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Bridging the Gap in Education for Patients on Oral Chemotherapy: A QI Project

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College of Health Sciences

School of Nursing

Doctor of Nursing Practice Program

DNP Project Final Report

Bridging the Gap in Education for Patients on Oral Chemotherapy: A QI Project

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DOCTOR OF NURSING PRACTICE

The DNP Project Final Report is submitted in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice (DNP) at Eastern Kentucky University (EKU).

Student Acknowledgement

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Review & Approval of DNP Project Final Report

The DNP Project Final Report has been reviewed and approved by the DNP Project Team, which includes the DNP Project Chair and the DNP Project Team Member(s). The DNP Project meets the satisfactory requirements for the DNP Project Final Report outlined in the EKU DNP Project Guidelines. The EKU DNP Project Guidelines are based on best practices outlined by the American Association of Colleges of Nursing (AACN) and external evidence-based sources. The DNP Committee develops, maintains, and monitors these standards on behalf of the Department of School of Nursing at Eastern Kentucky University.

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Abstract

Oral chemotherapy and intravenous (IV) chemotherapy share many of the same side effects. However, at community General Hospital Medical Center oral chemotherapy patients were not receiving equitable monitoring and education like their IV chemotherapy counterparts. To bridge the gap, a quality improvement (QI) initiative to improve education, documentation and follow-up between visits was proposed to increase compliance and understanding. The QI project consisted of patients taking oral chemotherapy within the first 12 weeks of starting treatment. Patients were contacted weekly via nurse lead follow up calls and the Oral Chemotherapy Template was discussed with the patient to identify concerns or side effects to medication. Findings were documented on the Oral Chemotherapy Template and relayed to the provider if warranted. Random chart audits were performed to assess the effectiveness of problem identification and education given to patients on oral chemotherapy. Findings showed that the implementation of the Oral Chemotherapy Template and nurse lead follow up calls has narrowed the gap in monitoring, education, compliance, and safety of patients taking oral chemotherapy at CGH Medical Center.

Keywords: oral, chemotherapy, adherence, follow-up, education

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NSC 994 Synthesizing Evidence for DNP

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November 22, 2022

Abstract

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up between visits was proposed to increase compliance and understanding. The QI project consisted of patients taking oral chemotherapy within the first 12 weeks of starting treatment. Patients were contacted weekly via nurse lead follow up calls and the Oral Chemotherapy Template was discussed with the patient to identify concerns or side effects to medication. Findings were documented on the Oral Chemotherapy Template and relayed to the provider if warranted. Random chart audits were performed to assess the effectiveness of problem identification and education given to patients on oral chemotherapy. Findings showed that the implementation of the Oral Chemotherapy Template and nurse lead follow up calls has narrowed the gap in monitoring, education, compliance, and safety of patients taking oral chemotherapy at CGH Medical Center.

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Quality Improvement Project to Bridge the Gap in Education for Patients on Oral Chemotherapy

Cancer treatment has undergone a shift from traditional intravenous (IV) chemotherapy to include delivery of oral chemotherapy. The Association of Community Cancer Centers projects that the use of oral chemotherapy will more than double in the next few years. It is estimated that 25 percent of anticancer drugs in research are being created for oral usage

(Bettencourt, 2014). The rapid shift to oral chemotherapy has created gaps in patient care standards. With such a change in administration patients are gaining more independence from hospitals and infusion centers, allowing patients the freedom to manage their cancer medication at home. Though oral medications are more convenient for patients it does pose challenges. Primarily, the loss of direct medical supervision during cancer treatment has led to adherence and safety concerns for patients (Krikorian et al., 2019). Monitoring oral chemotherapy patients requires a universal approach to minimize risks, side effects, maintain adherence, address concerns, educate and improve outcomes. The purpose of this project is a quality improvement initiative to bridge the gap in therapy related education for patients taking oral chemotherapy through use of medical record template and nurse lead follow up calls.

Background & Significance

Traditional chemotherapy patients receive chemotherapy treatment under the watchful eye of providers and nurses in a controlled setting. In oral chemotherapy patients are receiving treatment outside of a medical setting. Patients have more autonomy and are in control of when, where and how they take their oral chemotherapy. The freedom associated with oral chemotherapy is one of the most attractive features for patients, but unfortunately, patients often do not understand that oral chemotherapy is still chemotherapy and needs to be safely monitored and that adherence to the prescribed regimen in vital in cancer reduction or stability.

Adherence rates for oral chemotherapy are estimated at 15% to 97% (Morgan et al., 2018). With patients administering oral chemotherapy independently, not under the direct control of a provider knowledge deficient concerns arise. There is a missed opportunity to counsel patients and reinforce education when patients are not seen in the office frequently. The ramifications of incorrectly following treatment plans are substantial and could lead to more time

at the doctor's office, hospital stays, disease advancement, and increased rates of mortality (Morgan et al., 2018).

Community General Hospital Medical Center (CGHMC), like many organizations throughout the world, is having difficulty with oral chemotherapy therapy patients maintaining adherence to treatment regimens. According to Merriman, director of clinical and pharmacy services for Minnesota Oncology, "Patients in the United States do not have a great track record when it comes to taking any long-term medication, with estimates ranging from 17% to 80%" (Merriman, 2019). Adherence is a multi-faceted issue involving, patient instructions, drug storage, dose being given at right time, patient cutting doses to prevent side effects, and patient understanding of the importance of adherence (Merriman, 2019). However, the situation at CGHMC presents a unique opportunity to streamline a service for oral chemotherapy patients to advance medication adherence.

Oral Chemotherapy Gold Standards

The is importance in explaining the quality and safety standards for oral chemotherapy. Before 2016, the American Society of Clinical Oncology (ASCO) put forth clinical care guidelines for IV chemotherapy and oral chemotherapy separately. In 2016 the guidelines were updated and there is no longer separate standards between IV chemotherapy and oral chemotherapy but rather have one universal set of clinical care and safety guidelines (Neuss et al., 2016). The combination to one universal set of guidelines occurred because the committee gained understanding that both oral and IV chemotherapies carried the same risks, benefits, and side effects to patients no matter how the chemotherapy was administered (Neuss et al., 2016). These risks and side effects can include dehydration, toxicity, neuropathy, decreased blood cell counts, elevation in liver enzymes, and risk of death (Krikorian et al., 2019).

The update focused on organizations addressing follow-up appointments with patients receiving chemotherapy. Further focused on evaluation and documentation of treatment-related toxicities, dose modification related to toxicities (Neuss et al., 2016). The gold standard care for oral chemotherapy mirrors IV chemotherapy. Patients should be seen in office regularly to monitor side effects, toxicities, and intolerances. Education, side effects, and treatment changes should be documented in a universal area, so that staff and providers can have immediate access to this information for review and updating. Nurses should be following up with patients between visits to discuss if side effects are occurring, is dosage being taken correctly, at the correct time, and any concerns to taking the medication correctly. Patients should be educated and monitored for education effectiveness at every appointment (Neuss, et al., 2016).

While oral chemotherapy does offer the freedom that patients desire, providers need to understand that oral chemotherapy is not necessarily a good fit for every patient. Oral chemotherapy requires that patients take a highly active and responsible role in their cancer treatment (Neuss, et al., 2016). To meet this gold standard of oral chemotherapy care, providers must make practice changes, give more amounts of education, use universal documentation, monitor follow-up appointments carefully, and communicate with the patient between visits about side effects, medication usage, and concerns about adhering to the regimen as prescribed and discussed.

Current Oral Chemotherapy Usage at CGHMC

After discussing the standards for how oral chemotherapy should be given and monitored, now a discussion on how oral chemotherapy is currently being utilization at CGH Medical Center. CGH Medical Center oncology department has gone through a substantial change in staff and providers in the last few years, as a result the organization decided to

implement the Quality Oncology Practice Initiative (QOPI) to provide the highest level of care to oncology patients. QOPI is a certification program offered by the American Society of Clinical Oncology (ASCO) and certified practices can evaluate performance against quality measures and standards that were created by oncology field experts (ASCO, 2021). Practices participating in the QOPI program learn to strengthen the effectiveness of their policies and procedures improving quality in patient care and within the medical community (ASCO, 2021).

At CGHMC patients are seen by a provider and chemotherapy treatment care plan is established and a determination is made which type of chemotherapy the patient will receive. The type of chemotherapy the patient receives is based on the type of cancer, stage of cancer, and genetic factors of the cancer pathology (Echle et al., 2020). When a patient is deemed an acceptable candidate for oral chemotherapy the provider discusses the various options with the patient in office. If the patient and provider agree to move forward with the option of oral chemotherapy many components must occur before the patient starts the medication.

When the oral chemotherapy is prescribed in the provider's office sometimes the provider educates the patient about side effects, route, timing, when to call office, and gives printed material but other times a nurse navigator provides the education. There is no set checklist or protocol to follow for educating the patient, so everyone educates differently (Mackey, 2021). The giving of education is documented in the patient's medical chart but there is no universal location for this information (Mackey, 2021). Whomever is providing the education puts it in a chart note, phone call note, or in other locations (Mackey, 2021). This way of documenting makes it difficult to know what or if the education has been provided to the patient. Further, lack of proper documentation does not put forth high quality continuation of patient care (Cheshire,

2021). Once the patient has begun taking the oral chemotherapy medication, depending on the specific drug prescribed the patient will follow-up in office every three to four weeks.

Oral chemotherapy creates an issue with monitoring patients for side effects and toxicity on a regular basis (Wimbiscus, 2019). With traditional IV chemotherapy patients are seen by a provider every one to three weeks. In traditional chemotherapy, when seeing provider more frequently, there is a higher likelihood that the provider will discover toxicity, side effects, or intolerances earlier. Catching these issues early allows for premedication adding/changing or a reduction in chemotherapy dosage so the patient can remain on treatment while maintaining a good quality of life (Wimbiscus, 2019).

Patient Impact

The current practices being used at CGHMC are not cohesive with early intolerance or toxicity detection for oral chemotherapy patients. Patients being prescribed oral chemotherapy are not seen routinely in an infusion clinic therefore symptoms and side effects that impact quality of life and adherence are not always reported (Jacobs et al., 2019). With less than standard clinical monitoring patients may not know what side effects to expect and when the contact the office. No communication is occurring with the patient between visits unless the patient contacts the office, there is no way to know if the patient is experiencing negative effects or is staying adherent to the medication (Mackey, 2021). Lack of monitoring has made tracking patient adherence extremely difficult, leaving both providers and patients in a less than optimal situation.

