

Pediatric Oncology Family Education

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NURS 703A: DNP Proposal

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March 17, 2022

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Abstract

Aim

The aim of this QI project was three-fold: 1) to develop and adopt a standardized educational process for nurse practitioners (NP) to utilize in newly diagnosed children with cancer prior to discharge, 2) implement the process into standardized NP workflow and 3) to decrease overnight family calls.

Background

A new childhood cancer diagnosis is life-altering to children and their families. A comprehensive understanding of treatment by the patient and family is of critical importance as they will become the primary caretaker for their cancer treatment.

Method

The Model for Improvement by the Institute for Health Improvement was utilized for this quality improvement project as well as Plan-Do-Study-Act cycles. A review of the evidence revealed that standardizing patient and family education can decrease poor symptom management, increase the quality of life, and increase the recognition of life-threatening symptoms. A standardized education checklist tool was adapted by NPs at a pediatric hematology-oncology unit in a Children's Hospital after recognizing the lack of standardized education. Data were collected to assess the utilization rate of the process over a three-month period. Additionally, the number of the family calls post-discharge pre and post-implementation of this standardized process was evaluated to determine confidence at home.

Results

Nurse practitioner education checklist was created and implemented for use. After the implementation of the QI project, there was a decrease in overnight patient calls noted in a three-month time frame.

Conclusion

Adopting a standardized process improved overnight calls, expanding this standardized educational checklist into the outpatient setting to reinforce education is the next step.

Introduction

Cancer in children and adolescents is the leading cause of death by disease in the United States (Rabin et al., 2015). According to the National Cancer Institute (NCI), it is estimated that 15,590 children and adolescents will be diagnosed and 1,780 of those will succumb to their disease yearly (2021). There are various types of cancers; most common being leukemia, lymphoma, and brain and central nervous system tumors (NCI, 2021). Survival rates have improved immensely in the past decade. Once diagnosed, patients are placed on appropriate therapy. Initial therapy is termed induction therapy; therapy may consist of chemotherapy, radiotherapy, and surgeries specific to the patient's diagnosis (NCI, 2021).

A comprehensive understanding of treatment by the patient and family is of critical importance as they will become the primary caretaker and advocate for their child upon initial diagnosis and discharge from the hospital (Rodgers et al., 2018). Historically, patients were typically admitted for the duration of induction therapy; for example, a patient with leukemia has an induction of 30 days, most of the care was provided by hospital staff, including medication administration and central line care. More recently, treatment has shifted from the inpatient to the outpatient setting, leading to a change in the roles and responsibilities of the family (Warrick et al., 2018). Families are responsible for accurate administration of medication and recognizing potential life-threatening emergencies that require emergency medical care (Landier et al., 2016). To provide a safe transition upon discharge, various skills and knowledge must be relayed to the family by health care providers (Rodgers et al., 2018). Thus, education provided to families should include in-depth knowledge regarding disease, prognosis, treatment along with side effects, and care at home upon discharge (Landier et al., 2016). Lack of effective education can lead to detrimental outcomes for the patients. Detrimental outcomes include delay in treatment

and delay in recognition of life-threatening symptoms delaying medical attention (Hockenberry et al., 2021; Wilson Smith et al., 2018)

Nurse practitioners (NPs) caring for this patient population play a pivotal role as health care members in the inpatient and outpatient setting. Nurse practitioners pride themselves on the holistic approach to care that they provide for patients. This comprehensive approach includes preparing families to be able to manage their child's physical needs related to the new diagnosis and therapeutic regimen while at home. A nurse practitioner's role extends to providing disease and treatment-specific education to families/ caregivers. Family knowledge of the new reality of physical needs is paramount to having successful treatment and safely managing symptoms that can be life-threatening once discharged home.

Problem Description

Initial treatment in pediatric and adolescent/young adult (AYA) patients with an oncology diagnosis can have increased adverse events secondary to their disease and treatment. Newly diagnosed children with cancer have high morbidity and mortality rates (Warrick et al., 2018). Patients and families are presented with the initial diagnosis of the patient and given a plethora of information on the disease and treatment plan. Parents and families experience a variety of emotions and stress during this initial period (Rodgers, et al., 2018). Initial discharge from the hospital post-initiation of treatment occurs once the patient is clinically stable, symptoms are being adequately managed, and families have completed disease-specific teaching (Warrick et al., 2018). Parents and families often obtain inconsistent information across various institutions due to the lack of standardized education provided (Rodgers, et al., 2018). Lack of standardized education leads to increased parental stress, parents reporting increased frustration with inconsistent information, and exhaustion from processing new information for discharge

with recently receiving a new cancer diagnosis (Rodgers et al., 2018). One study discovered that 17% of families reported not retaining any information during the initial meeting and desired repeat education (Rodgers et al., 2016).

Outcomes related to poor caregiver education have been associated with poor symptom management, decreased quality of life, medication errors, missed follow up appointments leading to delay in treatment, delay in recognition of life-threatening symptoms delaying medical attention, and unplanned utilization of healthcare services (Wilson Smith et al., 2018; Hockenberry et al., 2021). Unplanned utilization of healthcare services includes unscheduled clinic visits, emergency department visits, unplanned hospitalization, and septic events (Hockenberry et al., 2021).

A lack of standardized education for children with new oncology diagnoses is occurring at various institutions, including a local Children's Hospital in California, on the pediatric hematology/oncology/bone marrow transplant unit, by the nurse practitioners (NPs). Family education in the local Children's Hospital transitioned from a patient educator to the NPs due to the COVID-19 pandemic. As a result of this new responsibility within the team composed of various NPs, variations in education delivery, timing, responsibilities, and structure occurred due to a lack of a standardized approach. Data in the month prior to the relinquishment of the nurse educator role (March 2020) demonstrated there were five pediatric patients with new oncology diagnoses with only one (20%) overnight call for assistance with symptom management. In comparison, more than a year later (July 2021) there were eight patients with new diagnoses, and four of the families called overnight for assistance with symptoms management (50%). Symptoms identified during the overnight calls included pain, constipation, and nausea.

Available Knowledge

Research on family education for patients with newly diagnosed oncology disease is limited. A search limited to the past ten years was performed utilizing-PubMed, CINAHL, and EBSCO. Search terms included MeSH terms, “Neoplasms/Nursing, Caregivers/Education, Patient Discharge/Standards, Induction Therapy, Checklist, and Evidence-Based Nursing” and results were narrowed to manuscripts published in the United States in English.

Evidence from expert opinions and a systematic review recommended unifying patient/family education in the pediatric/AYA population (Landier et al., 2016). Five principles were identified in the delivery of the education which included “(1) in pediatric oncology, patient/family education is family-centered; (2) a diagnosis of childhood cancer is overwhelming and the family needs time to process the diagnosis and develop a plan for managing ongoing life demands before they can successfully learn to care for the child; (3) patient/family education should be an interprofessional endeavor with 3 key areas of focus: (a) diagnosis/treatment, (b) psychosocial coping, and (c) care of the child; (4) patient/family education should occur across the continuum of care; and (5) a supportive environment is necessary to optimize learning” (Landier et al., 2016). Best practice for dissemination was limited but the evidence recommended utilizing a standard tool (Duffy et al., 2021; Landier et al., 2016).

