Medication Reconciliation in a Head and Neck Cancer Clinic

Megan Lee Lucas

Nebraska Methodist College

Capstone

Dr. Jillian Krumbach

06/23/2021

Table of Contents

Abstract

The Head and Neck Cancer Clinic is within a Cancer Center in the Southeastern United States. The organization has a medication reconciliation policy in place to ensure that accurate medication information is updated in each patient's chart, which is used in the Head and Neck Cancer Clinic. The purpose of this project was to improve medication reconciliation participation by implementing a medication reconciliation tool sheet in a Head and Neck Cancer Clinic over a two-month period. For two weeks data was collected on the current medication reconciliation discrepancies for individual patients that have an appointment at the clinic. Comparison was done on what was in each patient's electronic medical record and what the patient stated they were actually taking. This data collection was measured by how many patients had an inaccuracy in the electronic medical record during this two week period. Following the pre-implementation phase, the medication reconciliation tool sheet was implemented for four weeks. Post implementation data was collected over the following two weeks and measured how many patients had an inaccuracy in the electronic medical record after the medication reconciliation tool sheet was implemented. Both prescription and over-the-counter medications were reviewed with each patient in all phases of the intervention. The intervention had 100% participation by all the patients seen during the intervention time frame. The results of the intervention were 100% of the patients had an inaccurate EMR pre-implementation. The post-implementation data showed that 100% of patients had an inaccurate EMR and no improvement noted from the intervention.

Keywords: medication, reconciliation, cancer, tool sheet, electronic medical record

Medication Reconciliation in a Head and Neck Cancer Clinic

Medication reconciliation is crucial process to ensure patients and providers have accurate and comprehensive medication information to prevent adverse events and improve medication adherence for each patient. Medication reconciliation is a prevalent problem, evidenced by the 2005 the Joint Commission inclusion in hospital's requirements for accreditation (Rangachari et al., 2019). Medication reconciliation is a priority for research, policy making, providers, patients, and care takers and has been vastly studied.

Overview

Problem Description

The Head and Neck Cancer Clinic is within a Cancer Center in the Southeastern United States. The organization has a medication reconciliation policy in place to ensure that accurate medication information is updated in each patient's chart, which is used in the Head and Neck Cancer Clinic. The Head and Neck Cancer Clinic medication reconciliation policy is a brief 2-page description on the process and procedure on medication reconciliation. The process has 4 steps: obtaining a medication list from the patient or medical record, documenting and reviewing the medication list, updating the medication list, and printing a patient care summary at the end of the visit ("PCHM: Medication Reconciliation & Lists Policy," 2019). This current process has many opportunities for improvement. Currently, no one medical provider is responsible for getting accurate information or updating the patient's chart. Patients are not required to bring in a medication list or medication bottles. Additionally, patients are not given a medication chart on how and when to take new medications, nor is there follow up on how accurately the patient is taking current medications.

This project aimed to answer the question, in adult patients seen in an outpatient Head and Neck Cancer Clinic, did implementing a medication reconciliation tool sheet improve the accuracy of medication reconciliation compared to the institution's method of medication reconciliation over a period of two months? The outcome of this project was to improve the accuracy of the patient's electronic medical record by implementing the new medication reconciliation tool sheet.

Available Knowledge

Current Practice

A Cancer Center in the Southwestern United States performed a mixed-method study on Electronic Health Record (EHR) medication reconciliation in order to improve medication reconciliation and adverse patient outcomes. It was estimated in this study that less than 25% of medication reconciliations on patients' charts were correct and showed that providers were unsure about who was responsible for completing the medication list. Additionally, providers who were not the original prescriber were resistant to discontinue a patient's medication (Rangachari et al., 2019). The patient satisfaction score for medication instructions was in the 25th percentile for primary care in this study, citing patient feeling the medications were not explained to them or clear instructions given. The study concluded that each provider has responsibility in updating the medication reconciliation and that education on the importance of accurate medication list is to promote safety, outcomes and medication compliance of patients (Rangachari et al., 2019). This study did not mention how to change the current policy to ensure that each provider is held responsible for updating patient medications.

Another similar organization in the Southeastern United States changed the education reconciliation system and was able to garner significant net annual savings. According to data

the facility had accurate medication lists only 20% of the time, but with the new medication reconciliation it reaches near 100% and saves more than $830,000 annually (Katz, 2012). The new program decreased the number of adverse drug events by 75% per year from 543 to 136. The system estimated that each averted drug event would have cost about $4,000, for a total savings of $1.6 million (Katz, 2012). When factoring in staff costs of an estimated $800,000 the system was able to make a profit of $800,000 (Katz, 2012).