Medical Department and Staff Considerations

During the implementation of the QOPI program it became inevitably clear that CGHMC oncology department was not up to standards on oral chemotherapy documentation and

monitoring (Rodriguez, 2021). Patients need to understand that oral chemotherapy carries many of the same risks as IV chemotherapy, yet patients on oral chemotherapy receive little to no monitoring outside of the provider's office. Some 40% of practices do not have a formal program for documentation or monitoring of oral chemotherapy patients (Wong et al., 2016). The provider and organization have a responsibility to deliver the best quality of care possible to every patient. But those impacted stretches beyond just the patient and provider. The entire oncology department staff is impacted, the lack of universal documentation makes finding information difficult (Mackey, 2021). Further if patients ask questions it is hard for staff to find out what the patient has been educated on and what they have not (Mackey, 2021). Also, not having a protocol for documenting phone calls consistently makes finding even basic communication with patients difficult (Mackey, 2021). The issue gets even more difficult because multiple staff members could be working on the same thing but since there is no systematic way of handling communication, questions, and concerns there are times when staff members are working on the same things and do not even know (Mackey, 2021). When this occurs, the department loses time and is wasting staff resources.

Organizational Impact

The healthcare organization is impacted, when the department does not have a good method for monitoring oral chemotherapy patients the likelihood of adverse reactions, side effects, or toxicity increases (Wimbiscus, 2019). When these risks increase the healthcare organization may have more emergency room visits, imaging studies, and hospitalizations that could have been prevented with an implemented monitoring system (Rodriguez, 2021). These issues increase the overall cost to the organization. The community serviced by CGHMC is impacted because cancer patients are coming to the organization expecting congruent well

communicated care and the current system is not up to the standards expected from top notch chemotherapy facilities (Mackey, 2021). Also, the community is rural making it difficult for patients to travel to another oncology group, therefore changes need to be implemented to better close gaps in care and communication.

To summarize, oral chemotherapy and IV chemotherapy share many of the same risks such as, side effects, dehydration, toxicity, neuropathy, decreased blood counts, elevation in liver and kidney enzymes and risk of death (Krikorian et al., 2019). However, at CGHMC traditional IV chemotherapy patients receive better monitoring and education when compared to the oral chemotherapy patient. Oral chemotherapy patients at CGH Medical Center are not being monitored nor documented effectively to meet quality and safety standards, leading to issues with side effects, lack of documented education, and complications with medication adherence (Cheshire, 2021). It is important that oral chemotherapy patients receive the same high-quality care that CGHMC gives to traditional chemotherapy patients where safety, education, monitoring, adherence, and quality of life are at the forefront. Evidence-based research studies will be reviewed for possible interventions for better oral chemotherapy monitoring and education documenting.

Review & Synthesis of Literature

A formal review and synthesis of literature was conducted to answer the following question, “Among patients at Community General Hospital Medical Center receiving oral chemotherapy (P), what is the impact of technological/electronic interventions (I), compared to usual care (C), on improving monitoring and education (O) within 3 months (T)?” To better answer this question a database search was performed to search for the base evidence. The databases searched included Cumulative Index of Nursing and Allied Health Literature

(CINAHL), Medical Literature Analysis, and Retrieval System Online (MEDLINE), Nursing & Allied Health, and Cochrane Database of Systematic Reviews. The keywords utilized in the search strategy were *oral*, *chemotherapy*, and *adherence*.

The findings were further narrowed down by limiting the findings to publications in English, publications within the last five years, and publications that were peer reviewed. Also, when searching in the Nursing and Allied Health database the additional keywords *evidence-based* and *healthcare* were added to further help narrow down the research. In total 380 studies were found. After removing duplicates and completing a hand search of the titles and abstracts 6 studies were selected for inclusion. All evidence was appraised using Melnyk-Fineout Overholt Rapid Critical Appraisal Forms. Refer to Appendix A for hierarchy table and Appendix B for intervention table.

Qualitative Systematic Review

A qualitative systematic review on the factors on driving and disabling oral chemotherapy adherence was reviewed. The purpose of the study was to show that adherence to oral chemotherapy is influenced by many factors. It aimed to contribute an interpretation of the factors that both facilitate and bar adherence to oral chemotherapy among individuals with cancer taking noncurative oral chemotherapy (Dowling et al., 2019). The study used a systematic search strategy of nine databases resulting in 1,430 articles. Those articles were narrowed to 10 qualitative studies. The criteria for inclusion were verbatim accounts from participants, 18 years of age and older, peer reviewed, published in English, and no time restrictions. Of the 12 articles included in the study a total of 206 patients were included, with 109 taking oral tyrosine kinase inhibitor and 57 healthcare professionals (Dowling et al., 2019). The selected articles were then appraised using NVivo version 11.0 for data extraction and synthesis. The synthesis of data

extraction outlined two major themes one being the factors driving adherence and the other being factors disabling adherence.

The findings showed that desire to survive, having a routine, and a strong patient-healthcare provider relationship led to a higher likelihood of adherence. While, thoughts of non-adherence, unplanned risky behavior, balancing survival, and quality of life, and maintaining nonadherence led to lower rates of adherence. This study is relevant to the overall DNP project because it shows the impact of internal and external factors that affect the patient's likelihood of adherence. The study provides important information on why patients struggle with adherence, through this understanding better interventions can be designed to prevent not adherence. In this study additional accidental findings show early education, use of E-health communication and follow-up via telephone appear to be positive interventions to increase adherence (Dowling et al., 2019).

Randomized Controlled Trial (RCT)

Adherence and safety are among some of the most challenging components of oral chemotherapy usage. A study focusing on the effects of telephone-based follow-up on adherence, efficiency, and toxicity of patients taking chemotherapy was reviewed. The study is a randomized open-label controlled trial (RCT) performed in Egypt. Eligibility for the study included metastatic patients greater than 18 years of age with metastatic colorectal or gastric adenocarcinoma. Also, participants needed to have an Eastern Cooperative Oncology Group (ECOG) Performance Status (PS) less than or equal to two with newly diagnosed oral capecitabine therapy (Eldeib et al., 2019). The ECOG Scale of Performance Status is a measurement tool used to describe a patient's level of functioning in terms of their ability to care for themself, daily activity, and physical ability (Oken et al., 1982). Scoring is on a scale from 0

to 6, the lower the number the more independent a patient (Oken et al., 1982). In total 82 patients were randomly selected and assigned one of two groups. The intervention group received weekly telephone-based follow-ups in addition to standard care (n=44) and control group (n=38), received National Cancer Institute (NCI) standard of care (Eldeib et al., 2019). Both groups were compatible in demographics, baseline clinical characteristics, and tumor markers.

All patients were provided with the standard information about capecitabine, its related toxicities, and individualized treatment care plans by the healthcare provider. All participants were given a phone number to the pharmacist if any concerns or questions arise about the capecitabine treatment. Only the intervention group received active phone calls from the providers office on a weekly basis during their treatment period. During the follow-up phone calls an assessment of expected adverse effects was documented, discussed, and graded (Eldeib et al., 2019). Also, suitable strategies were discussed, and management strategies recommended in collaboration with the patients' healthcare provider. Lastly, these phone calls reinforced the importance of adherence to the oral medication as prescribed.

The outcome measures in the study included toxicity and adherence assessment at the end of each cycle performed through a phone call. Secondary outcomes included tumor response, survival time, and health service utilization. Analysis found that both groups appear to be compatible in length of initial visit and information given about the medication (p=0.742). The intervention group had a total of 1,554 minutes spend on active telephone calls throughout treatment cycles. Findings showed that the intervention group demonstrated a higher adherence (100%) than the control group patients (92.86%) in later cycles. Clinically no significant difference in early cycles. This study shows significance to the DNP project because results

conclude that consistent telephone follow-up helps to minimize adverse effects and improve adherence in later cycles.

Randomized Controlled Trial 2 (RCT)

Ghiggia et al., (2020) conducted a RCT study focusing on reinforced message (RM) on adherence. The aim was to measure efficiency of the reinforced message by collecting plasma levels. Subjective opinions of patients were collected, with a secondary aim to detect psychological or clinical factors influencing adherence (Ghiggia et al., 2020). Eligible patients for the study needed to be older than 18 years of age and scheduled to start treatment with sorafenib, erlotinib, or sunitinib, depending on pathology (Ghigga et al., 2020). In total, 40 patients participated in the trial and were randomly assigned one of two groups, the experimental group (EG) (n=15) and the control group (CG) (n=20) (Ghiggia et al., 2020). Five patients withdrew from the study. The randomization was performed by external agency to eliminate bias.

Patients in both groups were then given the same education at initial visit and after one week a second visit was scheduled to psychological data and provide pharmacological suggestions. After the EG received a 10-minute RM session from a pharmacist, physician, and nurse, while the control group received standard of care with usual recommendations. At each visit patients were evaluated on hematological parameters and symptoms. Patients were seen for a total of 4-10 visits. The values of plasmatic drug concentrations were taken at the beginning and at every follow-up visit. These values were then transformed to Z-scores to compare the different values for all three drugs. Finding show the EG reported higher drug levels and a statistically higher mean score on subjective evaluation (Ghigga et al., 2020). A statistically significant difference was noted between the EG and CG, with EG experiencing less toxicity,

side effects, and dose reduction when compared to CG. This study shows value for the DNP project because results show that education and RM on therapy positive impacts adherence rates.

Randomized Controlled Trial 3 (RCT)

A study focusing on the challenges and opportunity of adherence to oral chemptherapy was reviewed. The study is a prospective RCT open label study performed in a single outpatient oncology clinic. The purpose of the study was little data exists on the effects of combining methods to better predict and improve oral chemotherapy adherence in cancer patients (Krikorian et al., 2019). The goal of the study was to see if a pharmacist led education at the initiation of treatment would lead to higher adherence rates over the usual nurse led education. Adherence rates were measured at four and eight weeks after prescribing oral chemotherapy, both groups also included pill counts and self-report questionnaires.

In total, 200 patients were enrolled into the study between 2009 and 2015 (Krikorian et al., 2019). One group was led by pharmacist intervention and education (n=101), while the control group received standard of care education from a nurse (n=99) (Krikorian et al., 2019). Patients who remained in the study were 90%-100% adherent to oral chemotehrapy in both groups. There were a statistically significant correlations associated with non-adherence including forgetfulness (p= 0.009), wanting to avoid side effects (p=0.02), feeling depressed or overwhelmed (p=0.032), or falling asleep before taking medication (p=0.048) in both groups. The study directly correlates to the DNP project because the study helped to identify barriers to adherence and further identified pills counting and self-report adherence are ways to improve adherence in oral chemotherapy patients.

Mixed Methods

The next study reviewed is a mixed methods study. The study focused on if oral chemotherapy patients had enough knowledge about the medication and regimen for optimal adherence. The studied involved 64 multiple myeloma patients taking oral agents that target multiple myeloma cells. The mixed methods study consisted of patient surveys (n= 64) and interviews with two patients from the survey (Arber et al., 2017). The survey given to patients had four sections related to confidence in taking oral chemotherapy, knowledge of side effects of oral chemotherapy, knowledge of when to take oral chemotherapy, and what to do if side effects occur (Arber et al., 2017). Further, demographic information was collected. The questionnaire had 15 questions, 13 fixed multiple choice and 2 open ended questions. All individuals in the study were asked if they would be willing to take part in an interview, only 2 participants were inclined to be interviewed. The interviews were conducted around to major themes: 1) meaning of illness; 2) treatment; 3) information; and 4) support (Arber et al., 2017).