Recommendations for topics to be covered in patient/family education have been divided into primary, secondary, and tertiary topics. Topics identified were classified as primary, secondary, and tertiary; primary topics identified as being essential or “survival skills” (Haugen et al., 2016; Landier et al., 2016; Rodgers et al., 2016; Rodgers et al., 2018). Primary topics considered to be life-saving include medication administration, central line care, recognition of emergencies, and the understanding of how/when to access emergent care (Landier et al., 2016).

Before hospital discharge, research recommends teaching primary topics, 24 were identified plus four additional based on diagnosis, are recommended to be taught before initial hospital discharge (Appendix M) (Rodgers et al., 2018). Secondary topics included by the research identified 24 topics plus two additional based on diagnosis, should be discussed within the first month of diagnosis (Rodgers et al., 2018). Tertiary topics, of which there were 12 identified, were appropriate for outpatient setting discussion and recommended to be completed before the end of treatment (Rodgers et al., 2018). The division of topics was established to decrease patients and their families from feeling overwhelmed by allowing time for the family to process a new diagnosis and address the specific families' learning priorities. Individualized teaching can occur by commencing with primary topics or essential and advancing to secondary and tertiary topics based on patients and their family's readiness, which can vary from the health care team (Landier et al., 2016).

Furthermore, expert opinions identified that timing and pacing of education are critical in effective teaching for families to properly process; stating that education should not be a one-time occurrence; more evidence on specific and timing needs to occur (Landier et al., 2016; Rodgers et al., 2016). Lastly, there is a lack of evidence of the role of the nurse practitioner in discharge education. Therefore, a standardized tool that aids the NPs address essential topics consistently is necessary.

Rationale

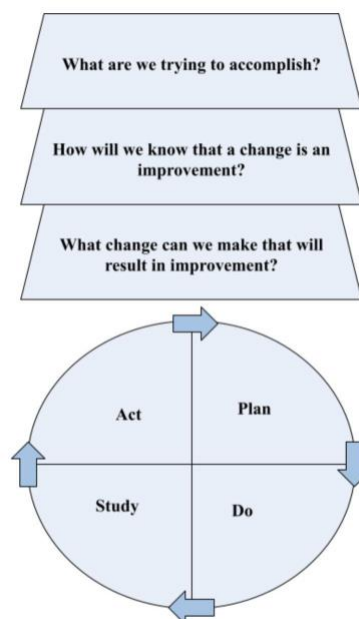
The Model for Improvement was utilized in this quality improvement project. This model is used widely by health care organizations to accelerate change within an organization (Institute for Healthcare Improvement [IHI], 2019). The Model for Improvement consists of two parts; the first portion contains three questions followed by the second portion that consists of the Plan-Do-

Study-Act (PDSA) (IHI, 2019). The questions to answer are as follows: “What are we trying to accomplish? How will we know that a change is an improvement? What change can we make that will result in improvement?” (Figure 1) (IHI, 2019). PDSA cycles were used in testing change to accurately measure improvement; various cycles were used to achieve measurable outcomes (Figure 1).

Interventions for this quality improvement project were used to address the identified problems. An evidence-based structured educational checklist was developed to include essential information for patients and their families (Duffy et al., 2021). Standardized tools are recommended to relay critical information utilizing structure (Duffy et al., 2021). Development and implementation of standardized checklists have been utilized in other children's hospitals with successful outcomes (Duffy et al., 2021).

Figure 1

The IHI Model for Improvement



Specific Aims

The specific aims of this improvement project are:

- 1) Develop and adopt a standardized educational process for NP's to utilize during the patient stay and prior to discharge
- 2) Implement the process into standardized NP workflow to be utilized 100% of the time by January 2022
- 3) Decrease overnight family calls to 20% by January 2022

Methods

Context

A Doctor of Nursing Practice (DNP) Quality Improvement (QI) project was implemented over a three-month time frame at a tertiary care hospital located in California. The teaching medical center resides in a large metropolitan area. The QI project will be implemented over a three-month time frame from November 1, 2021, to January 31, 2021. The children's hospital consists of a variety of specialties, including a 33 inpatient bed Pediatric Hematology/Oncology/Bone marrow transplant (BMT) unit. Patient care in this unit is provided by a multidisciplinary team.

The care team for these patients consists of six attending physicians, six inpatient hematology/oncology/BMT nurse practitioners, two outpatient nurse practitioners, and two resident physicians who rotate monthly. The team collaborates closely with bedside nursing staff, nurse educator, clinical nurse specialist, case manager, and pharmacist from the inpatient and outpatient team. Prior to the start of this QI project the nurse educator role was relinquished. The Pediatric Hematology/Oncology/BMT team cares for patients from birth-24.99 years at initial diagnosis with a childhood oncology diagnosis. Childhood cancers are described as the most

common cancers seen in patients from birth to fourteen years of age (NCI, 2019). Patients and their families are from diverse backgrounds, including race and ethnicities. The inpatient team on average oversees five to six newly diagnosed oncology patients each month, as well as provides continuing treatment to those previously diagnosed currently in active treatment therapies. The team members are part of the Children's Oncology Group (COG). The team follows the COG pediatric cancer clinical trial protocols; whether patients are currently actively enrolled in an active study or if a study is closed, closed protocols are used as the institutional standard of care protocol to provide the most up-to-date treatment to the patients.

Interventions

An individualized patient education checklist (see Appendix I) to be utilized by the nurse practitioners (NPs) was developed and adapted based on available evidence, expert opinion recommendations, and tailored to previously established job responsibilities within this specific service. The checklist was chosen to implement a standardized process. The education tool was designed as a checklist to ensure that all the essential components were discussed with patients and their families prior to discharge, due to the fact that more than one NP may teach a patient due to the variable work schedule. Feedback was solicited and incorporated prior to adapting the checklist; modifications and adjustments were made as needed per the workflow at the institution implemented. The specific timing of education delivery was included in the education checklist.

The educational checklist was adapted from Duffy et al. (2021) and titled "Education Checklist for Parents of Children Newly Diagnosed with Cancer" and included several components (Figure 2). The five oncology components include: 1) my team, 2) roadmap review, 3) chemotherapy and side effect management with medication prescriptions, 4)

resources/accessing care, and 5) procedure education (see Appendix I). Each of the five major components have specific topics to be discussed (see Appendix I).

The education checklist with a detailed written and verbal explanation was provided to the NPs and nurse educators once finalized. Questions regarding the educational checklist were answered accordingly and all NPs who would be utilizing this checklist verbalized understanding. The education checklist was printed and placed in the NP office, accessible to all. The NPs were instructed to place a physical paper copy in the patient's chart to be accessible on various days to the NPs. The checklist was collected by the quality improvement team member. An electronic health record (EHR) generated phrase was created for the healthcare software system for the NPs on the Pediatric Hematology/Oncology/BMT team (Appendix K). The EHR-generated phrase was utilized to document the completed teaching.

