

Patient participation is a key component to the medication process. However, there are further factors that provide obstacles to medication reconciliation. The outpatient electronic medical record (EMR) is complicated to use and there are time constraints that make the process difficult to complete. Changes to the EMR medication list may include 1) medications listed in alphabetical, 2) medications listed by using one name for each medication (ex. Furosemide/Lasix), and 3) improved visual display with less crowding and more space between the medications.

It is clear from the experience and understanding gained from this intervention that medication reconciliation requires a team approach. That team includes physicians, nurse practitioners, registered nurses, and patients. It is the responsibility of the entire team to ensure the medications listed in the EMR are correct and complete. All patients deserve valuable and quality care as well as, the best outcomes possible.



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Appendix A

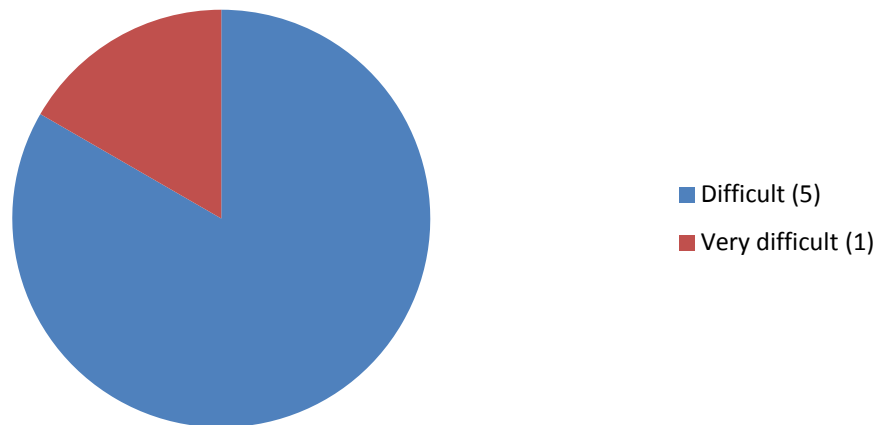
Results of the Staff Medication Reconciliation Questionnaire

**What are the barriers you face with the process of medication reconciliation?**

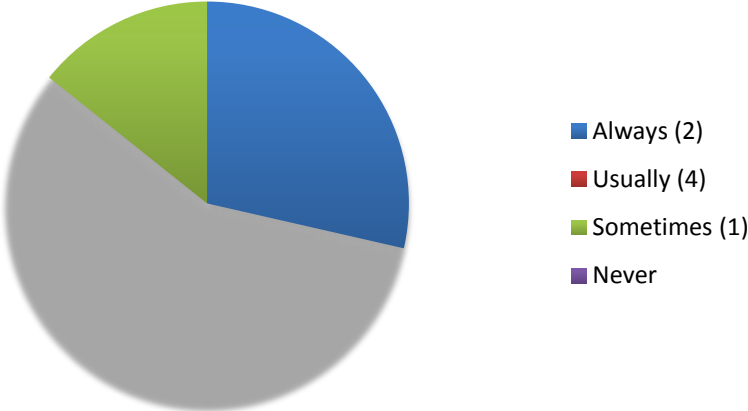
Barriers	Staff Responses (Provider/RNs n=7)
Time consuming/Time constraints	5 out of 7
ECW is not regularly updated	1 out of 7
ECW is difficult to read/understand	3 out of 7
Patients are not bringing their medications	4 out of 7
Patients do not remember/confused about their medications	3 out of 7
The process to start/stop medications in ECW	1 out of 7
The use of different drug manufacturers for the same medication confuses patients	1 out of 7
The pharmacy labels medication bottles using more than one name (alternating) i.e. furosemide/lasix	2 out of 7
The patients have multiple providers	1 out of 7