Quantitative

Data analysis of the survey was performed using IBM SPSS version 22.0 and statistical tests were used to explore associations between each of the question scores (Arber et al., 2017). Also, to compare the difference in terms of knowledge Kruskal-Wallis, Mann-Whitney U-test, and chi-squared tests were utilized. While interviews were transcribed verbatim. Analysis identified high adherence rate (92.2%) with OC in multiple myeloma (Arber et al., 2017).

Qualitative

There was a statistically significant knowledge deficient identified, which were related to patient ethnicity and gender. A potential for non-intentional non-adherence with OC due to knowledge deficient does exist. This study correlates to the DNP project because it identified the need for increased education by providers, nurses, and pharmacists especially in the early phases

of treatment. Further the impact of follow up communication and continued education can increase adherence rates in patients taking oral chemotherapy.

Descriptive Study

The last study reviewed for the DNP project is a longitudinal descriptive study. The study looked at the impact of a structured nursing intervention to address oral chemotherapy adherence in patients with non-small cell lung cancer (NSCLC). The purpose of the study was to evaluate the impact of a nurse-led intervention to enhance both medication knowledge and adherence through using the Multinational Association for Supportive Care in Cancer Oral Agent Teaching Tool (MOATT) (Boucher et al., 2015). The study involved 30 patients with NSCLC who were currently being prescribed Tarceva for oral chemotherapy treatment. The methods used in the study were nurse led education sessions using the MOATT and a follow-up phone discussion 72 hours later (Boucher et al., 2015). Patients completed both the Knowledge Adherence Scale (KRS) and the Morisky Medication Adherence Scale-8 (MMAS-8) after the first cycle of chemotherapy (Boucher et al., 2015).

The main research variables were knowledge, adherence, and feasibility. The findings of the study showed 27 participants completed the study and measures reporting high knowledge levels and MMAS-8 scores (Boucher et al., 2015). Structure nurse sessions and follow-up calls ranged in time from 14-30 minutes. The findings showed that nurse led teaching using the MOATT tool and telephone follow up is not only feasible but an effective way of increasing adherence in oral chemotherapy patients. This study relates to the DNP project as it shows the value in nurse led education sessions and how telephone follow up calls can increase patient adherence to oral chemotherapy.

Synthesis of Literature

Each of the studies reviewed have strengths, weakness, similarities, and differences that impact how valid and accurate the results. Some of the similarities are three studies were RCTs and used patients from one location. All the studies focused on oral chemotherapy adherence by intervention of education, teaching tools, or telephone/office follow up. Further the studies involving patients all had relevantly low number of patients in the studies. Some differences were the type on interventions being implemented, as well as the RCT studies used patients taking only a specific type of oral chemotherapy. Each RCT used a difference oral chemotherapy in the study. Strengths of the studies include peer viewed and use for appropriate statistical analysis tools. Limitations of the studies were similar, small numbers and low participants in interviews. Longer studies with most follow-up sessions would provide more information on long term adherence rates as adherence rates decline with long term medication use.

Though limitations to the studies were observed evidence-based interventions were identified including, use of early education to improve adherence, implementing teaching tools at follow up visits, and using telephone communication to reinforce teaching between visits. Applying evidence-based interventions into clinical practice shows that practice decisions are for patients to receive superior healthcare interventions improving their chances for recovery. Using evidence-based research, providers can evaluate research do better understand the risks and effectiveness of diagnostic tests and treatments (Portney, 2020).

Theory

Health Promotion Model was developed by Nola Pender on the idea that each person had distinct characteristics and life experiences that impact subsequent actions (Sakraida, 2010). Variables for specific behavior and knowledge have important significance and through nursing actions these variables can be modified. The theory's goal is to promote health related desirable

behavior outcomes that improve health, enhance functional ability, and lead to better quality of life (Sakraida, 2010).

The main components that guide this model are individual characteristics and experiences, behavior specific cognitions, and behavioral outcomes. Individual characteristics and experiences help explain prior behavior and personal factors (Sakraida, 2010). Behavior specific cognitions are explained as benefits to action, barriers to action, self-efficacy, activity related impact, interpersonal influences, and situational influences that all impact the individual's overall perception of the behavioral modification. Behavioral outcomes focus on the commitment to plan of action, immediate competing demands, and health promoting behavior. The main assumptions of this theory explain that individuals will seek to regulate their own behavior actively and that individuals interact with their environment being transformed over time (Sakraida, 2010). Further healthcare professionals impact an individual's interpersonal environment leading to influences in behavior throughout an individual's lifespan. (Appendix D).

This theory correlates to the DNP project because the aim of the project to improve patient care through quality improvement of electronic technology documentation and nurse led follow up calls. To improve patient care in oral chemotherapy, patients existing behaviors will need to be modified. The health promotion model describes that behavior is a multifactorial issue and to promote positive change there are many components that need to be understood. As discussed earlier there are many factors that impact a patient's ability to remain adherent to oral chemotherapy including forgetfulness, side effects, intolerances, decreased labs counts, issues obtaining the medication, cost, and lack of education. The issue of adherence to oral chemotherapy is not a unilateral problem, it has many factors that impact if an individual person will remain adherent. The Health Promotion Model demonstrates that internal and external factors, as well as

environmental factors impact a person's perception of health and well-being. Further the Health Promotion Model shows that a multifactorial problem such as oral chemotherapy adherence can be achieved through behavior specific cognitions being modified.

Organizational Description

Setting, Mission, & Goals

The agency is a rural community hospital situated in northwest Illinois. The location of the organization makes the organization the primary healthcare agency within a 75-mile radius. That means that over 100,000 people rely on CGH Medical Center for all their healthcare needs. The organization houses many different specialties, one of which is oncology. The CGH Medical oncology department can offer cancer patients the same high standard of care that they would receive from a large center but much closer to home. There is importance that both organizational and oncological standards be achieved. The organization's mission is to deliver exceptional care by combining outstanding skill with heartfelt compassion (CGHMC, 2021). Further, organizational goals are to meet the ever-changing needs of the community by creating positive lifelong relationships with our patients (CGHMC, 2021).

Policy & Stakeholders

There are organizational standards and policies that can impact the DNP project and therefore must be considered. Policies directly impacted oncology and oral chemotherapy include, HIPAA, ordering protocols, patient information policies, IT structuring, and professional protocols and policies. There are stakeholders at every level impacted by the DNP project. Individual patients receiving treatment within the department, healthcare professionals giving care, administrators guiding the policies and managing the day-to-day aspects, upper level management who develop the organizations overall goals and standards, and individuals living

within the community who use CGH Medical Center for their healthcare needs are all impacted by changes occurring within the organization.

Organizational Assessment

Analysis of the organization using SWOT method shows that strengths include focusing cancer care by following National Comprehensive Cancer Network (NCCN) guidelines for cancer treatment, putting individual focused care, building strong community relations, and using high level of skill. Weaknesses of the oncology department include a poor documentation system, the use of paper charts, and poor communication among staff members. Opportunities to exist for improvement as the organization is gaining certifications and advancing quality care through reflection and health promotion. Other opportunities exist for advancement through using education checklists and implementing universal documentation templates. Threats to the organization in the oncology department would be patients receiving care at another facility do to increase in patient volume, while not advancing the department to meet patient needs.

Project Congruency to Organization

The DNP project is important to the organization because it follows with the organizations mission to provide excellence care and to be the choice of healthcare for patients in the community. The DNP project's goal is to implement process improvements to electronic medical record to aid in better monitoring of oral chemotherapy patients to improve patient care standards and adherence rates. The project directly correlates to the vision of the organization to meet the needs of the patients. By improving monitoring and documentation of oral chemotherapy, patients are receiving a higher standard of care leading to longer life expectancy and improved outcomes. Giving patients this ability leads to strong patient-provider

relationships, which builds trust and confidence in the organization among patients. A statement of mutual agreement is located in Appendix C.

Methodology

The project was a quality improvement (QI) initiative using mixed-method data collection to bridge the gap in education, satisfaction, and documentation in patients on oral chemotherapy. Organizational readiness was assessed. Staff was trained on use of a new medical record template to improve documentation. Then, satisfaction of the staff with the process change was assessed. The objectives are outlined here:

1) In total, at least 90% of the staff will weigh-in on organizational readiness for change using the ORIC instrument.
2) In week 1, 100% of staff will be trained on use of the medical record template and plan for follow up calls.
3) By week 4, 80% of charts will demonstrate completion of call and documentation of call content.
4) At week 4, 95% of staff will complete the Satisfaction Survey and report 4 or higher on each item.

Implementation Framework

The implementation framework that guided the DNP project is the Institute for Healthcare Improvement (IHI) Model for Improvement. This model is further known as the plan-Do-Study-Act (PDSA). The PDSA model is a broadly adopted approach to assessing and learning about change (Melnyk & Fineout-Overholt, 2019). The model's main components include four steps: 1) Plan change and observation; 2) Do/Implement the change on a small scale; 3) Study/Analyze data and determine what was discovered; 4) Act to standardize the new

process or implement new change (IHI, 2020). According to IHI (2020), the PDSA cycle is used for a quality improvement process that test a change in the work setting and acts on what is learned.

The first step in the cycle is plan. The plan was to develop a medical record template that can aid nurses and providers in monitoring and documenting education, side effects, adherence, and concerns of patients taking oral chemotherapy to improve oral chemotherapy safety standards. The second step in the cycle is do. The primary investigator held a short educational meeting with nursing staff on how to use the developed template and process for following calls. The presentation discussed the implementation of the template, as well as, weekly follow up nurse led telephone calls to patients started on oral chemotherapy medications during the first 3 months of usage. The third step is study. The primary investigator utilized a chart audit for determining medication compliance, education, side effects, and nurse calls were completed and documented. The last step in the PDSA cycle is act. The primary investigator evaluated how the overall process went including patient satisfaction and nursing evaluation of the process. The primary investigator refined the change based on what was learned and standard policies were implemented to ensure oral chemotherapy monitoring and documentation. An image of the PDSA cycle is provided in Appendix E.

Setting & Recruitment

The intervention took place CGHMC outpatient oncology clinic. Primary investigator announced DNP project and educational meetings at morning huddle. Flyer was placed in oncology breakroom, so staff were reminded of meeting (Appendix F). Further, email of flyer was sent to oncology department registered nurses with time, date, and location of meeting.

The targeted population was all registered nurses working in the outpatient oncology clinic at CGHMC (N=20). The recruitment target goal was 20 registered oncology nurses. Inclusion criteria for this evidence-based project included registered nurses from the outpatient oncology clinic at CGHMC, float registered nurses trained in the oncology department were also included in the project. Exclusion criteria included individuals who are not registered nurses in the CGHMC outpatient oncology department or oncology trained registered nurse floats. Participation in the project was voluntary. All Participants were compensated by the principal investigator by providing breakfast at presentation meeting. Consent of nurses for participation in the study was obtained using waiver of consent (Appendix G).