Figure 2

Primary Topics	Date & Initial	Learning Preference/Method Used	Learner	NP reviewed or mastered	Final Check off
Oncology: Diagnosis (p. 1-2) <ul style="list-style-type: none"> □ Meet with provider regarding diagnosis and general treatment plan □ Interdisciplinary team involved (social work to screen for immediate needs) □ Patient knows how to convey diagnosis in emergency Oncology: Resources/Accessing care (p. 4-6) <ul style="list-style-type: none"> □ When to call for help (PT) vs. oncology team □ Who to call for help □ Know how to take temperature □ Fever 101.5 □ Follow up appointments scheduled □ Give CD before in Family Handbook • Give & Review: • Magnesium • Thermometer Oncology: Side Effect Management (to know before next scheduled appointment) (p. 7-8) <ul style="list-style-type: none"> □ Nausea/vomiting □ Constipation □ Use gloves at home for 48 hours after chemo (changing diapers, body fluid contact-wash/flush) □ Specific to the chemotherapy the patient received General Basic Health Practices/Preventing Infection (p. 9-10) <ul style="list-style-type: none"> □ Preventing infection related to: <ul style="list-style-type: none"> • Hand washing • Scrubbing vitals • Oral care • Caring for animals • Vascular exposure • No rectal medications or exams • Give & Review: • PEAR: Oral Care/Brushing, CLABSI Prevention • Oral Care Kit/Brush General: Home Medications (p. 12) <ul style="list-style-type: none"> □ Name and purpose □ Dose and frequency □ Administration □ Storage □ Prescriptions are filled □ Home care company and supplies (if applicable to patient) □ Chemotherapy safe handling/disposal Including IV Lines: Care of Central line (p. 3, 11) <ul style="list-style-type: none"> □ Emergency care of central line □ Centralize central line flush □ Home Care vs. inpatient - supplies and techniques may vary often and it's OK • Give & Review: • PEAR: Central Venous Catheter: Care at Home • PEAR: Emergency Inserted Central Catheter: Care at Home • PEAR: & Survival: Emergency Kit General: Wound Care (p. 11) <ul style="list-style-type: none"> □ If patient has a wound, care is taught to parents w/ in return demonstration General: Pain Management (p. 7) <ul style="list-style-type: none"> □ Equip parent: relief, assessment and management with growth □ Patient use spirituality at home, monitor temp oral to ax □ Analgesic, Ibuprofen and combination medications Neurology: Care of patients with CNS tumor only (p. 11) <ul style="list-style-type: none"> □ Know symptoms of increased ICP/cause for seizures □ Know symptoms of shunt malfunction (if patient has a shunt) □ Safety precautions 					

Primary Topics Checklist adapted from “Implementing and evaluating a standardized new diagnosis education checklist: A report from the Children’s Oncology Group,” by E. A. Duffy et Al, 2021, *Journal of Pediatric Oncology Nursing*, 38(5), 322-330. Adapted with permission.

Plan Do Study Act Cycle 1

The first PDSA Cycle occurred from November 1, 2021, to November 30, 2021 (Table 1). After implementation of the education checklist, it was noted that not all nurse practitioners on the service had provider cards to distribute to patients. A new nurse practitioner hired in mid-November did not have a provider card. Thus, the distribution of provider cards would be inconsistent among nurse practitioners providing education to the families. To ensure a standard process and consistency “Provider Cards” and “Oncology: Resources/Accessing Care” were omitted from the checklist. Secondly, it was discovered that the “Oncology: Resources/Accessing Care” was duplicate information that the bedside RNs were already distributed to the patients and their families.

Plan Do Study Act Cycle 2

The Second PDSA Cycle occurred from December 1, 2021, to December 31, 2021 (Table 1). The utilization rate of the physical form during this time frame was 40%. Due to feedback from members of the Nurse Practitioner team, it was re-evaluated and agreed to become a Nurse Practitioner guide that would be a reference. After this change, a new document was created, and to aid in electronic documentation a generated phrase was created that reflected the updated document (Appendix J). The document was emailed to all the NPs on the service as well as a physical copy was created and placed in the NP office.

Plan Do Study Act Cycle 3

Implementation of a new updated Nurse Practitioner Resource occurred from January 1, 2022, to January 31, 2022 (Table 1). The EHR-generated phrase was dispersed amongst the NP team as well to utilize. Data was continuously collected on utilization and overnight call from

families post-discharge. The utilization of the reference for was 75%. The documentation rate post implementation was 75% during this time frame.

Table 1. PDSA Cycle 1,2,3

PDSA 1: November 2021			
Plan	Do	Study	Act
Creation and adoption of the nurse practitioner education checklist	Implement the education checklist used by nurse practitioner	Collect data on Utilization and overnight call from families post-discharge	Update checklist and omit “Provider Cards” and “Oncology: Resources/Accessing Care”
PDSA 2: December 2021			
Plan	Do	Study	Act
Revise standardized nurse practitioner education checklist	Implement revised physical educational checklist form	Utilization, and overnight call from families post-discharge	Abandon paper checklist; and adopt as an education resource for NPs
PDSA 3: January 2022			
Plan	Do	Study	Act
Update education checklist into resource form and create an electronic smart phrase for documentation of education	Implement use of EHR generated phrase Implement use of education checklist as an NP resource	Utilization, and overnight call from families post-discharge	Adopt use of EHR generated smart phrase for education documentation and the availability of the updated NP education as a resource

Study of Interventions

Prior to the implementation of the QI project, a questionnaire was created and data about NP demographics was collected (Appendix D). Prior to implementing the education checklist, a baseline assessment was completed to determine the frequency of conducting and documenting

patient education on newly diagnosed patients prior to initial discharge; this would further determine usability. A tool was created for the purpose of data collection for this QI project (Appendix E). A retrospective chart review of newly diagnosed patients within the past three months was completed from August 1, 2021, to October 31, 2021 to ensure a similar number of patients pre and post were evaluated. The NP team reviewed charts to determine education received in the newly diagnosed pediatric oncology patients. In addition, data was collected on parent overnight calls received for patients newly discharged with a new diagnosis from August 1, 2021, to October 31, 2021. A run chart determined the progress of the intervention. Data was collected on the number of checklists completed by the various NPs on the service. The documentation in the patient's electronic medical record was used to determine utilization of the educational tool by the NPs.

Measures

Two outcome measures were used to assess the aims of this project. The first was the utilization of education checklist by the NPs and documentation in patient charts, which measure adoption; measure was used to reflect on the process outcomes. Utilization rate will determine whether this QI project will be adoptable. The second is the number of parent overnight calls post-discharge to determine the outcome of the QI project-during a three-month time frame from the start of the implementation of the QI project. Families or patients currently on active therapy may call overnight with questions. These calls are directed to a provider on call to answer their patients' questions. The questions are often about their diagnosis, treatment, or symptoms the patient may be experiencing. This measure was utilized to measure understanding in managing patients at home with the education provided to patients and their families prior to discharge. During the duration of this QI project, balancing measures were noted and included adjustments

to the new edition of this responsibility in the NP flow of the job and the loss/addition of NPs on the service team during this time frame of implementation.

Analysis

Descriptive statistics were used to analyze age, gender, race/ethnicity, fluency in languages other than English, years as an RN and NP, and years of experience as an NP on the pediatric hematology/oncology/BMT service. Additionally, descriptive statistics with mean and frequencies were used to analyze the frequency of completing the education checklist. The number of patient calls was collected three months immediately prior to implementing the checklist and three months post-implementation. A two-sample independent t-test was used to compare the number of calls before and after the intervention. A run chart was utilized to examine how our quality improvement project is performing as well as observe patterns during the implementation of changes.