\*ECW= EClinical Works

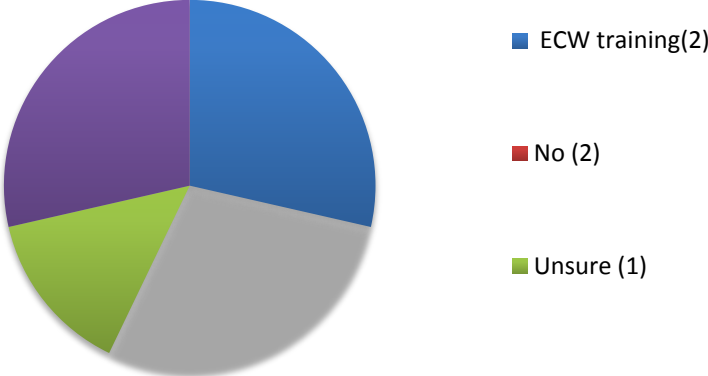
**How do you feel about the current medication reconciliation process?**

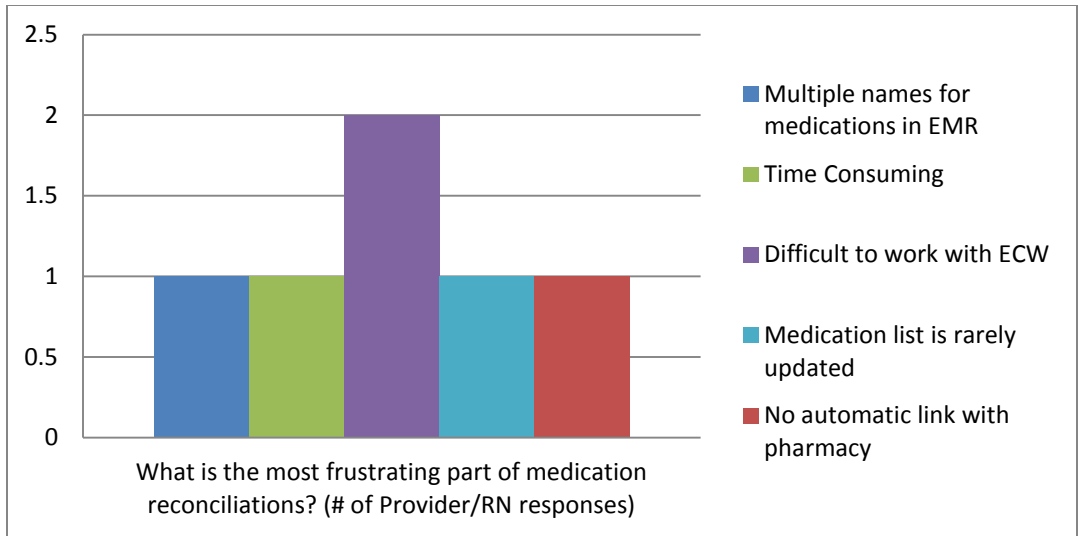


**How often do you perform medication reconciliation with patients?**

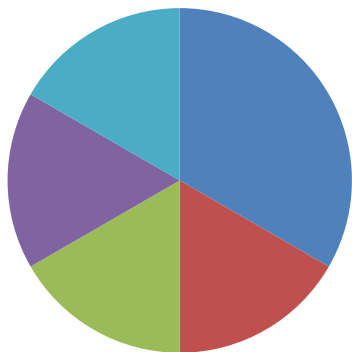


**Were you trained on the medication reconciliation process? If yes, how were you educated on this process?**



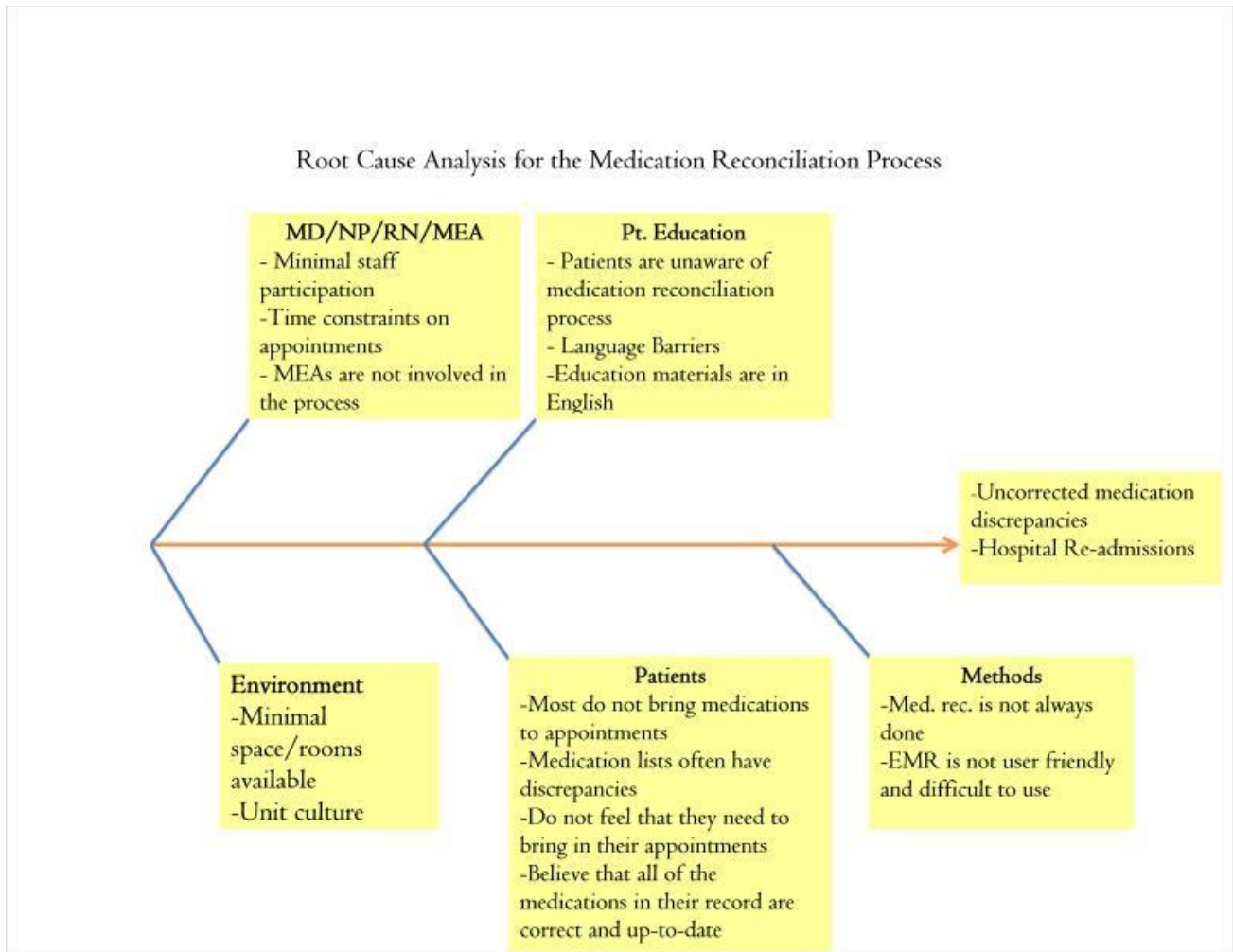


**If there was one thing you could change about the medication reconciliation process what would it be?**



- The Registered Nurse or someone else would do medication reconciliation (2)
- Have a legible new list in ECW (1)
- An easier to correct medication list in ECW (1)
- Improve the process of prescribing medications in ECW (1)
- EMR would only use the generic names (1)