IRB & Ethical Considerations

Community General Hospital Medical Center had deferred the IRB of record to EKU. Therefore, approval to conduct the DNP project was pursued from Eastern Kentucky University (EKU) Institutional Review Board (IRB). Project was discussed with Director of Physician Services, Shane Brown and Outpatient Nursing Manager, Cindy Wadsworth, NP. The project was identified as a quality improvement initiative. Both the Director of Physicians Services and Outpatient Nursing Manager approved the project and project site. See appendix C for Statement of Mutual Agreement.

Ethical considerations shape the virtues of beneficence and autonomy. The American Nurses Association (ANA) Code of Ethics has numerous provisions to guide nurses through clinical practice. There is an ethical responsibility of nurses to protect patient rights, confidentiality, and promote cultural safety (Winland-Brown, Lachman, and Swanson, 2015). Provision 3 discusses that nurses promote, advocate, and protect patients' rights, health, and

safety (Winland-Brown, Lachman, and Swanson, 2015). These actions nurses take daily represent both beneficence and autonomy.

Implementation Process

Creation of the Template and Content for Follow-Up Calls

This evidence-based project had a planned intervention of implementing medical record template for improving documentation of oral chemotherapy patients' education and monitoring. The template implemented was used as a guide of nurse follow-up calls (Appendix M). The template included both questions and educational information being given. Questions included:

- "Has the patient been seen by any other providers or ER since last contact?"
- "Has there been any prescription changes or OTC medication changes?"
- "Has the patient been taking the oral chemotherapy has prescribed without having issues swallowing the tablets?"
- "Has the patient experienced any side effects since starting the medication or new side effects since last nurse follow-up call?"
- "Has the patient missed any doses of oral chemotherapy, if so what was the reasoning for the missed dose(s)?"

Education checklist is on the template and checkboxes for topics that were discussed including education on the oral chemotherapy agent, reviewing what symptoms are considered emergent, home handling of oral chemotherapy, when to contact our office, were hand out given, patient appropriate and capable of self-administration of oral chemotherapy, and side effects (Appendix M). The template included an area for questions that the patient has of nurse or provider. Also, nurse reviewed with patient next office visit, laboratory and/or imaging dates and times with patient to ensure compliance with appointments and testing.

Nurse discussed with patient the oral chemotherapy they are taking and review the oral chemotherapy checklist with the patient. Nurse discussed side effects and if patient is experiencing any discussed potential solutions per provider approval. Nurse provided education to patient based on oral chemotherapy agent being taken and assess patients' psychosocial needs and pain score. Nurse provided referral to PT, nutritionist, palliative care, hydration, home nursing, ST, or OT per provider approval to provide improved coordination of care. Nurse reviewed upcoming appointments for provider visit, laboratory studies or testing with patient to improve compliance.

Training

Two sessions were offered for the education and demonstration of new medical record template and nurse led telephone calls. A make-up session was offered if necessary. Each session lasted approximately 30 minutes. Nurses were educated on the evidence of implementing nurse led follow up calls weekly and the evidence base strategy of having an oral chemotherapy template design to help guide the telephone conversation.

After completion of the educational/training programs use of the template and nurse led follow up call were deployed. Data was collected throughout the process and discussed upon completion and evaluation with instruments and data analysis. (Appendix H).

Evaluations

Evaluation survey was administered after the completion of the DNP project implementation. Evaluation of chart audits identified if template usage met the 80% goal. Further survey evaluation was given to all nursing staff performing follow-up phone calls to evaluate nursing perception of project implementation. Last, patients were randomly selected for survey about satisfaction of having weekly follow-up phone call when starting oral chemotherapy agent.

Instruments

Background Survey

Oncology registered nurses were asked about their highest level of education (Associate, Bachelors, Masters Degree); their age (26-35, 36-45, 46-55, 56-65, 65+); how long they have been a registered nurse (1-3 years, 4-5 years, 6-10 years, 11-15 years, 15+ years); how long have you worked for CGH Medical Center (less than 1 year, 1-3 years, 4-6 years, 7-10 years, 10+year); how long have you worked in CGHMC oncology department (less than 1 year, 1 year, 2 years, 3 years, 4 years, 5+ years); what certifications do they hold (OCN, ONS, Other); what challenges they have been faced with regard to the current electronic medical record system and templates being used; and what improvements in oral chemotherapy documentation would you like to see occur. The demographics help to describe the population to which the intervention is occurring. (Appendix J).

ORIC

Organizational readiness for implementing change (ORIC) is a multilevel concept that can be assessed on an individual scale or in a group setting (Shea et al., 2014). There are different aspects of the ORIC. The first was commitment to change which explains the members willingness to implement a change (Shea et al., 2014). The second was how efficiently are the members ability to implement a change. Factors such as task knowledge, resource availability, and situational considerations are impact an organization's ability to implement change. Change efficiency is high when members know what to do and how to do it, when they perceive they have the resources they need to implement change, and when they perceive situational factors to be favorable (Shea et al., 2014). The ORIC is a validated and reliable tool that can assess an organization's readiness for change. The tool is practical in a hectic healthcare setting as a way

to measure organizational readiness for change. The ORIC assessed the departments readiness for implementing intervention. (Appendix I).

Education Survey Evaluation

An evaluation of educational meeting was provided to all individuals that attended the meeting. The goal was to receive feedback on the education given so that improvements or changes can be made. The evaluation tool was to demonstrate if all participants understand the education being given and evaluate the quality of the teaching. The evaluation was to ensure that the primary investigator met the goal of education of new template and follow up phone calls. Further this helped the primary investigator determine if the educational meeting achieved the goal of educating the oncology registered nurses on the interventions. (Appendix K).

Charts Audit & Follow Up Calls

After education session nurses were notified that chart audits would be performed for purposes of the project. Did explain to the nurses that these chart audits are for observational purposes only and would in no way be punitive. If during observation primary investigator discovers that template was not being used correctly or weekly nurse led follow up calls were not occurring, additional education will be given at that time. Data collection included chart audits. Electronic oral chemotherapy monitoring template had each item assigned a number. The audits consisted of determining if nurse lead follow up calls were occurring weekly and if so, was the template used to document side effects, education, adherence, and satisfaction.

Project Evaluation Survey

A survey was given after the completion of 4 weeks of the project of the DNP project to evaluate the project. Nurses were given a short survey asking how easily they feel the change was implemented; do they feel the change has made a positive impact on patients; do they

understand why the change was implemented; how did the primary investigator respond to concerns and questions; does the change make their work more difficult; does the change help staff location patient information more easily and what modification would they make to the implemented change, if any. By providing the survey the primary investigator gained valuable insight into how the implemented change impacts the nursing staff, as well as, what modifications to the change the staff would like to see going forward. Survey incorporated questions regarding staff satisfaction of implementation and process. (Appendix L).

Data Analysis & Storage

An analysis of the frequency of oral chemotherapy template usage was be conducted. Measured for tendencies, percentage of use, percentages of demographic form and educational feedback scores. Quantitative data, such as educational feedback and survey scores were analyzed. The Statistical Package for the Social Sciences (SPSS), version 26 for Windows will be used in data analysis. Further, education feedback used mixed approach of qualitative and quantitative data; chart audits to measure central tendency; and observations to see how the template and follow up calls are or are not being used. Oncology registered nurses' identities remained confidential, only know by the primary investigator. This was achieved by setting up folders that de-identify participants except for a randomly assigned number. The number was assigned at educational meeting. Master list of numbering was kept secure in Community General Hospital Medical Center primary investigator's office. This approach was utilized in education feedback, survey, demographic form, chart audits, and observations.

The DNP project used protected health information that was de-identified during the chart audit. The primary investigator took the de-identified data and used an excel document that was encrypted on CGHMC electronic software for security purposes. All data obtained during

this project was stored in a locked cabinet accessible only to the primary investigator. All data was protected and any access data that is unwanted was destroyed by shredding. Pertinent data will be stored for one year and then deleted or destroyed by shredding.

Timeline, Budget, & Resources

Timeline

The timeline for the project was divided into different sections. Pre-implementation was roughly 10 weeks, consisting of template development, education program development, demographic development, educational program survey development, and hiring registered nurse case manager. Of the 10 weeks, 6 weeks were spent training new registered nurse case manager to the department, software, functionality, and job responsibilities. During this time educational program were given to all oncology registered nurses that provided nurse lead follow-up calls.

Implementation of the project consisted of 4 weeks. During these 4 weeks the registered nurse performed weekly follow-up calls to patients on oral chemotherapy to educate, assess, and document. Reeducation of registered nurse was provided on a case-by-case basis. Post-implementation consisted of 2 weeks to perform chart audits on the patients that are currently on oral chemotherapy. Findings were presented to all department and administrative staff.

Budget

Resource/Item	Year One/ Start-up	
	Annual ($)	Monthly ($)
Personnel Expenses	$ 87,750.00	$ 7,312.50
Salary @ 1.0 FTE	$ 65,000.00	$ 5,416.67
Benefits @ 30% of Salary	$ 19,500.00	$ 1,625.00

Non-Productive Time costs	$ 3,250.00	$ 270.83
Non-Personnel Expenses	$ 14,200.00	$ 1,183.33
Office supplies	$ 3,200.00	$ 266.67
Patient education material	$ 2,000.00	$ 166.67
Staff education material	$ 1,500.00	$ 125.00
Equipment costs	$ 3,500.00	$ 291.67
Space/room rental		$ -
Construction costs	$ 4,000.00	$ 333.33
Total personnel and non-personnel costs	$ 101,950.00	$ 8,495.83
Fixed Overhead Allocation @ 3% of above total	$ 3,058.50	$ 254.88
Total Budget Expenses	$ 105,008.50	$ 8,750.71

The budget above illustrates some of the costs of the overall projects. The main component of the costs was the hiring of a full-time registered nurse case manager, who performed the bulk of the nurse lead follow up calls, however all oncology registered nurses trained and understanding how to perform this task. Salary, benefits, and initial non-productive costs of adding case manager are illustrated.

Further budget costs and considerations included increase office supplies for individuals performing education, monitoring, and follow up calls. Patient educational material costs increased with the project has more individualized materials was distributed to patients about the drug, side effects, home care, monitoring etc. Staff education costs for the program included

initial nurse educational program and further in-service programs from pharmaceutical companies. Equipment costs covered new computer, phone, and software for registered nurse case manager. Construction costs covered creation of desk and office for registered nurse case manager. Total budget for year 1 is $105,008.50. CGH Medical Center received a grant for the oncology department from a private donor in the total of $500,000 that must be used within the department. The DNP project has been approved and was funded through this donation.