Ethical Considerations

The proposed project was submitted to the Internal Review Board at the academic institution and the project facility for non-human subject research determination. Approval for the implementation of the project was granted by both organizations. A letter was obtained from management at the project facility and permission was granted as a quality improvement project. There was no conflict of interest. Personal health information was not obtained or shared during the implementation and evaluation of this quality improvement project. A password-protected computer was utilized for the entirety of the project.

Results

The quality improvement project took place over a three-month period post-implementation of the standardized checklist. Data were compared for three months pre and post-implementation. Six nurse practitioners participated in this quality improvement project, (Table 1). The majority of NPs identified themselves as female in comparison to male. The NPs identified themselves by race and ethnicity, with the minority being Black or African American, majority being White, and a portion being Hispanic or Latino. The age of the NPs ranged from 32-62 but the average was 30-39. Years as a registered nurse ranged from 0-30, with an average of 11-15 years. Years as a nurse practitioner ranged, with a majority within the 0-5 years range. Years as an NP on the pediatric hematology/oncology/bone marrow transplant range, with the majority being in the 0-5 years range.

This quality improvement project involves newly diagnosed patients and their families (Figure 5). The quality improvement project was implemented on November 1, 2021, known as PDSA 1. During the initial month, data was collected.

Table 1. NP Demographic Data

AGE IN YEARS	
20-29 YEARS	
30-39 YEARS	3
40-49	1
50-59	1
60-69	1
GENDER	
Female	5
Male	1
Nonbinary	
RACE/ETHNICITY	
American Indian or Alaska Native	
Asian	

Black or African American	1
Native Hawaiian or other pacific islanders	
White	3
Hispanic or Latino	2
FLUENCY IN LANGUAGES OTHER THAN ENGLISH	
Yes	2 (Spanish)
No	4
YEARS AS AN RN	
0-5	
6-10	2
11-15	1
16-20	2
21-25	
25+	1
YEARS AS AN NP	
0-5	5
6-10	
11-15	
16-20	
21-25	1
YEARS AS AN NP ON THE PEDIATRIC HEMATOLOGY/ONCOLOGY/BMT	
0-5	5
6-10	
11-15	
16-20	
21-25	1

Outcomes

Demographic Data

Data was collected on patients who were newly diagnosed with an oncology disease from November 1, 2021, to January 31, 2022; the number of new diagnosis was variable each month (Figure 3). Patient's age ranged from 12 months to 16 years of age (Figure 6). The patients included in this quality improvement project were male and female (Figure 4). The majority of patients included in this quality improvement project were white, black or African-American, and Hispanic (Figure 4). Primary care providers included mother, father, and/or grandparents. The primary language spoken by caregivers included English and Spanish.

Figure 3
New Diagnoses of Patients

Newly Diagnosed Pediatric Patients Diagnoses

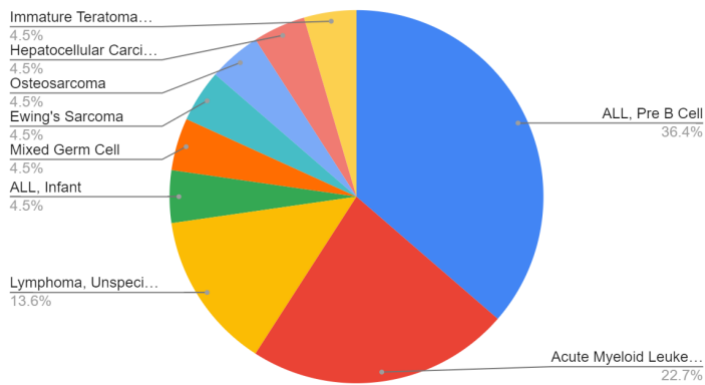


Figure 4
Race/Ethnicity and Gender of Newly Diagnosed Patients

Race/Ethnicity and Gender

Newly Diagnosed Pediatric Patients

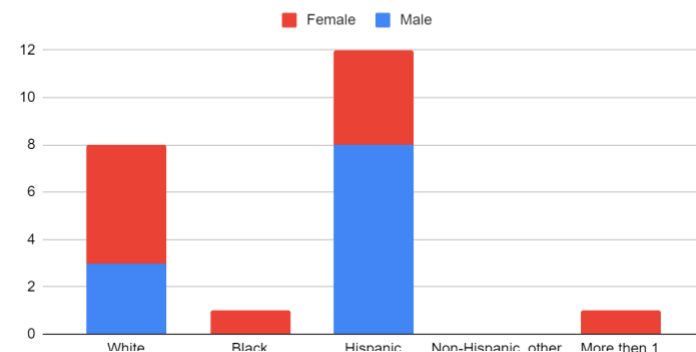


Figure 5
Number of New Diagnoses per Month

Number of New Diagnoses Per Month

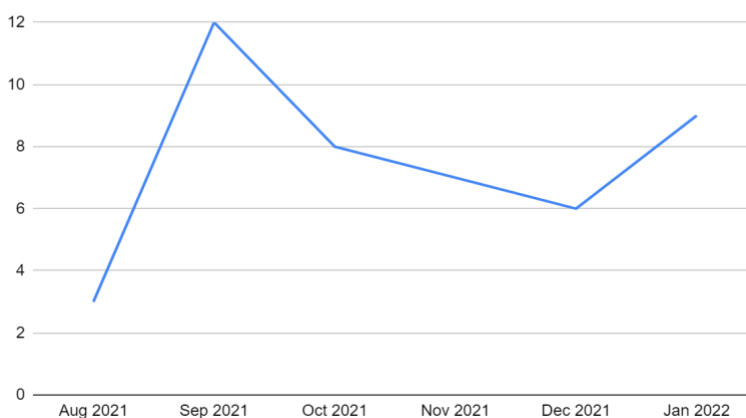
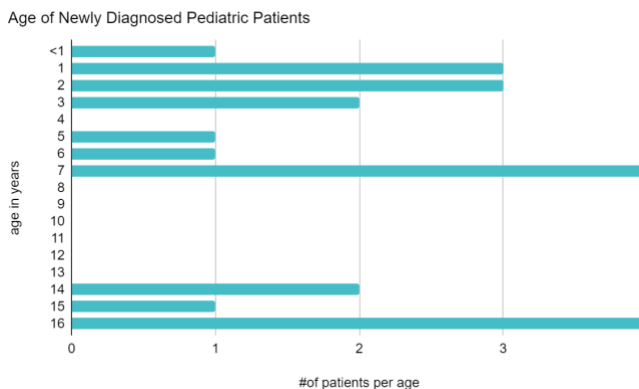


Figure 6
Age of Newly Diagnosed Pediatric Patients



Utilization

During PDSA cycle one there were a total of five patients that were considered newly diagnosed patients with an oncology diagnosis; two were omitted, as one patient transferred to another children's hospital due to the location of where the patient lived and the second patient was discharged home pending results who was not treated, only with surgery outpatient after diagnosis confirmation. One hundred percent of the patients were given education by the NP, the checklist was only utilized 20% of the time during PDSA, and documentation in the electronic medical record occurred only 20% of the time.