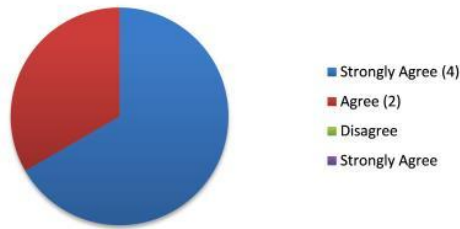
Appendix B



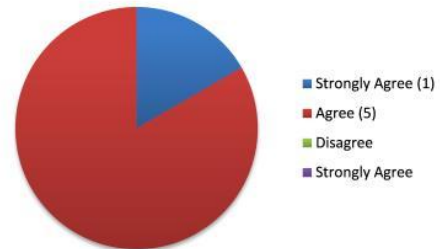
Appendix C

Staff Satisfaction Survey

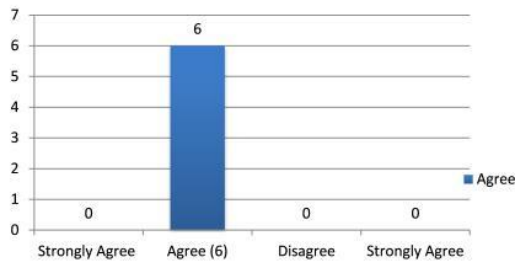
**I am treated with respect every day by everyone that works in this practice.**