Resources

There were a number of resources available to initiate the DNP project. Resources included labor, equipment like computers and phones, office supplies, marketing and education material. Further, financial resources such as the donation to oncology department and technology encompassing software, data processing, and applications. Also, the CGH Medical Center property was a resource. The IT department was a substantial resource in development of the medical record template for nurse lead follow up calls.

Results

The DNP Project utilized both qualitative and quantitative data collection throughout the process. The qualitative data was recorded through follow up calls to patients taking oral chemotherapy and the conversation was recorded in the patient's record. The private investigator reviewed the data entries within the charts selected at random. Further open ended questions were summarized and recorded into the patient's chart. The open ended questions were not recorded verbatim as in qualitative research. Primary investigator analyzed the responses to examine common themes. The presentation of findings will follow the implementation process for the project. Results will be discussed in the following order: ORIC, Demographic Survey, Education Evaluation, Oral Chemotherapy Template, and Follow Up Survey.

Instruments

Demographic Form

The demographics of the department population was assessed using an eight-question survey. A total of 19 (N= 19) participants completed the Demographic Form Survey. The Demographic Form Survey was administered to identify the diversity of the population within the oncology department. The majority of the participants had a bachelor's degree and were between the ages of 46-65 (n=14; 73%). Further the majority of respondents had been a registered nurse for more than 5 years (n=16; 84%). Over half the respondents have worked for CGH medical Center greater than 5 years (n=12; 63%) and further 63% (n=12) have worked in the oncology department at CGH Medical Center from greater than 3 years. Overall, 26% of participants (n=5) are oncology certified nurses, while 73% of participants (n=14) are certified through the Oncology Nursing Society.

Further the Demographic Form Survey aimed to identify challenges in the medical record system/template. Common themes identified were difficulty with cycle identification (n=12; 63%) and difficulty knowing where information is located in the chart leading to double charting (n=9; 47%). Participants were asked what improvements in oral chemotherapy who they like to implement. 73% of participants (n=14) felt that standardized charting template for oral chemotherapy was necessary to avoid error. Another common theme was better communication with oral chemotherapy dispensing (n=9, 47%).

ORIC

An assessment of organizational readiness to implement change was given and evaluated. A total of 19 participants (N=19) completed the ORIC survey. The ORIC given consisted of 12 questions aimed at evaluating the organizations willingness to implement changes to the

department. The ORIC survey is scored on a scale of 1 to 5, 1 being disagree and 5 being agree, participants were asked to rate each of the 12 statements using this scale.

From the ORIC instrument, responses were similar across questions 1, 2, 3, 4, 8, and 11 indicating that 84% (n=16) of staff agreed that they were confident in the organization investing and committed in change, keeping track of implementing change, handling challenges that might arise with change implementation, and being motivated to implement change. Further questions 5 and 6 had comparable responses showing that 79% (n=15) felt confident that the staff in oncology want the change and the organization can support people through the change. Results of questions 10 and 12 were surprising. Findings indicate that, 100% (N=19) felt confident that they could coordinate tasks to make implementation go smoothly. Only 42% (n=8) felt confident that they could manage the politics of implementing change.

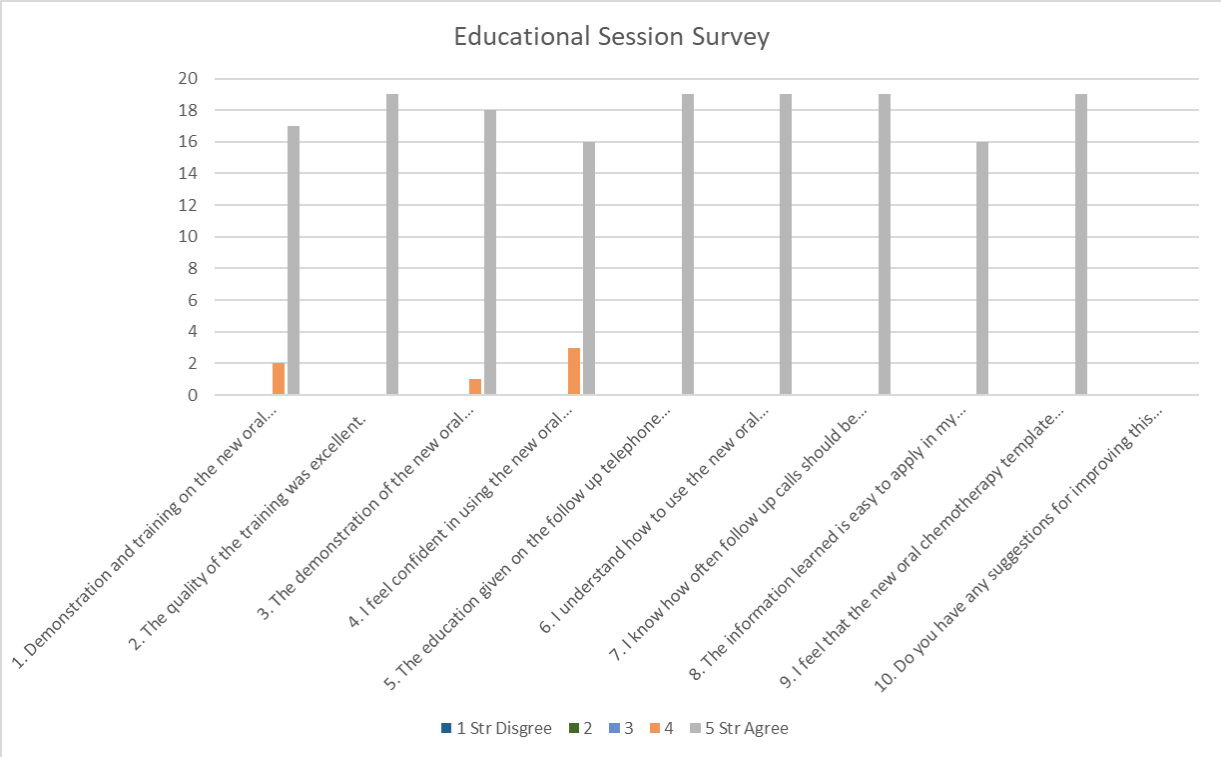
Education Evaluation Survey

Two education sessions were held to discuss, educate, and demonstrate the oral chemotherapy template. After participants (N=19) engaged in the educational session they were given an educational evaluation survey to assess the participants understanding of the oral chemotherapy template and to evaluate the educational information given by demonstrator/educator. The educational evaluation survey consisted of 10 questions, nine were scaled 1-5 and question ten was open ended. The scaled questions used a 1-5 scale, 1 meaning strongly disagree and 5 meaning strongly agree.

Responses to questions 2, 5, 6, 7, and 9 were similar indicating that 100% (N=19) of respondents felt strongly that the educational session identified when follow up calls should be occurring, how to use and access the oral chemotherapy template, that the oral chemotherapy template was applicable to their work and that the education given was excellent quality and easy

to understand. Comparable findings were also noted in questions 4 and 8 with 84% (n=16) feeling strongly that they were confident using the oral chemotherapy template and that the information learned in the educational session was easy to apply to everyday work. Zero participants (n=0) gave any suggestions for improving the educational session. The findings of the educational survey revealed no outlying findings.

Figure 1.0 Results of Educational Session Survey

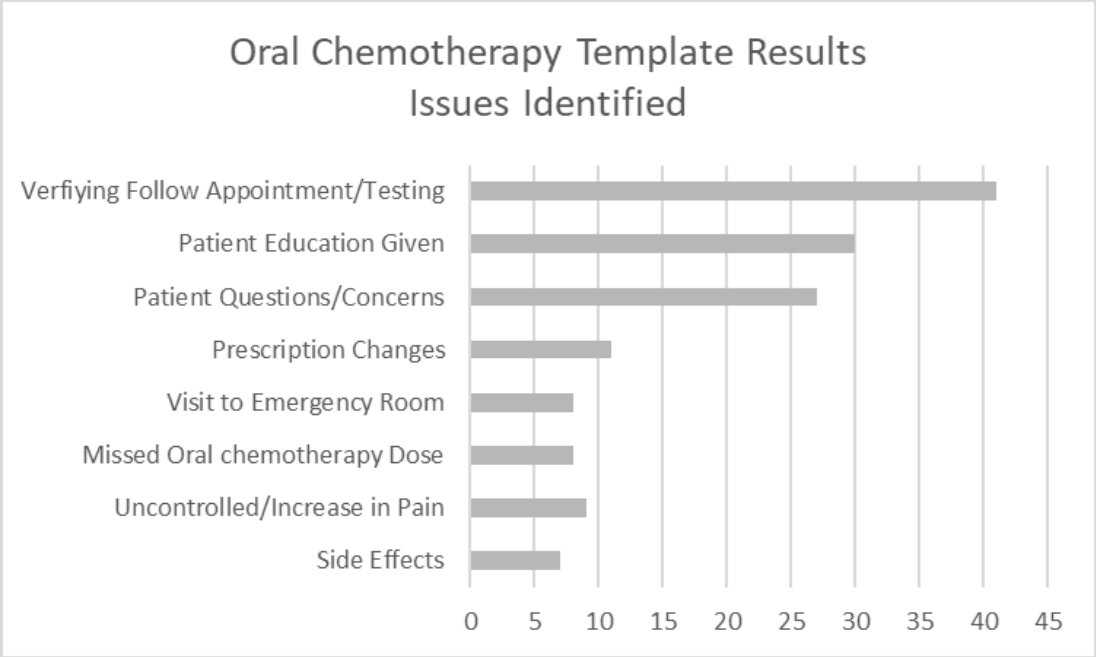


Oral Chemotherapy Template

The oral chemotherapy template was designed for monitoring and education of patients taking oral chemotherapy medications. The oral chemotherapy template was utilized during a 5–10-minute nurse lead telephone phone once weekly during the first four weeks of a patient starting on oral chemotherapy. The results of the oral chemotherapy template were reviewed. During the four-week project patients (N=35) were identified as taking oral chemotherapy and enrolled in the DNP project. Of the 35, 27 patients (77%) completed the four-week project. 4

patients died during the study and an additional 4 patients were non-compliant with weekly calls. After implementation of 4 weeks of the project, random chart audits were done to identify common themes.

Random chart audits revealed seven identified issues/concerns. Overall, nine accounts of having issues with uncontrolled pain, eight times a patient missed a dose of oral chemotherapy, and eight patient emergency room visits. Fuerther, 11 prescription changes, 27 patients concerns/questions, 30 times additional patient education was given, and 41 times that follow up appointments and/or testing were verified with patient. The chart below illustrates the findings of the oral chemotherapy template.



Follow Up Survey

A Follow Up Survey was administered to assess to quality and accessibility of using the oral chemotherapy template in practice. The Follow Up Survey was given to oncology certified registered nurses (N=19) at work within the CGH Medical Center oncology department or are trained oncology certified register nurse floats. The Follow Up Survey consisted of a series of

seven questions that related to the oral chemotherapy template usage. The first six questions were scaled 1 to 5, with 1 being strongly disagree and 5 being strongly agree. Question seven was an open-ended discussion.