The Second PDSA Cycle occurred from December 1, 2021, to December 31, 2021, the utilization rate of the physical form during this timeframe was 40%. Due to feedback from the Nurse Practitioner team, use was re-evaluated and consensus was to transition the physical checklist to a Nurse Practitioner reference as the hospital was a paperless system and there was confusion as to where to keep the physical educational checklist. After the agreement, a new document was created as a reference tool instead of a checklist, and to aid in electronic documentation a smart phrase was created that reflected the updated document (Appendix K).

During PDSA cycle two there were a total of five patients identified with a new oncology diagnosis; one was omitted, the patient was transferred to another children's hospital due to location of where the patient lived. One hundred percent of the patients were given education by the NP, the checklist was only utilized 20% of the time during PDSA, and documentation in the electronic medical record occurred 40% of the time.

During PDSA cycle 3 there were a total of eight patients that were considered newly diagnosed patients with oncology diagnosis; one patient was omitted as the patient expired prior to discharge.

Overnight Calls

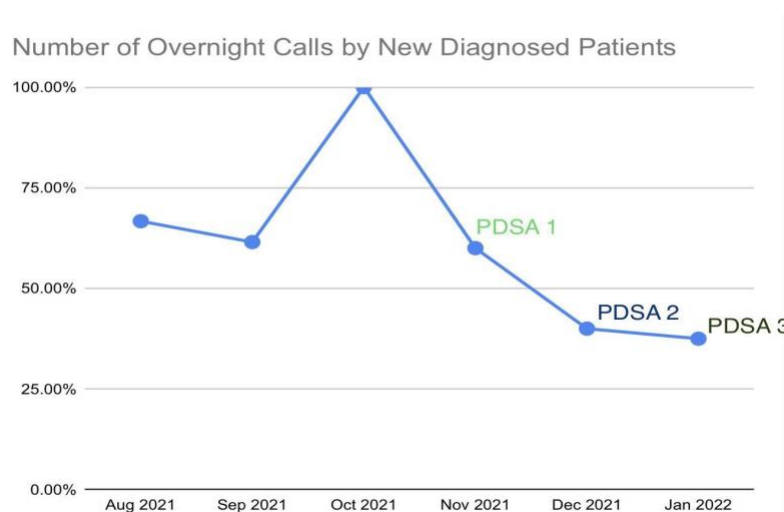
During the first PDSA cycle and after implementing the "Education Checklist for Parents of Children Newly Diagnosed with Cancer", overnight calls were measured on newly diagnosed patients. Data were collected if the patient or family member called overnight within 30 days of initiation of chemotherapy. During the month of November 2021, five patients met the criteria for newly diagnosed oncology patients. Following the initiation of chemotherapy, it was noted that 60% of the patients called overnight; One family called with a question in regards to multivitamins, another family called regarding abdominal pain and presumed nausea, a third family called with fever in the setting of neutropenia and was admitted (Figure 7).

In the second PDSA cycle (December 2021), after implementing the revised version of "Education Checklist for Parents of Children Newly Diagnosed with Cancer", overnight calls were measured. Once again, data on the overnight calls were collected if the patient or family member called overnight within 30 days of initiation of chemotherapy. During the month of December 2021, five patients met the criteria, it was noted that 40% of families or patients called overnight; one patient called in regards to nausea and presumed abdominal pain, a second family

called in regards to fever and was further admitted for further evaluation and management (Figure 7).

After the implementation of the second PDSA cycle, with the checklist now a resource, Overnight calls were measured for newly diagnosed patients within the month of January 2022. The data on the overnight calls were collected if the patient or family member called overnight within 30 days of initiation of chemotherapy. During the month of January 2022, Eight patients met the criteria, it was noted that 25% of the families or patients called overnight; one family called in regards to a question about a medication dose, a second family called in regards to the patient having symptoms of nausea, vomiting, and jaw pain (Figure 7).

Figure 7
Overnight Calls



Summary

In summary, a standardized patient and family educational process for the NPs was developed and adopted at our local Children's Hospital. After various modifications of this standardized process, especially with the discovery of paper checklists in a paperless electronic health record being impractical, it was proven to be adaptable within the pediatric hematology/oncology team on the inpatient service as a reference tool along with a EHR generated phrase. Following the implementation of this QI project, there was noted to be a decrease in overnight calls over the three month period.

Interpretation

After the implementation of the quality improvement interventions, the percentage of overnight calls decreased over a three-month period. At the end of the project, overnight calls had decreased from 76% to 38% with a mean of 46% over the three months. The education provided to patients and families by the nurse practitioners continued to be 100%. The use of a standard electronic documentation note increased during the three months post intervention. Standardizing nurse practitioner education to patients with newly diagnosed oncological disease demonstrated increased confidence as reported by Duffy et al. (2021) in regards to standardizing delivery of education.

Adaptability of a standardized education process was noted to be acceptable. The acceptability of the QI project aligned with limited publications in regards to this specific topic (Duffy et al., 2021). We noted the increased utilization rate of the EHR generated phrase by NPs speculating that this decreased workload and was feasible after its adaptation. We noticed that some months prior to the QI project implementation, there was a decreased overnight amount of calls that can be related to possibly the fact that during that time period the service team was

adequately staffed. Longevity of the project can be hindered by lack of personnel, NP turnover rate, and shift in NP roles.

Limitations

Our study encountered several limitations. Limitations for this study included both process and outcomes of the intervention. One limitation included missed overnight calls as emails on certain dates were not sent by the provider on call. In an average month a mean of 7.66 days emails were not sent out and therefore unable to determine if night calls were made or not made. We can conclude there were no calls made by parents those nights but can not be certain. Figure 6 shows emails and night calls not captured on a month-to-month basis.

A second limitation was the increased workload of the Nurse Practitioners during the implementation of the quality improvement project. At the initiation of this quality improvement project the service was not staffed to the core number of NPs. A new nurse practitioner was hired which required additional time for onboarding by the experienced NPs. The time spent orienting the new NP decreased available time for patient family education in addition to the increased patient load. Due to the increased workload and decreased time for patient/family education, impacts on the project are unknown.

A third limitation included ineffective teaching on consistent days from the start of treatment. Due to the lack of a fully staffed NP team and increased workload during this time period, impacts on teaching on various days, such as day one of treatment or day of discharge has unknown impact on the outcomes of patient understanding of education being delivered.

Conclusions

This quality improvement project demonstrated that implementation of standardized practice by the NP is feasible within the workflow of the nurse practitioner. To our knowledge, this quality improvement project is a first to address education being delivered by the nurse practitioners. This QI project has proven to be sustainable regardless of factors that may disrupt the NP workflow. The potential for spread to other contacts include other hospitals that have NP's who work with newly diagnosed pediatric oncology patients. Continued potential for the spread to other contacts such as the outpatient setting as well with nurse practitioners who work in outpatient settings; throughout the years it has noted that there is an increased number of newly diagnosed patients being treated outpatient for the initiation of their treatment.