Studies that Guided the Intervention

A quality improvement study performed at one Department of Veterans Affairs (VA) medical facility showed 60% of patients were found to have mediation discrepancies, where 67% were documented on admission and 40% at discharge. The medication discrepancies led to adverse drug events in up to 40% of the patients (Presley et al., 2020). The VA study implemented an intervention toolkit to improve medication reconciliation. The toolkit provided clearly defined roles for medical providers, including education on obtaining accurate medication history and performing a discharge medication reconciliation (Presley et al., 2020). The results after implementing the toolkit was an increase from 22 % to 45% in medication reconciliation and helped the VA national medication reconciliation to standardize policy and enhance medication reconciliation (Presley et al., 2020). This study helped formulate the medication reconciliation tool sheet to implement for the Head and Neck Cancer Clinic.

In a scoping review of 15 studies, it was found that few examined medication reconciliation in an outpatient care setting and focused instead on inpatient and process outcomes (McCarthy et al., 2016). In a randomized controlled trial, a pharmacist-led medication review and a computer-assisted questionnaire with patient involvement was conducted prior to their visit with a provider. This study showed that by doing a medication review with patients a 74%

decrease in drug related problems before the patients scheduled visit was seen (Huiskes et al., 2019).

In a prospective pilot study by Tong, et al. (2015), each patient enrolled had a 20-minute consultation with a pharmacist at this time medication discrepancies were recorded. The study found that 30% of patients were taking medications that had been discontinued or not taking medication as prescribed, 11% were taking the wrong dose, and 38% of patients had medication discrepancies (Tong et al., 2015). A study conducted in the outpatient setting found that 63% of patients had a medication discrepancy and 36% were classified as likely to cause moderate harm to the patient; this study concluded that by implementing a medication reconciliation policy and model in clinic it led to improved patient safety by resolving medication discrepancies (Phillips et al., 2016).

Rationale

Lippitt's Phases of Change Theory served as the theoretical guidance for implementation of the medication reconciliation tool sheet at the Head and Neck Cancer Clinic. The four elements of Lippitt's Theory are assessment, planning, implementation, and evaluation (Mitchell, 2015). Lippitt's phases of change theory is commonly used in the healthcare profession and focuses on the role and responsibility of change agent than the actual change itself (Mitchell, 2015). The four elements also have seven phases to help guide change. The phases are diagnosing the problem, assess motivation or capacity for change, assess change agents' resources, select progressive change objective, choosing appropriate role of the change agent, maintain change, and terminate the helping relationship (Mitchell, 2015).

The first three phases the providers have expressed their motivation for a change, and the reasons that a change is needed. Through collaboration with the providers, the problem was

identified, and the process of change was explained. Phases four through six, change objectives in the medication reconciliation process were selected and how the change will be initiated. This quality improvement project focused on phases four through six.

Purpose

The purpose of this project was to improve medication reconciliation participation by implementing a medication reconciliation tool sheet in a Head and Neck Cancer Clinic over a two-month period.

Methods

Context

Head and neck cancers include cancers in the larynx, throat, lips, mouth, nose, and salivary glands. Seventy-five percent of head and neck cancers are caused by tobacco and alcohol use (*Head and Neck Cancer—Patient Version*, 2019). Infection with human papillomavirus (HPV) can increase the risk of head and neck cancers (*Head and Neck Cancer—Patient Version*, 2019). Men have a 5 times greater risk of developing head and neck cancer than women, while risk also increases with age and median age of diagnosis in the late 60s and 70s (*Head and Neck Cancer—Patient Version*, 2019). Head and Neck Cancer constitutes 3% of all malignancies, with approximately 60,000 new cases each year and approximately 12,000 resulting deaths (Mourad et al., 2017).

Treatment for head and neck cancer can include surgery, radiation therapy, chemotherapy, targeted therapy, or a combination of treatments. Each treatment option relies on correct medication reconciliation for each patient. Cancer patients initiating new therapies have a high burden of medication use and are more susceptible to inadvertent medication discrepancies (Chun et al., 2019).

The Head and Neck Cancer Clinic, the project site, is within a Cancer Center in the Southeastern United States. The Cancer Center has ten cancer specialty clinics, sees nearly 2,000 new cancer patients annually, and over 60,000 annual patient visits ("Georgia Cancer Center," 2020). The Cancer Center sees indigent care patients and patients that have insurance. The Head and Neck Cancer Clinic operates each Monday, Tuesday, and Thursday and sees on average 40 patients daily (Bentley & Byrd, 2020). The implementation of the new medication reconciliation tool sheet did not require additional staff, nor did it require additional education hours for the staff.