Responses to questions 2, 3, 4, and 6 were similar indicating that 100% (N=19) of respondents felt strongly that the new oral chemotherapy template made a positive impact on patients, oral chemotherapy patients are being monitored more frequently, information is more easily accessed, and the primary investigator addressed all questions and concerns to their satisfaction. Question 1 responses showed 89% (n=17) participants felt strongly that the oral chemotherapy template was easy to implement. Further question 5 showed a similar finding with 84% (n=16) participants saying the oral chemotherapy template helped them perform their work more easily. The findings were surprising that a majority of staff 84% (n=16) or greater strongly felt that the oral chemotherapy template has positively impacted their practice.

Question seven asked an open-ended question to participants. What modifications would you make or suggestion for improvement. Common themes identified included having the provider introduce the nurse navigator or nurse making follow up calls so that a discussion about the monitoring follow calls can occur, so patients better understand what is expected of them and how often. Another theme communing occurring was a nurse navigator should make all follow up monitoring calls as chemotherapy nurse's workload in too heavy to accommodate for any extra tasks.

Discussion

In the analysis of the quality improvement project involving a 4-week study of nurse lead oral chemotherapy follow up phone calls, findings were as predicted. The implementation of nurse lead follow up phone calls had a direct patient on patient care standards. These findings are

consistent with current research showing improved communication and monitoring with weekly follow up calls. In a 2015 study, weekly nurse lead phone calls were proven to be a feasible and effective way of improving oral chemotherapy adherence (Boucher et al.). This study also analyzed the impact the oral chemotherapy template had on nursing staff and patients and found a positive correlation among oral chemotherapy template usage and improved patient monitoring and education.

Staff Impacts

Existing cancer treatment methods are being challenged by the influx of oral chemotherapy agents, and research suggests administration of oral antineoplastics is complex and that increased supervision and monitoring has shown improvement in compliance and decrease in toxicity (Rodriguez, 2017). The quality improvement project findings showed a direct correlation between nurse lead follow up calls and improvement in patient monitoring and compliance. Results of Follow Up Survey indicated that nursing staff felt the project had positive impact on patients and that it was feasible to maintain. Further, findings revealed nursing staff noted improved satisfaction with electronic medical record and a minimization of double charting.

Patient Impacts

The quality improvement project showed a positive impact on patients, this finding is consistent with current research demonstrating the patients benefit from a standardized patient monitoring and education program being provided by trained oncology nurses (Reise et al., 2017). Analyzing the findings showed that patient side effects were being identified faster so interventions could be started earlier. Also, patient education was occurring on a weekly basis and focused on patient specific concerns, previous research demonstrated that patients receiving

weekly education about oral chemotherapy tended to handle side effects and critical situations better than those patients who did not (Reise et al., 2017). Treatment compliance was found to improve with the use of nurse lead follow up calls when compared to no calls being performed, this finding is compatible to the predicted findings.

The purpose of this quality improvement project was to bridge the gap in therapy related education and monitoring for patients taking oral chemotherapy through implementation of medical record template and nurse lead follow up calls. The findings were consistent with current research, showing that nurse lead follow up calls improved patient education, compliance, and monitoring. A study done in 2019 demonstrated that weekly nurse lead follow up calls increased oral chemotherapy compliance to 100% compared to no weekly follow up calls (Eldeib et al).

Limitations

This study is not without limitations including small sample size, time constraints, and self-reported data. The sample size was a barrier to this study as a relatively small patient population was include in the study which could impact the reliability of data collected when analyzing common themes. The study was implemented under time constraints due to academic approval. The length of study was 4 weeks which could have impact patient responses and only provided a small window of data collection. The study contained self-reporting data which can contain several areas of bias such as, selective memory, telescoping, attribution, and exaggeration. By relying on self-reported data there are multiple areas of impact bias that may make the findings of this study flawed.

Implications

The main aim of the DNP Project was to address the lack of education and monitoring being given to oral chemotherapy patients at CGH Medical Center. This aim has been met through the implementation of the Oral Chemotherapy Template and weekly nurse lead follow up calls. The study had a direct impact on patients using oral chemotherapy at CGH Medical Center. The implications of this project have shown that oral chemotherapy patients are now being monitored and educated more frequently.

With these findings in mind the CGH Medical Center oncology department will implement the Oral Chemotherapy Template and nurse lead weekly follow up calls for all patients on oral chemotherapy in the first 12 weeks of treatment, as studies have shown this is the most critical time for education, monitoring, and compliance. The Oncology department is now equipped with trained nursing staff to move this project into our daily practice. The addition of a nurse navigator has made follow up calls less taxing on the remaining chemotherapy staff. The organization has a whole is now providing better standard of care to oral chemotherapy patients. The organization is further impacted by added nurse navigator appointments to the department which is an increased source of revenue that was untapped prior to project implementation. Patients receiving oral chemotherapy at CGH Medical Center will be directly impacted as they will be automatic enrolled into our oral chemotherapy nurse lead monitoring program. Patient will have an initial meeting with the patient and the time the oral chemotherapy medication is prescribed. This way the patient and nurse navigator can discuss in detail the oral chemotherapy monitoring program and set up times for weekly telephone calls. This program will give patients a direct clinic contact and can help identify issues/concerns earlier in the progress.

The organization as a whole has implications to the project. Prior to the project CGH Medical Center did not have a system for educating and monitoring oral chemotherapy patients.

Now with the implementation of weekly nurse lead phone calls, CGH Medical Center is meeting the recommendations put forth by the QOPI standards. A standard process for monitoring safety, assessing adherence, and educating patient taking oral chemotherapy is of top importance as cancer care is evolving (ASCO, 2021).

The DNP Project has direct link to the improvement in quality and safety of healthcare. Oral chemotherapy has been a rapidly evolving area within cancer care and creating a lack of standardized process and guidelines within many oncology practices. The use of oral chemotherapy misses an additional opportunity for education and toxicity assessment, as the chemotherapy infusion nurse is not involved in the patient's daily chemotherapy care (Mackler et al., 2019). The implementation of the Oral Chemotherapy Template and nurse lead follow up calls has closed the gap in education and monitoring for patients having oral chemotherapy. Hematology/Oncology Association standards concluded that oncology trained nurse navigators and chemotherapy nurses have helped improve communication, patient education, and monitoring through oral chemotherapy monitoring programs, improving both quality and safety of patient care (Mackler et al., 2019)

The implications for education related to the DNP project include the patient, nursing staff, and provider. All providers prescribing oral chemotherapy should be educated on the Oral Chemotherapy Template and its purpose. Further providers will be the first to initiate and discuss the oral chemotherapy medication with the patient and implementation the nurse navigator to meet with the patient. The process involves multiple steps with direct education to the provider, patient, and nurse. Further ongoing education for the provider and nurse will occur as system changes and new oral chemotherapy medications come to use. This new education and process will then be past on to the patient. The Oncology Nurses Society panel agreed on

recommendations and suggested an adherence risk assessment, education addressing adherence, ongoing assessment, proactive follow-up, coaching, and motivational interviewing in addition to usual care is required for patients taking oral chemotherapy (Belcher et al., 2022).

Sustainability

The DNP project has been well received by nursing staff and patients showi9ng that the Oral Chemotherapy Template has improved patient education and monitoring. From a financial standpoint, the grand given to CGH Oncology department will allow for at least five years of additional funding of the nurse navigator. The sustainability of the project for the future was more efficient to implement with the on boarding of a nurse navigator, as chemotherapy staff were overwhelmed were the sheer number of tasks prior to implementation of the Oral Chemotherapy Template. However, with the nurse navigator and phone triage nurses the nurse lead follow up calls are being performed weekly. The creation of nursing appointment schedule has given the nurses the ability to schedule patients for the follow up call at a certain time so that patients are being contacted and that staff is efficient with time management. Further the creation of nurse schedule gave the organization the ability to charge for this monitoring and education service, providing increased revenue for the organization. With taking in the whole project there is strong evidence for project sustainability and longevity.

Future Scholarship & Conclusion

Beyond the academic context the project will be displayed via poster board at the Journal of Advanced Practitioner in Oncology (JADPRO) conference in Orlando, Florida in 2023. Further, the project will be submitted to the Oncology Nursing Certification Corporation (ONCC) journal for publication consideration. The project will be a building block of future study, specifically has the implementation of the Oral Chemotherapy Template and nurse lead

follow up calls minimized side effects and improved quality of life in patients taking oral chemotherapy. A side study would analyze the financial impact of adding billing patients to nurse appointment scheduling.

Oral chemotherapy has become a mainstream form of receiving chemotherapy and with that rises many challenges. Providers prescribing oral chemotherapy are having difficulty maintaining care standards for monitoring, education, and compliance. With the implementation of the Oral Chemotherapy Template and nurse lead follow up calls, CGH Medical Center has narrowed the gap in patient education, monitoring, safety, and compliance for patients on oral chemotherapy.

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Appendix A.

Hierarchy Table

Melnyk Level	Evidence 1 (Boucher et al., 2015)	Evidence 2 (Dowling et al., 2019)	Evidence 3 (Eldeib et al., 2019)	Evidence 4 (Arber et al., 2015	Evidence 5 (Ghiggia et al., 2020)	Evidence 6 (Krikorian et al., 2019)
I		X				

II			X		X	X
III						
IV						
V						
VI	X			X		
VII						

Appendix B.

Intervention Table

Intervention Table	Boucher et al, 2015	Dowling et al, 2019	Eldeib et al, 2019	Arber A, et al, 2015	Ghiggia et al, 2020	Krikorian et al., 2019
Nurse Educating Patient	X	X		X	X	X

Teaching Tools	X				X	X
Follow-up communication		X	X	X		
Pharmacist led education					X	X

Interpretation:

5 studies mentioned Nurses Educating Patients

3 studies mentioned Teaching Tools.

3 studies mentioned follow up communication.

2 studies mentioned pharmacist led patient education.

Appendix C.

Eastern Kentucky University
Doctor of Nursing Practice (DNP) Program
Statement of Mutual Agreement

The purpose of this document is describe the nature of the agreement for the Doctor of Nursing Practice (DNP) Project between:

Student Name: _Lindsay Rodriguez_____
Partnering Organization Name: _____CGH Medical Center_____

This statement of mutual agreement is completed in the DNP Project planning phase as a precursor to the Institutional Review Board (IRB) and to show general organizational support for the DNP Project.