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Appendix A

Project Timeline

PROJECT TIMELINE IRMA SOTO

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Finalize project design and approach (703A)	X	X									
Complete IRB determination or approval (703A)		X	X	X	X						
PDSA Cycle 1 (703B)						X	X				
PDSA Cycle 2 (703B)							X	X			
PDSA Cycle 3 (703B)								X	X		
Final data analysis (703B)										X	
Write sections 13-17 of final paper (703B)										X	
Prepare for project dissemination (703B)										X	
	Mar 21		June 18 June 28			Sept 10 Sept 27			Jan 3 2022 Dec 10		Mar 18 2022

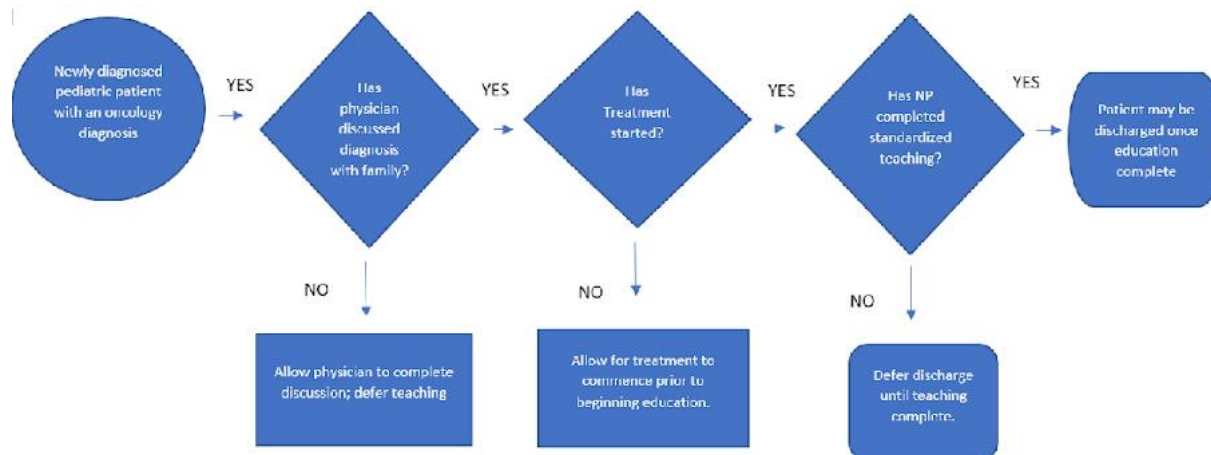
Spring 2021

Summer 2021

Fall 2021

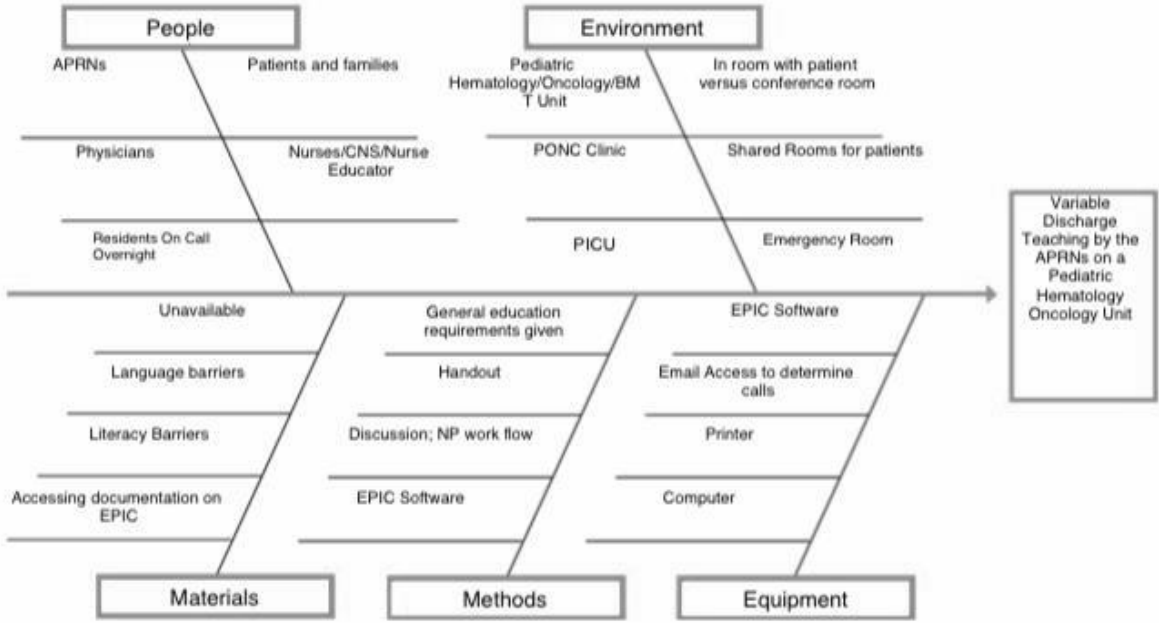
Winter 2022

Appendix B Process Map



Appendix C

Cause and Effect Diagram



Appendix D

Nurse Practitioner Demographic Questionnaire

Demographic Questionnaire

1. What is your age?
 - A. 20-29
 - B. 30-39
 - C. 40-49
 - D. 50-59
 - E. 60-69

2. What is your gender? Female Male Nonbinary

3. Race/Ethnicity?
 - A. American Indian or Alaska Native
 - B. Asian
 - C. Black or African American
 - D. Native Hawaiian or Other Pacific Islander
 - E. White
 - F. Hispanic or Latino

3. Fluency in languages other than English?

Yes No

If yes, what language:

4. Number of years as an RN?

5. Number of years as an NP?

6. Number of years of experience as an NP on the pediatric hematology/oncology/BMT service?

Appendix E

QI Project Data Collection Tool

Table A. Data Collection for Patients with Implementation of Standardized NP Education

Patient Number	1	2	3	4	5
Date of Admission:					
Date of Diagnosis:					
Date Treatment Started:					
Date of Discharge:					
Number of Days of Unit 4800					
Number of Days in the ICU					
Number of Days in Other Locations					
Diagnosis:					
Age of Patient:					
Gender: M/F					
Ethnicity/Race:					
White					
Black					
Hispanic					
Non-Hispanic, other					
Ethnicity unknown					
More than 1					
Primary Language:					
Use of translator: Y/N					
Caregiver:					
Age of Caregiver:					
NP education completed: Y/N					
1 st Education Date:					
2 nd Education Date:					
3 rd Education Date:					
Documentation on EPIC: Y/N					
1 st Education completed by:					
2 nd Education completed by:					
3 rd Education completed by:					
Calls overnight: Y/N					
Number of Calls within 30 days of Discharge:					

Appendix F

IRB Determination: LLUCH

From: Aguilar, Ghinette
Sent: Tuesday, July 20, 2021 11:43 AM
To: Soto, Irma
Cc: Radovich, Patti
Subject: RE: OHSU DNP student; Soto, Irma RE: Clearance for academic activities on campus

Hello **Irma**,

Congratulations, you have met the clearance requirements to begin your DNP project at LLUH, August 2021 to March 2022. Please consider yourself **CLEAR**. Please follow up with Dr. Patti Radovich to arrange your training schedule.

As a student, you are required by LLUH to submit documentation of having received the annual flu shot by September 30 as you will be completing training hours at LLUH during the annual flu season (October to March). Please forward this documentation to me when you have completed this requirement. Thank you.

Hi **Patti**, the following student(s) is/are **clear** to start training with you.