A SWOT analysis identifies strengths, weaknesses, opportunities, and threats in business or situation requiring strategic planning to reach an objective (Good, 2020). The SWOT analysis of the organization strengths are identifying and avoiding medication errors, staff and organization's willingness to change after education, little to no financial input needed from the organization, improves provider and patient communication, and improves patient autonomy. The weaknesses are identifying and addressing barriers that prevent accurate medication reconciliation. Weaknesses of the project include staff resistance to change and potential barriers to patients bringing in the medication tool sheet. The opportunities are implementing the tool in the larger organization and other clinics, this allows for an increase in collaboration with patients and staff and improves staff teamwork with providers. The threats are that patients may refuse to participate or may refuse or forget to bring in the medication tool sheet, clinic budget may not allow for the printing of medication tool sheets, and some staff may dismiss the medication tool sheet and not support the project.

Intervention(s)

The intervention on improving medication reconciliation was to implement a medication reconciliation tool sheet in a Head and Neck Cancer clinic. The intervention was conducted by the capstone facilitator and the two nurses for the clinic. The Head and Neck Cancer Clinic has two nurses responsible for checking in each patient and updating the medication list. Each nurse was educated on the intervention and the importance of medication reconciliation before the project begins. Patients who had appointments with the providers during the months of April and May 2021 were asked if they were willing to participate in a medication reconciliation improvement project. Upon approval, they were educated on medication reconciliation process, asked about current medications, then the current list was compared to what was listed on the electronic medical record. All patients were adults, over the age of 18, and patients with Head and Neck Cancer. The patients for this intervention kept the appointments that were recommended by the provider. No additional follow up visits were made for this specific intervention. Frequency of patient appointments are scheduled depending on the stage of cancer, recent surgery, post radiation, post chemotherapy, and post scan appointments.

For two weeks, data was collected on the current medication reconciliation discrepancies for individual patients that have an appointment at the clinic. This data was collected and compared to each patient's electronic medical record along with the medications each patient's reported medications. This data collection measured how many patients have an inaccuracy in the electronic medical record during this two-week period. The same patients during this two-week period were followed for the entire intervention, as no new participants were allowed to participate after this time frame.

Then, for four weeks the medication reconciliation tool sheet was implemented. The Capstone facilitator created the medication reconciliation tool sheet (Appendix A). The medication reconciliation tool sheet is a paper copy that the patient will bring to each provider appointment which includes a list of each medication, dosage, reason for medication, date started and stopped, and a column for providers that prescribed the medication. This tool sheet was filled out for each patient by the Capstone facilitator based on the current medications the patient was taking. Then, the electronic medical record was updated to correlate with the medication reconciliation tool sheet by the two clinic nurses during the visit. The tool sheet was updated at each following visit to match the electronic medical record, allowing all providers to see an updated medication list to improve patient safety and medication compliance. Then for an additional two-week post implementation data was collected. During this time frame data collection was measured by how many patients had an inaccuracy in the electronic medical record after the medication reconciliation tool sheet was implemented.

Study of the Intervention(s)

The Plan-Do-Check-Act (PDCA) cycle and the Plan-Do-Study-Act (PDSA) cycle are tools for accelerating quality improvement by planning, trying, observing results, and acting on what is learned from the intervention (Nguyen et al., 2020). The plan stage involves identifying objectives and developing an intervention to achieve it. This stage was developed after a meeting with the providers for the clinic and the medication reconciliation tool sheet was created off the providers concerns. The do stage involves implementing the intervention and carrying out a small-scale study. The providers gave permission to allow the Tuesday afternoon clinic to be the small-scale study to implement the medication reconciliation tool sheet. The check stage involves reviewing the intervention, analyzing the results and identifying what was learned. Post

implementation data collection was conducted for two additional weeks. This data collection involved comparing the patient's electronic medical record, patient's verbal statement on what they are taking, and the medication reconciliation tool sheet. The post implementation data was compared to the pre implementation data, based on the accuracy of the electronic medical chart and the medication reconciliation tool sheet. The act stage involves making a change based off what was learned in the intervention.

Measures

In order to measure the outcomes of intervention, pre and post medication reconciliation quantitative data was recorded to include how many patients seen had a medication discrepancy in the electronic medical record. All measures and data were collected by the project facilitator to make sure that the information gathered was complete and accurate.