General Information:

DNP Project Title:	Bridging the Gap in Education for Patients on Oral Chemotherapy: A QI Project
Partnering Organization:	Name of Organization: CGH Medical Center Name of Organizational Contact: Cindy Wadsworth Phone: 815-625-0400 ext 6114 Email: cynthia.wadsworth@cghmc.com

Brief Description of the Project:

Identified Problem/Gap:	Lack or education and monitoring of patients taking oral chemotherapy
Proposed Intervention(s):	Bridge the gap in therapy related education for patients taking oral chemotherapy through use of medical record template and nurse lead follow up calls
Proposed Evaluation of: ● Outcomes ● Process	-90% of staff will weigh in on organizational readiness for change using ORIC instrument. - In 1 week, 100% of staff will be trained on use of the medical record template and plan for follow up calls. - By week 4, 80% of charts audited will demonstrate completion of call and documentation of call content. - At week 4, 95% of staff will complete satisfaction survey and report 4 or higher on each item.
Description of On-Site Activities: ● Student's Role ● Meetings ● Access to Data	-Surveys -Education sessions -Oral chemotherapy template implementation -Nurse lead follow up calls

Intellectual Property: ● Ownership ● Plans for Dissemination ● Non-disclosure expectations ● Publication Plans	*** All EKU DNP Projects will require at minimum a de-identified abstract to be uploaded into the digital repository as a marker of academic work.

Institutional Review Board:

EKU is the IRB of Record	The organization agrees to let EKU be the IRB of Record. X Yes ❑ No ❑ Other: (Explain) ❑
Organization is the IRB of Record	The organization prefers to be the IRB of Record. ❑ Yes X No ❑ Other: (Explain)

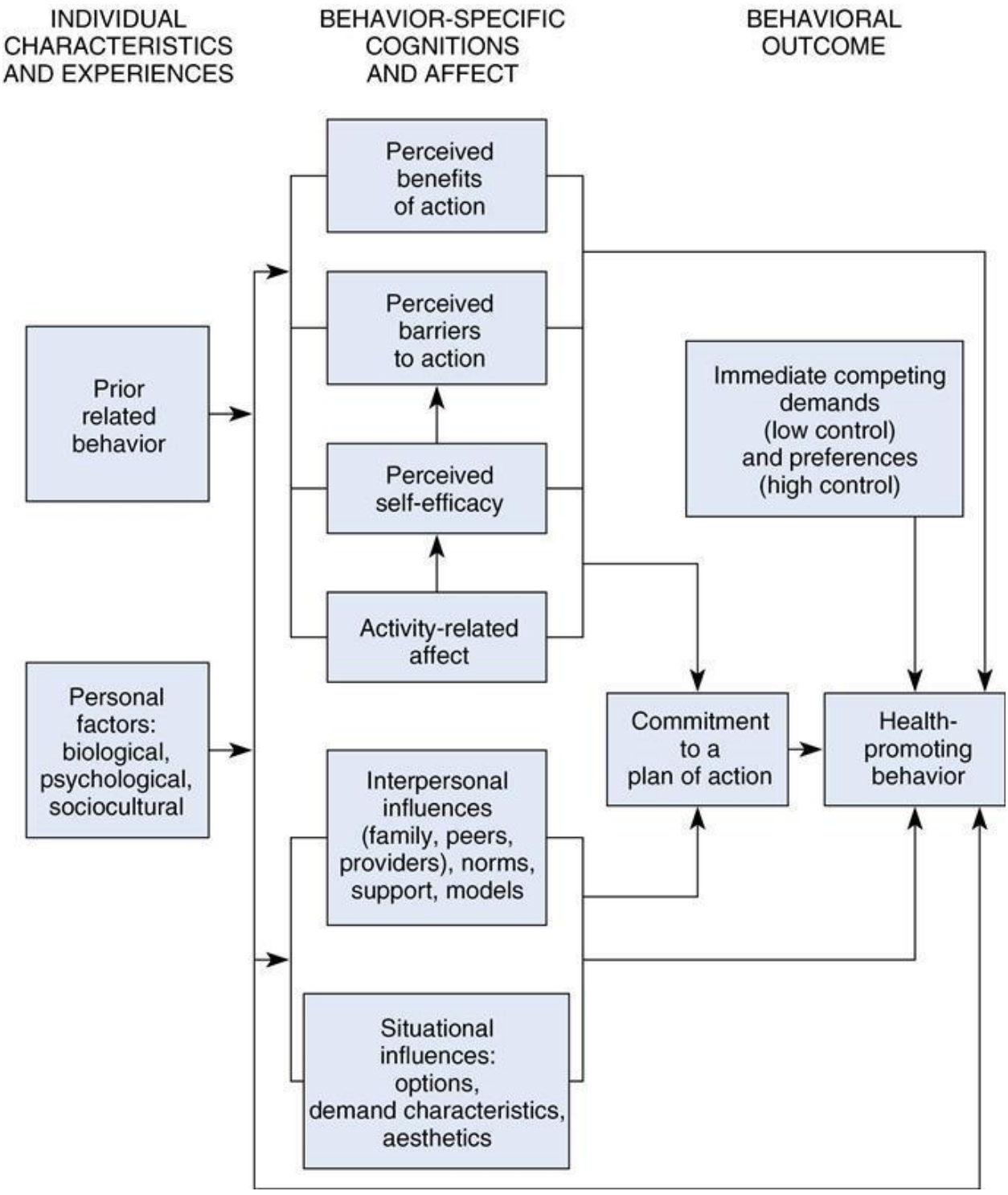
Other elements for clarification prior to implementation of the DNP Project. Describe.

DNP Student Signature: __Lindsay Rodriguez_____
Date: 3/10/2022

Partnering Organization's Signature: __Cindy Wadsworth_____
Date: 03/10/2022

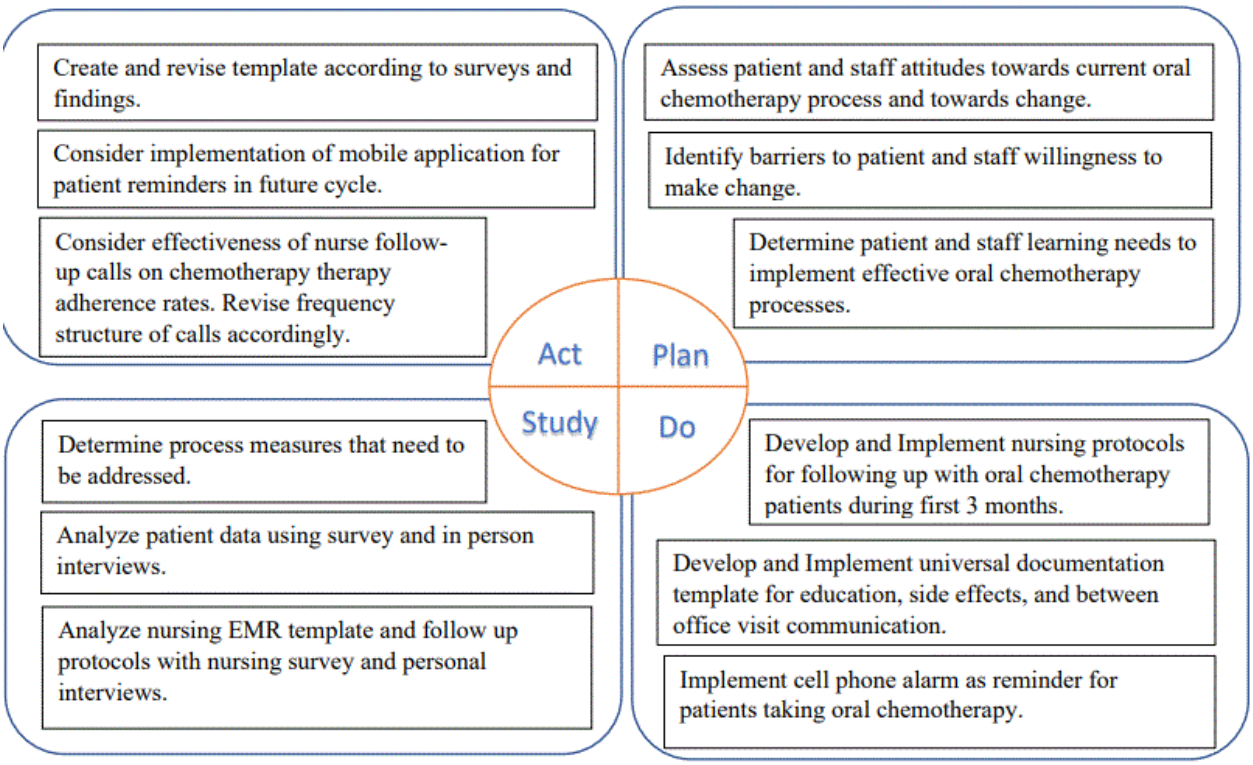
Appendix D.

Health Promotion Model



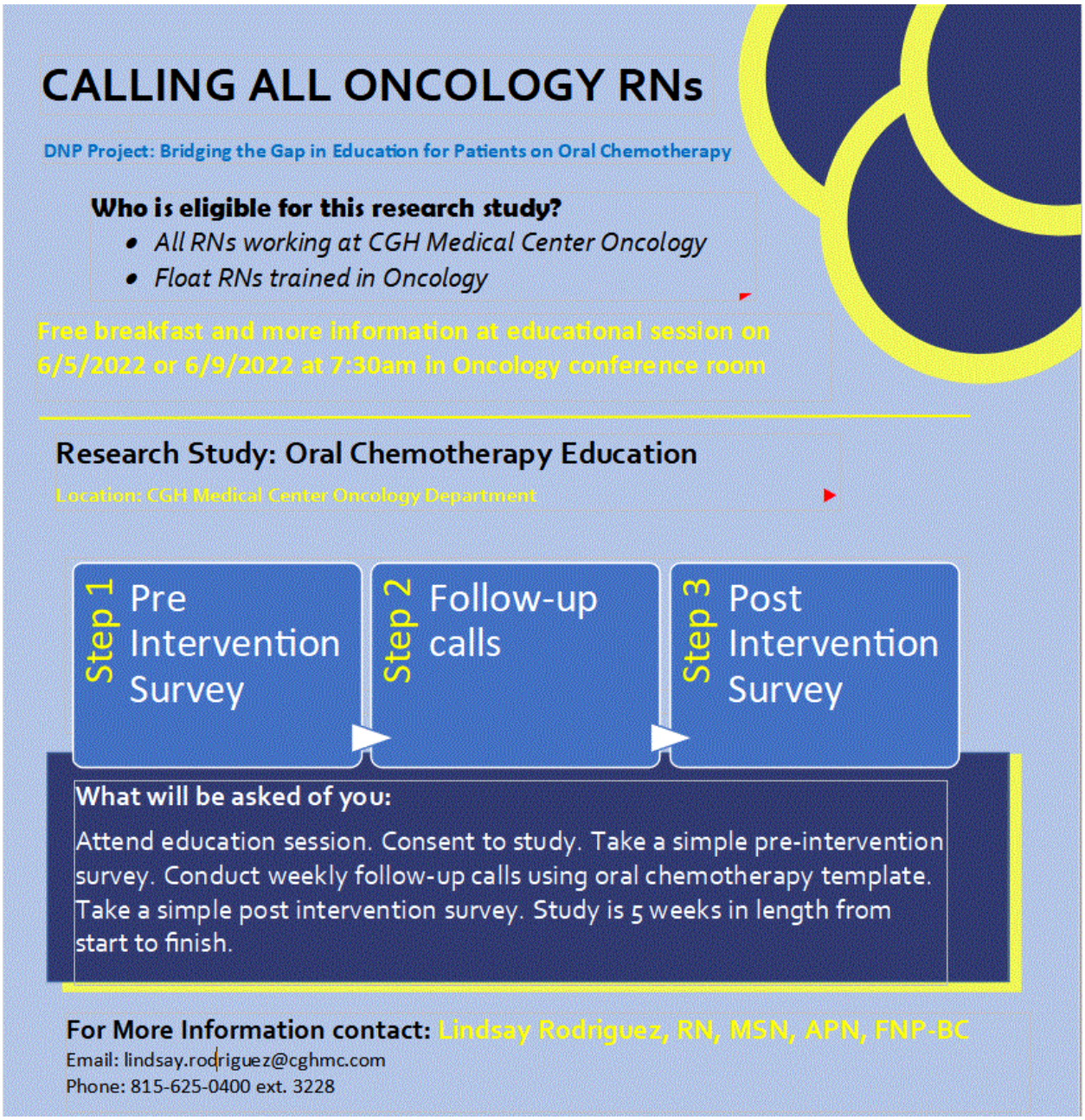
Appendix E.