- Irma Soto, OHSU DNP student

Also, I have been asked to remind our training departments that LLUH is responsible for providing an orientation to students who are scheduled to train in our facilities. Per LLUH Patient Safety and Reliability, training departments should be able to demonstrate that students and faculty, if applicable, have been orientated to the training sites.

Thank you,

Ghinette T. Aguilar, MSN, FNP, NPJ-BC – *Manager of Academic Relations*
 Loma Linda University Medical Center | Staff Development
 LOMA LINDA UNIVERSITY HEALTH
 11255 Mountain View Avenue, Suite 11 Loma Linda, CA 92354
 (909) 558-4000, ext. 37818 · fax (909) 558-3541 · Email: gaguilar@llu.edu



October 15, 2021

To: Irma Soto

Dear Irma:

On behalf of the Nursing Evidence-based Practice and Nursing Research Council at Loma Linda University Medical Center, we have approved your evidence-based practice project entitled, "**Pediatric Oncology Family Education by Nurse Practitioner**". We feel that this is a project that will potentially improve the outcomes for oncology patients and families. We look forward to hearing your results upon completion of your project.

You may proceed at this time with your intervention and data collection. Upon completion of your project or yearly the NRC requests that you present your findings to the council and email a copy of your final paper to Patti Radovich, PhD at ebp@llu.edu.

Good luck with your project. If we can be of any further assistance, please contact me.

Sincerely,

Patti Radovich

Patti Radovich, RN, PhD, CNS, FCCM
 Chair, Nursing Research Council
 Director Nursing Research
 Telephone: 909-558-3923
 Pager 8343
pradovich@llu.edu

Appendix G

IRB Determination: OHSU



Notification of Not Human Research Determination

To: Irma Soto

Link: [STUDY00023239](#)

P.I.: [Asma Taha](#)

Title: Pediatric Oncology Family Education

Description: The committee reviewed this submission and assigned a determination of Not Human Research. For additional details, click on the link above to access the project workspace.

Oregon Health & Science University

Research Integrity Office
3181 SW Sam Jackson Park Road - L106RI
Portland, Oregon 97239-3098
(503)494-7887 irb@ohsu.edu

VA Portland Health Care System

Research and Development Service
3710 SW U.S. Veterans Hospital Road - R&D
Portland, Oregon 97239-2999
(503)273-5125 rvamc-irb@va.gov

Appendix H

Letter of Support for Implementation

Letter of Support from Clinical Agency

Date: June 12, 2021

Dear Irma Soto,

This letter confirms that I, *Karin Colunga*, allow *Irma Soto* (OHSU Doctor of Nursing Practice Student) access to complete his/her DNP Final Project at our clinical site. The project will take place from approximately June 2021 to March 2022.

This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor and clinical liaison (if applicable):

- **Project Site(s):** Loma Linda University Children's Hospital 11234 Anderson St, Loma Linda, CA 92354; Loma Linda University Children's Hospital Pediatric Specialty Clinics 2195 Club Center Drive, Suite E, San Bernardino, CA 92408
- **Project Plan:**
 - A comprehensive understanding of treatment by the patient and family is of critical importance for newly diagnosed children with cancer. Nurse practitioners (NPs) caring for this patient population play a pivotal role as health care members in the inpatient and outpatient setting. A lack of standardized education is occurring at various institutions, including on the pediatric hematology/oncology/bone marrow transplant unit by the nurse practitioners. Family education has been shifted from a nurse-patient educator to nurse practitioners as a result of the COVID-19 pandemic. The question we plan to accomplish to answer is if implementing a standardized discharge checklist for newly diagnosed pediatric oncology patients utilized by NPs will increase safety after discharge by measuring adverse overnight calls for first-time discharged patients.
 - The specific aims of this improvement project are:
 - 1) Develop and adopt a standardized educational process that all NP's commit to completing during patient stay and prior to discharge
 - 2) Implement the process into standardized NP workflow
 - 3) Assess the utilization rate of the process over a three-month period
 - 4) Compare the number of the family calls post-discharge pre and post-implementation of this standardized process.
 - An individualized patient education tool (Education Checklist) will be utilized by the nurse practitioners (NPs) and will be developed and adapted based on available evidence, expert opinion recommendations, and tailored to previously established job responsibilities.
 - Two outcome measures will be used to assess the aims of this project. The first is the frequency of education completed by the providers and documented in patient charts. The second is the number of parent calls post-discharge.
 - The proposed project will be submitted to the Internal Review Board at the academic institution and the project facility for non-human subject research determination. There is no conflict of interest. Personal health information will not be obtained or shared during the implementation and evaluation of this quality improvement project. A password-protected computer was utilized for the entirety of the project.
 - **Site(s) Support:** Authorized employees include the Nurse Practitioners on the Pediatric Hematology/Oncology/BMT unit.

During the project implementation and evaluation, *Irma Soto* will provide regular updates and communicate any necessary changes to the DNP Project Preceptor.

Our organization looks forward to working with this student to complete their DNP project. If we have any concerns related to this project, we will contact *Irma Soto* and *Asma Taha* (student's DNP Project Chairperson).

Regards,

Karin Colunga

Director – Advanced Practice Nursing

DNP Project Preceptor

Signature



Job Title

Date Signed

6/12/21

Appendix I

Education Checklist for Parents of Children Newly Diagnosed with Cancer

Nurse Practitioner Education Checklist for Parents of Children Newly Diagnosed with Cancer	Date and Initial	Learning Preference/Method Used or Handout given	Learner	R= reviewed M= mastered	Final Check off
Oncology: Diagnosis (Day 1) <input type="checkbox"/> Met with provider regarding diagnosis and general treatment plan <input type="checkbox"/> Interdisciplinary team involved (social worker to screen for immediate needs) <input type="checkbox"/> Parents know how to convey diagnosis in emergency					
Oncology: My team (Day 2) <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Provider Cards 					
Oncology: Roadmap Review (Day 2) <input type="checkbox"/> "How to Read Roadmap" Teaching <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Roadmap 					
Oncology: Chemotherapy and Side Effect Management with Medications Rx (Day 2) <input type="checkbox"/> Bleeding and Feeling Very tired <input type="checkbox"/> Pain <input type="checkbox"/> GI Symptoms: Nausea/Vomiting/Diarrhea/Constipation <input type="checkbox"/> Fertility <input type="checkbox"/> Hair Loss <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Side effect sheets from APHON specific to the Chemotherapy the patient received 					
Oncology: Resources/Accessing Care (Day 3) <input type="checkbox"/> When to call for help <input type="checkbox"/> Who to call for help (Oncology team vs 911) <input type="checkbox"/> Fever >100.4 <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Handout 					
Oncology: Wound Care/CNS (Day 3) <input type="checkbox"/> Wound care <ul style="list-style-type: none"> o If patient has a wound, care is taught to parents with return demonstration <input type="checkbox"/> CNS tumor patients care <ul style="list-style-type: none"> o Know symptoms of increased cranial pressure o Know symptoms of shunt malfunction (if patient has a shunt) o Seizure precautions 					

Nurse Practitioner Signature _____ Date _____

Nurse Practitioner Signature _____ Date _____

Appendix J

Updated Education Resource for Nurse Practitioner for Children Newly Diagnosed with Cancer