The pre implementation data was collected on the current medication reconciliation discrepancies for individual patients that had an appointment at the clinic for two weeks. In order to collect this data, a comparison was done on what was in each patient's electronic medical record and what the patient states they were actually taking. The post implementation data was collected by checking each patient's electronic medical record in comparison to the intervention tool sheet, during this time frame data collection was measured by how many patients have an inaccuracy in the electronic medical record after the medication reconciliation tool sheet was implemented. The intervention was measured by seeing an increase in the accuracy of the patients' medication reconciliation in comparing the tool sheet and the electronic medical record. This was measured by seeing if the patient has any incorrect medications in the EMR after the medication tool sheet is implemented. If any of the medications were incorrect after the implementation of the medication tool sheet results was recorded as an inaccurate EMR.

Analysis

Data was entered into an excel spread sheet where basic formulas were utilized by the facilitator to determine the pre and post implementation percentage. Given the nature of the type of data collected the use advanced statistics was not necessary to analyze data. This allowed the facilitator to easily determine if the tool sheet provided impact, if any, on the medications entered into the EMR. An example of this, would be if the patient had an inaccurate EMR pre-implementation then it would be counted as 100% inaccurate. The same patient had an inaccurate post-implementation EMR, then it would still be counted as 100% inaccurate and no improvement noted from the intervention.

Ethical Considerations

The Head and Neck Cancer Clinic does not currently have a formal medication reconciliation process, currently the review of medications is part of each visit to the clinic. The Health Insurance Portability and Accountability Act (HIPAA) covers the collection of prescribed medication information from patients at a standard office visit. Since the intervention took place at routine visits, it is covered by the HIPAA practices and will introduce no further risk of harm to patients. The current HIPAA practices at the clinic were followed and all patient data was kept secure and protected, as no patient information or data left the facility. Institutional Review Board approval was obtained before the project was implemented. The Project facilitator has no professional or financial conflicts of interest in this project.

Results

During the intervention time frame, 64 patients were seen at the clinic and medication reconciliation was conducted for each patient. The intervention had 100% participation by all the patients seen during the intervention time frame. The results of the intervention were that 100%

of the patients had an inaccurate EMR pre-implementation. The post-implementation data showed that 100% of patients had an inaccurate EMR and no improvement noted from the intervention.

Figure 1

Study Results

Pre Implementation number of Patient Seen	19
Implementation number of Patient Seen	19
Post Implementation number of Patient Seen	19
Number of Patients with incorrect EMR Pre Implementation	19
Number of Patients with correct EMR Pre Implenentation	0
Number of Patients with incorrect EMR Post Implementation	19
Number of Patients with correct EMR Post Implementation	0
Improvement seen with Intervention	0

Discussion

Summary

The key findings of this intervention were that despite each patient participating, the EMR was still inaccurate. The strengths of the intervention were that all the patients participated and carried the medication reconciliation tool sheet. The other strengths were that the clinic nurses and providers participated and supported the intervention.

Interpretation

The association between the intervention and outcomes did not yield the desired results. Each patient EMR was updated at the visit and each patient kept and showed the medication

reconciliation tool sheet at the visits. Since the outcomes did not yield the desired results, the facilitator tried to find reasons behind the failed intervention. It was found that the EMR has a system limitation. Even though the EMR was updated at each visit, the future visits did not show the previous visit updates. The future visits showed all the medications the patients have ever taken in the system. The system did not keep the updated medication reconciliation list performed on prior visits. This system limitation contributed to the lack of success for this intervention. This limitation was not known to the facilitator before the intervention began. The facilitator had limited access to gain more knowledge on why the EMR would not keep updated information. The information technology department at the institution was notified by the providers and clinic nurses of the EMR limitation. The intervention is not being continued in the clinic until the EMR limitation is corrected. The patients, clinic nurse, and providers found the medication reconciliation tool sheet to be a valuable asset as having it improves safety, autonomy, and outcomes for each patient.

Limitations

This study limitations were the number of patients seen and the EMR system itself. One limitation was due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic; the clinic was limited on the number of patients allowed to be seen each day, and that each patient had to be tested for the virus before the appointment. This could have limited the number of patient appointments.

Conclusions

In conclusion, this intervention hoped to improve medication reconciliation participation by implementing a medication reconciliation tool sheet in a Head and Neck Cancer Clinic in a two-month period. The findings of the intervention showed that even though all of the patients

participated, the EMR still was inaccurate with the intervention. Future research should consider collaborating with the information technology department and finding a way to keep the patients' EMR chart updated. The system limitation could be affecting other clinics and areas in the larger organization, future research can examine the larger organization to see if the issue is system wide or limited to certain areas.