PDSA Cycle



Appendix F.

Flyer



Appendix G.

Consent Form

Consent to Participate in a Research Study

Bridging the Gap in Education for Patients on Oral Chemotherapy: A QI Project

Upon approval of your study, the IRB will place a stamp with a protocol number here. You are required to use only the stamped version when enrolling participants in your study.

Key Information

You are being invited to participate in a research study. This document includes important information you should know about the study. Before providing your consent to participate, please read this entire document and ask any questions you have.

Do I have to participate?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. If you decide to participate, you will be one of about 20 people in the study.

What is the purpose of the study?

The purpose of the study is a quality improvement initiative to bridge the gap in therapy related education for patients taking oral chemotherapy through use of medical record template and nurse lead follow up calls.

Where is the study going to take place and how long will it last?

The research procedures will be conducted at CGH Medical Center in Sterling Illinois. You will not need to come to the main clinic during the study, however you will be contacted weekly by nurse navigator/nurse educator. Phone calls will take only 5-10 minutes once per week for 4 weeks.

What will I be asked to do?

Participates will be asked to take part in weekly nurse lead follow up telephone calls between office visits. The phone calls will be brief, lasting only 5-10 minutes where a nurse educator will answer a series of 10 short questions. These questions are designed to assess the patient in between visits while the patient is starting oral chemotherapy. Calls can be scheduled at the participants convenience and can be discontinued at any time within the 4 week study time, if the participant no longer wishing to participate in the study.

Are there reasons why I should not take part in this study?

Reasons a subject could be excluded from volunteering include being under age 18, not receiving oral chemotherapy and not a patient of CGH Medical Center oncology department.

What are the possible risks and discomforts?

To the best of our knowledge, the things you will be doing have no more risk of harm or discomfort than you would experience in everyday life.

You may, however, experience a previously unknown risk or side effect.

What are the benefits of taking part in this study?
You are not likely to get any personal benefit from taking part in this study. Your participation is expected to provide benefits to others by improving oral chemotherapy education and monitoring.

If I don't take part in this study, are there other choices?
If you do not want to be in the study, there are no other choices except to not take part in the study.

Now that you have some key information about the study, please continue reading if you are interested in participating. Other important details about the study are provided below.

Other Important Details

Who is doing the study?
The person in charge of this study is Lindsay Rodriguez at Eastern Kentucky University. She is being guided in this research by Dr Molly Bradshaw. There may be other people on the research team assisting at different times during the study.

What will it cost me to participate?
There are no costs associated with taking part in this study.

Will I receive any payment or rewards for taking part in the study?
You will not receive any payment or reward for taking part in this study.

Who will see the information I give?
Your information will be combined with information from other people taking part in the study. When we write up the study to share it with other researchers, we will write about this combined information. You will not be identified in these written materials.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Include the following statement if the data will not be recorded with identifying information: For example, your name will be kept separate from the information you give, and these two things will be stored in different places under lock and key.

However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court (if applicable: or to tell authorities if we believe you are a danger to yourself or someone else). Also, we may be required to show information that identifies you for audit purposes.

The information or biospecimens you provide as part of the research will not be used or distributed for future research studies even if identifiers are removed.

Can my taking part in the study end early?
If you decide to take part in the study, you still have the right to decide at any time that you no longer want to participate. You will not be treated differently if you decide to stop taking part in the study.

The individuals conducting the study may need to end your participation in the study. They may do this if you are not able to follow the directions they give you, if they find that your being in the study is more risk than benefit to you, or if the University or agency funding the study decides to stop the study early for a variety of reasons.

What happens if I get hurt or sick during the study?

If you believe you are hurt or get sick because of something that is done during the study, you should call Lindsay Rodriguez at 815-441-5208 immediately. It is important for you to understand that Eastern Kentucky University will not pay for the cost of any care or treatment that might be necessary because you get hurt or sick while taking part in this study. Also, Eastern Kentucky University will not pay for any wages you may lose if you are harmed by this study. These costs will be your responsibility.

Usually, medical costs that result from research-related harm cannot be included as regular medical costs. Therefore, the costs related to your care and treatment because of something that is done during the study will be your responsibility. You should ask your insurer if you have any questions about your insurer's willingness to pay under these circumstances.

What else do I need to know?

CGH Medical Center is involved in the study through funding and by providing supplies or equipment.

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this study.

We will give you a copy of this consent form to take with you.

Appendix H.

Lesson Plan for Educational Meeting

1. Welcome
2. Discussing current system- 5 minutes
3. Demonstration of new template for oral chemotherapy monitoring -15 minutes
4. Discussion of follow up phones- frequency, reasoning, how to use the template in phone note. -10-15 minutes
5. Q/A session- 5-10 minutes
6. Educational Feedback survey- 5 minutes

Appendix I.

ORIC

Additional file 1 Organizational Readiness for Implementing Change (ORIC)

	1 Disagree	2 Somewhat Disagree	3 Neither Agree nor Disagree	4 Somewhat Agree	5 Agree
1.	People who work here feel confident that the organization can get people invested in implementing this change.	1	2	3	4	5
2.	People who work here are committed to implementing this change.	1	2	3	4	5
3.	People who work here feel confident that they can keep track of progress in implementing this change.	1	2	3	4	5
4.	People who work here will do whatever it takes to implement this change.	1	2	3	4	5
5.	People who work here feel confident that the organization can support people as they adjust to this change.	1	2	3	4	5
6.	People who work here want to implement this change.	1	2	3	4	5
7.	People who work here feel confident that they can keep the momentum going in implementing this change.	1	2	3	4	5
8.	People who work here feel confident that they can handle the challenges that might arise in implementing this change.	1	2	3	4	5
9.	People who work here are determined to implement this change.	1	2	3	4	5
10.	People who work here feel confident that they can coordinate tasks so that implementation goes smoothly.	1	2	3	4	5
11.	People who work here are motivated to implement this change.	1	2	3	4	5
12.	People who work here feel confident that they can manage the politics of	1	2	3	4	5

Appendix J.

Demographics Form

1. What is your highest level of education achieved?

a. Associate's Degree

b. Bachelor's Degree

c. Graduate Degree

2. What is your age?

a. 18-25

b. 26-35

c. 36-45

d. 46-55

e. 56-65

f. 66+

3. How long have you been a registered nurse?

a. less than 1 year

b. 1-3 years

c. 3-5 years

d. 5-10 years

e. 15 or more years

4. How long have you worked for CGH Medical Center?

a. less than 1 year

b. 1-3 years

c. 3-5 years

d. 5-10 years

e. 10 or more years

5. How Long have you worked in CGHMC Oncology department?

a. less than 1 year

b. 1-3 years

c. 3-5 years

d. 5-10 years

e. 10 or more years

6. What certifications do you hold?

a. OCN

b. ONS

c. Other:

7. What are the challenges you faced with the electronic Medical record system/templates that are currently being used?

8. What improvements in oral chemotherapy documentation would you like to see occur?

Appendix K.

Education Evaluation

Please answer the following statement using 1-5 rating scale. 1 meaning Strongly Disagree 5 meaning Strongly Agree.

1. The demonstration and training on the new oral chemotherapy template met your expectations.

1 2 3 4 5

2. The quality of the training was excellent.

1 2 3 4 5

3. The demonstration of the new oral chemotherapy template explained in a way that made learning it easy.

1 2 3 4 5

4. I feel confident in using the new oral chemotherapy template.

1 2 3 4 5

5. The education given on the follow up telephone calls was easy to understand.

1 2 3 4 5

6. I understand how to use the new oral chemotherapy template and make follow up calls.

1 2 3 4 5

7. I know how often follow up calls should be occurring.

1 2 3 4 5

8. The information learned is easy to apply in my everyday work.

1 2 3 4 5

9. I feel that the new oral chemotherapy template is applicable to your work needs.

1 2 3 4 5

10. Do you have any suggestions for improving this educational session?

Appendix L.

Survey

Please answer the following statements using a 1-5 rating scale. 1 meaning Strongly Disagree and 5 meaning Strongly Agree.

1. The oral chemotherapy template was easy to implement?

1 2 3 4 5

2. The implementation of the new oral chemotherapy template and follow up calls have made a positive impact on patients?

1 2 3 4 5

3. Oral chemotherapy patients are being monitored more frequency than before the implementation of the oral chemotherapy template.

1 2 3 4 5

4. The primary investigator addressed your questions and concerns to your satisfaction.

1 2 3 4 5

5. Using the oral chemotherapy template helped me do my work more easily?

1 2 3 4 5

6. As a result of the oral chemotherapy template, I can find information more easily.

1 2 3 4 5

7. What modifications would you make or suggestions for improvement?

Appendix M.

Oral Chemotherapy Template

Oral Chemotherapy Telephone Follow up Template

1. Any Provider or ER Visits since last office visit?

2. Any prescription changes since last office visit?

3. Any side effects to oral medication since last office visit?

4. Any missed doses of oral chemotherapy/medication provider through our office? If so why?

5. Education Provided
    - ☐Oral Medication Drug specific
    - ☐Home handling
    - ☐Hand outs mailed-Drug specific
    - ☐Side Effects
    - ☐When to contact our office
    - ☐Self administration, when, how often
    - ☐What is considered Emergent
    - ☐Lives Alone
    - ☐Lives with Family

6. Patient Questions or concerns?

7. Verify follow up visit/labs/testing dates & times

8. Patient Service Referrals?

PT OT Nutrition Speech HOH WTW

Hydration Palliative Care Home nursing

9. Pain, where/ Scale 1-10. 1 being minimal, 10 being worse pain.

10. Any refills needed?