Nurse Practitioner Education Reference Checklist for Parents of Children Newly Diagnosed with Cancer
Oncology: Diagnosis (Day 1 or 2) <ul style="list-style-type: none"> <input type="checkbox"/> Met with provider regarding diagnosis and general treatment plan <input type="checkbox"/> Interdisciplinary team involved (social worker to screen for immediate needs) <input type="checkbox"/> Parents know how to convey diagnosis in emergency
Oncology: Roadmap Review (Day 1 or 2) <ul style="list-style-type: none"> <input type="checkbox"/> "How to Read Roadmap" Teaching <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Roadmap
Oncology: Chemotherapy and Side Effect Management with Medications Rx (Prior to day of discharge) <ul style="list-style-type: none"> <input type="checkbox"/> Bleeding and Feeling Very tired <input type="checkbox"/> Pain <input type="checkbox"/> GI Symptoms: Nausea/Vomiting/Diarrhea/Constipation <input type="checkbox"/> Fertility <input type="checkbox"/> Hair Loss <input type="checkbox"/> Give & Review <ul style="list-style-type: none"> o Side effect sheets from APHON specific to the Chemotherapy the patient received
Oncology: Resources/Accessing Care (Day of Discharge) <ul style="list-style-type: none"> <input type="checkbox"/> Fever >100.4
Oncology: Wound Care/CNS <ul style="list-style-type: none"> <input type="checkbox"/> Wound care <ul style="list-style-type: none"> o If patient has a wound, care is taught to parents with return demonstration <input type="checkbox"/> CNS tumor patients care <ul style="list-style-type: none"> o Know symptoms of increased cranial pressure o Know symptoms of shunt malfunction (if patient has a shunt) o Seizure precautions

References

- Duffy, E. A., Herriage, T., Ranney, L., & Tena, N. (2021). Implementing and Evaluating a Standardized New Diagnosis Education Checklist: A Report From the Children's Oncology Group. *Journal of Pediatric Oncology Nursing*. <https://doi.org/10.1177/10434542211011059>

Appendix K

Electronic Health Record Generated Phrase

{NursePractitionerNames:33715} met with {EducationPerson:33718:."Mother"} for the education session on day ***. {EducationPerson:33718:."Mother"} understand {Choose language(s) used:31588:."English"} and this Nurse Practitioner is fluent in {language:31032}. Education and education materials were provided in {Choose language(s) used:31588:."English"}. No barriers for learning noted at this time. {EducationPerson:33718:."Mother"} {WAS/WAS NOT:2100118327:."was not"} receptive to learning throughout the education session.

This Nurse Practitioner reviewed with {EducationPerson:33718:."Mother"}: Induction Roadmap {Roadmap:33720}, chemotherapy side effects and management which include but are not limited to: Fever, Bleeding and Feeling Very tired, Pain, Nausea, Vomiting, Diarrhea, Constipation, Fertility, and Hair Loss. Materials provided during the education session: provider cards, a copy of induction roadmap, chemotherapy side effect sheet, APHON Chemotherapy Fact Sheets for {Chemotherapy:33721}.

{NursePractitionerNames:33715} met with {EducationPerson:33718:."Mother"} for the education session on day ***. Materials provided include a resources handout. The Nurse Practitioner reviewed signs & symptoms of when to call MD and who to call for help including the oncology team versus emergency services. |

***Wound care was discussed with {EducationPerson:33718:."Mother"}.

***Central nervous system tumor care was discussed with {EducationPerson:33718:."Mother"} which included symptoms of increased cranial pressure and symptoms of shunt malfunction.

{EducationPerson:33718:."Mother"} showed interest in learning, verbalized understanding, and asked appropriate questions throughout the session. Education completed with {EducationPerson:33718:."Mother"}

Appendix L

Updated Electronic Health Record Generated Phrase

{NursePractitionerNames:33715} met with {EducationPerson:33718:."Mother"} for the education session on day ***. {EducationPerson:33718:."Mother"} understand {Choose language(s) used:31588:."English"} and this Nurse Practitioner is fluent in {language:31032}. Education and education materials were provided in {Choose language(s) used:31588:."English"}. No barriers for learning noted at this time. {EducationPerson:33718:."Mother"} {WAS/WAS NOT:2100118327:."was not"} receptive to learning throughout the education session.

This Nurse Practitioner reviewed with {EducationPerson:33718:."Mother"}: Induction Roadmap {Roadmap:33720}, chemotherapy side effects and management which include but are not limited to: Fever, Bleeding and Feeling Very tired, Pain, Nausea, Vomiting, Diarrhea, Constipation, Fertility, and Hair Loss. Materials provided during the education session: provider cards, a copy of induction roadmap, chemotherapy side effect sheet, APHON Chemotherapy Fact Sheets for {Chemotherapy:33721}.

{NursePractitionerNames:33715} met with {EducationPerson:33718:."Mother"} for the education session on day ***. Materials provided include a resources handout. The Nurse Practitioner reviewed signs & symptoms of when to call MD and who to call for help including the oncology team versus emergency services.

***Wound care was discussed with {EducationPerson:33718:."Mother"}.

***Central nervous system tumor care was discussed with {EducationPerson:33718:."Mother"} which included symptoms of increased cranial pressure and symptoms of shunt malfunction.

{EducationPerson:33718:."Mother"} showed interest in learning, verbalized understanding, and asked appropriate questions throughout the session. Education completed with {EducationPerson:33718:."Mother"}.

Appendix M

Primary, Secondary, and Tertiary Topics

Primary Topic Checklist

- Meeting with physician team for diagnosis and treatment plan
- Meeting with social worker to screen for immediate psychosocial needs
- Diagnosis (parents know how to convey this in an emergency)
- When to call for help, Who to call for help
- Fever, Temperature-taking
- Handwashing, Preventing infection
- Treatment side effects to know before next appointment
- Home medication: Names and purpose
- Home medication: Dose and frequency
- Home medication: Administration
- Home medication: Storage
- Home medication: Prescriptions are filled or plan in place to fill them
- Home care company (contact information and supplies)
- Chemotherapy safe-handling/item disposal
- Follow-up appointments
- For patients with external central line, Emergency care of central line, Demonstration of central line flush
- For CNS tumor patients, Symptoms of increased intracranial pressure, shunt malfunction, headache, Seizures
- If applicable: Postop/wound care

- Pain/pain management, Topical anesthesia for port

Secondary Topic Checklist Topic

- What is cancer?
- Chemotherapy overview
- Introduction to emergency department
- Introduction to outpatient nurse and/or clinic tour
- Effects of cancer treatment on the bone marrow
- Effects of cancer treatment on the digestive system
- Other side effects
- Varicella exposure
- Nutrition
- Bathing and swimming precautions
- Environmental precautions
- Activity restrictions
- No rectal medications or exams
- Home medication: Side effects
- For patients with external central line: Care of central line dressing, Demonstration of cap change

Tertiary Topic Checklist

- Topic Tests and procedures
- Vaccinations
- Websites for cancer related information
- Sexual activity including precautions for pregnancy and sexually transmitted infections

- Risky behaviors (ie, smoking, alcohol consumption, tattoos, piercing)
- Introduction to child life specialist
- Talking with child and siblings about cancer
- Coping skills
- Work and school absences
- Insurance issues
- Financial resources
- Including cancer organization referrals