References

Bentley, H., & Byrd, K. (2020, June 15). Community Needs Assessment (M. Lucas, Interviewer).

Chun, D. S., Faso, A., Muss, H. B., Sanoff, H. K., Valgus, J., & Lund, J. L. (2019). Oncology pharmacist-led medication reconciliation among cancer patients initiating chemotherapy. *Journal of Oncology Pharmacy Practice*, *26*(5), 1156–1163. https://doi.org/10.1177/1078155219892066

Georgia Cancer Center. (2020). Retrieved June 15, 2020, from Georgia Cancer Center website: https://www.augusta.edu/cancer/

Good, C. (2020). Plot your next move with a SWOT analysis. *MGMA Connection*, 128–129.

Head and Neck Cancer—Patient Version. (2019). National Cancer Institute; Cancer.gov. https://www.cancer.gov/types/head-and-neck

Huiskes, V. J. B., Ende, C. H. M., Kruijtbosch, M., Ensing, H. T., Meijs, M., Meijs, V. M. M., Burger, D. M., & Bemt, B. J. F. (2019). Effectiveness of medication review on the number of drug-related problems in patients visiting the outpatient cardiology clinic: A randomized controlled trial. *British Journal of Clinical Pharmacology*, *86*(1), 50–61. https://doi.org/10.1111/bcp.14125

Katz, P. S. (2012, November 11). Making the business case for med rec. Retrieved July 9, 2020, from Today's Hospitalist website: https://www.todayshospitalist.com/making-the-business-case-for-med-rec/

McCarthy, L., Su, X. (Wendy), Crown, N., Turple, J., Brown, T. E. R., Walsh, K., John, J., & Rochon, P. (2016). Medication reconciliation interventions in ambulatory care: A scoping review. *American Journal of Health-System Pharmacy*, *73*(22), 1845–1857. https://doi.org/10.2146/ajhp150916

Mitchell, G. (2015). Selecting the best theory to implement planned change. *Nursing Management*, *20*(1), 32–37. https://doi.org/10.7748/nm2013.04.20.1.32.e1013

Mourad, M., Jetmore, T., Jategaonkar, A. A., Moubayed, S., Moshier, E., & Urken, M. L. (2017). Epidemiological Trends of Head and Neck Cancer in the United States: A SEER Population Study. *Journal of Oral and Maxillofacial Surgery*, *75*(12), 2562–2572. https://doi.org/10.1016/j.joms.2017.05.008

Nguyen, V., Nguyen, N., Schumacher, B., & Tran, T. (2020). Practical Application of Plan–Do–Check–Act Cycle for Quality Improvement of Sustainable Packaging: A Case Study. *Applied Sciences*, *10*(18), 6332. https://doi.org/10.3390/app10186332

PCHM: Medication Reconciliation & Lists Policy. (2019, May 7). Retrieved February 14, 2020, from adfs2.augusta.edu website: https://augusta.policytech.com/dotNet/documents/?docid=7685

Phillips, M., Wilson, J.-A., Aly, A., Wood, M., Poyah, P., Drost, S., Hiltz, A., & Carver, H. (2016). An Evaluation of Medication Reconciliation in an Outpatient Nephrology Clinic. CANNT Journal, 26(2), 29–33.

Presley, C. A., Wooldridge, K. T., Byerly, S. H., Aylor, A. R., Kaboli, P. J., Roumie, C. L., Schnipper, J. L., Dittus, R. S., & Mixon, A. S. (2020). The Rural VA Multi-Center Medication Reconciliation Quality Improvement Study (R-VA-MARQUIS). *American Journal of Health-System Pharmacy*, *77*(2), 128–137. https://doi.org/10.1093/ajhp/zxz275

Rangachari, P., Dellsperger, K. C., Fallaw, D., Davis, I., Sumner, M., Ray, W., Fiedler, S., Nguyen, T., & Rethemeyer, R. K. (2019). A Mixed-Method Study of Practitioners' Perspectives on Issues Related to EHR Medication Reconciliation at a Health System. *Quality Management in Health Care*, *28*(2), 84–95. https://doi.org/10.1097/qmh.0000000000000208

Tong, E., Choo, S., Ooi, S.-C., & Newnham, H. (2015). Improving the transition of elderly patients with multiple comorbidities into the community: impact of a pharmacist in a General Medicine

outpatient follow-up clinic. *Journal of Pharmacy Practice and Research*, *45*(1), 117–121. https://doi.org/10.1002/jppr.1055

Appendix A

Medication Reconciliation Tool Sheet

Name of Medication	Dose	What is the Medication for?	DateStarted/Date Stopped	Provider who started medication