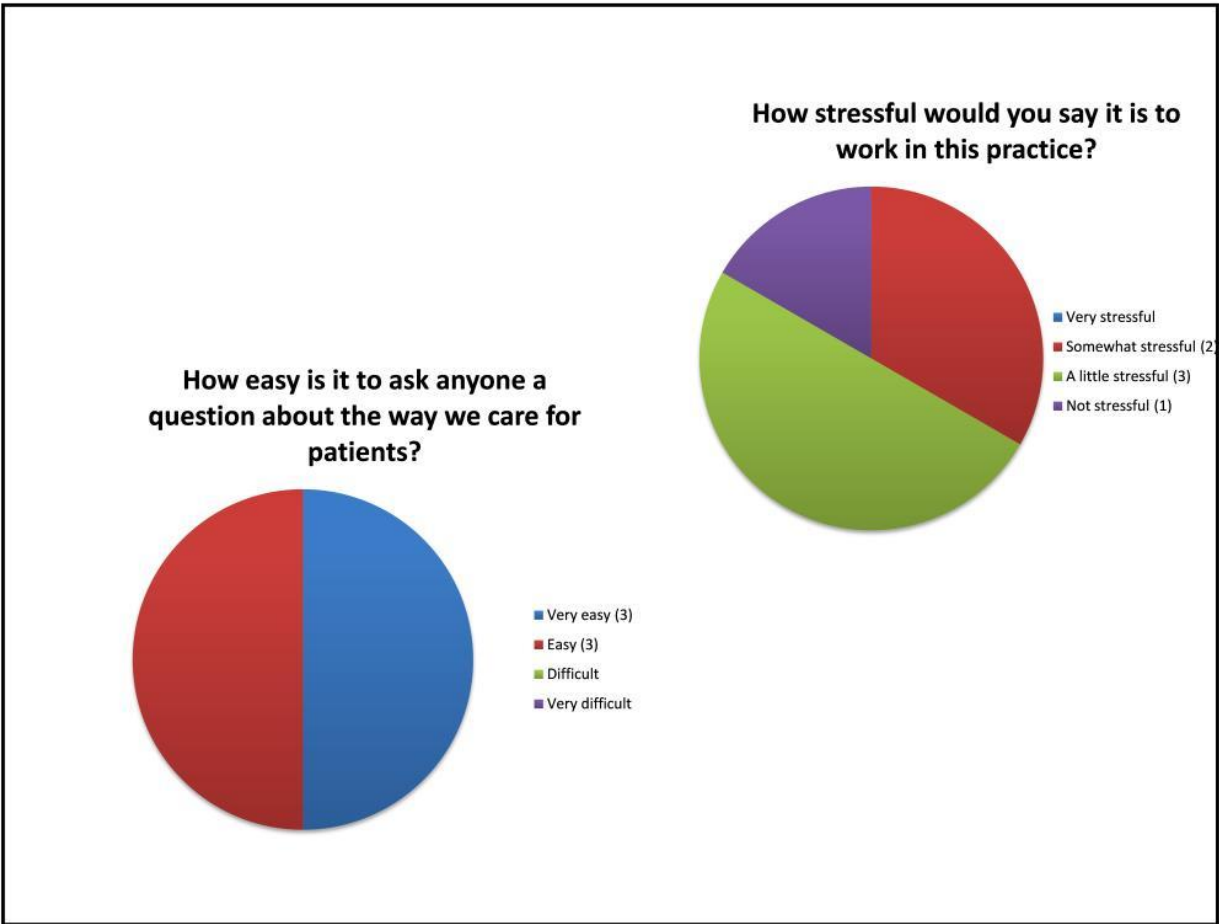


**I am given everything I need- tools, equipment, and encouragement-to make my work meaningful to my life.**



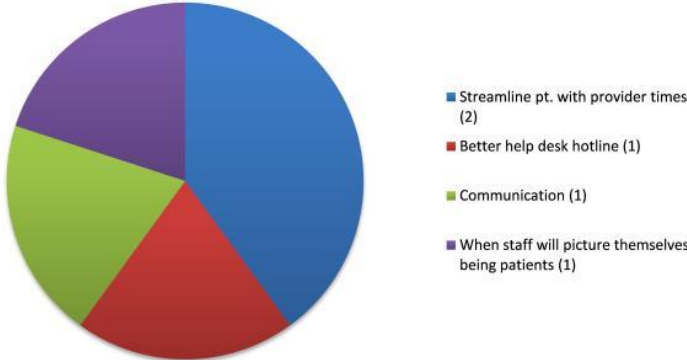
**When I do good work, someone in this practice notices that I did it.**





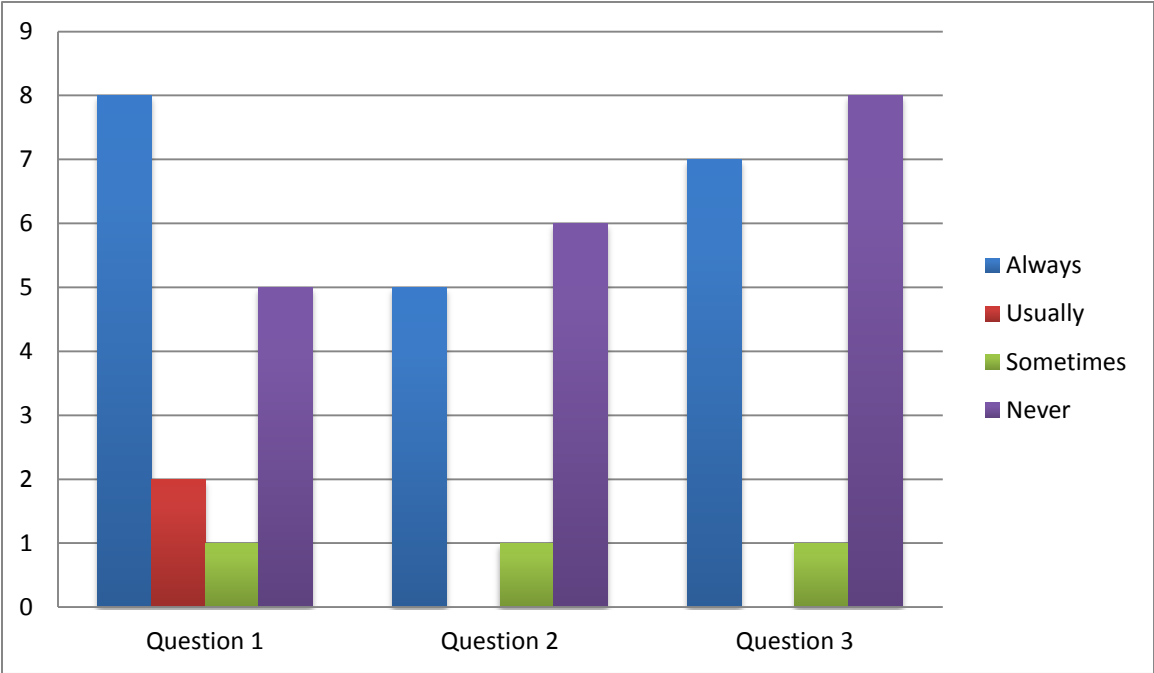


**What would make this practice better for those that work here?**



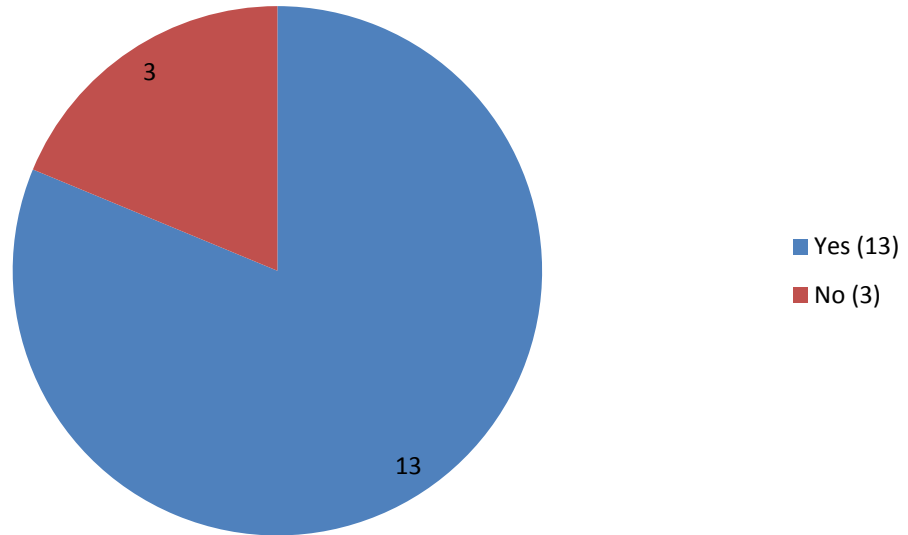
Appendix D

Patient Medication Reconciliation Survey



- 1. I keep an accurate and updated list of my medications
- 2. On my medication list, I include non-prescription, over-the-counter medications
- 3. I bring my medications to my clinic appointments

4. I understand why I take my medications.



5. From how many pharmacies do you use to receive your medications?	One pharmacy (13 respondents) Two pharmacies (3 respondents)
6. Do you receive any medications by mail?	Yes (1 respondent) No (15 respondents)
7. Are your medications kept in a separate location from others in your household?	Yes (12 respondents) No (4 respondents)
8. Are there any barriers that make it difficult for you to maintain an accurate medication list or bring your medications to appointments?	Yes (2 respondents) <ul style="list-style-type: none"> <li>• Too many medications to bring (1)</li> <li>• Forgetfulness (1)</li> </ul> No (14 respondents)

## Appendix E

## Pre-Intervention Results

<b>Phone calls:</b>	8 /31 (26%) 1M patients received a phone call reminder 5 /15 ( 33%) cardiology patients received a phone call reminder
<b>Medication reminders:</b>	3 /31 (10% )1M patients were reminded to bring their medications to their appointment 2 /15 (13%) cardiology patients were reminded to bring their medications to their appointment
<b>Medication brought to the appointment:</b>	11 of 31 (35%) 1M patients brought their medications to their appointment 8 of 15 (53%) cardiology patients brought their medications to their appointment

Appendix F: Project Timeline Gantt Chart

