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The Watcher Program: A Quality Improvement Project to Detect Deterioration Among

Pediatric Hematology/Oncology Patients

Abstract

This evidence-based practice quality improvement project investigates implementing and evaluating an early warning program (i.e., the Watcher Program) for pediatric hematology/oncology patients. The project was implemented at a pediatric inpatient hematology/oncology unit over four months. The following outcomes were reviewed: the algorithm appropriately identified a Watcher patient, interventions improved the patient's outcome, and the patient did not require transfer to the pediatric intensive care unit (PICU). Data showcased deteriorating patients were identified sooner and an increase in communication between care team members has occurred. Patients remained on the unit longer without requiring a rapid response call or a PICU transfer. Thus, the Watcher Program aided in bridging the gap in communication between clinicians and increase the quality of care.

Keywords: Situational awareness, pediatric oncology, pediatric hematology, PEWS, early warning system

The Watcher Program: A Quality Improvement Project to Detect Deterioration Among

Pediatric Hematology/Oncology Patients

Pediatric hematology/oncology patients ages 1 to 21 years old, can be a fragile patient population to treat when inpatient in a hospital setting. Acuity levels can change rapidly. Unfortunately, the deterioration can affect their well-being if it is not recognized quickly by clinicians. It is estimated that 40% of pediatric oncology patients will require care in the pediatric intensive care unit (PICU) during their course of treatment due to complications (Cardenas-Aguirre et al., 2022). To moderate transfers to the PICU and rapid response calls for assistance, programs can be created to improve clinical awareness for patients.

Situational awareness can benefit the bedside nurse when performing patient assessments. Situational awareness is defined as perceiving the elements in the environment at a given time and interpreting the situation to predict the future status of the patient (Fore & Sculli, 2013). Nurses and physicians at Children's Healthcare of Atlanta (CHOA) pediatric oncology inpatient unit, have identified an increase in rapid response calls and unsafe PICU transfers in this patient population. They have emphasized a desire to implement a Watcher Program. This quality improvement (QI) project was created encompassing situational awareness in combination with a clinical scoring tool. It assessed the project's effectiveness, the number of transfers to the PICU, and when the patient was first identified with signs of deterioration.

Background

When a pediatric hematology/oncology patient is admitted into the hospital setting, their stay can either be a direct admission for chemotherapy, sickle cell crises, or complications that arise from treatment. The Pediatric Early Warning Score (PEWS) is an evidence-based tool created for inpatient pediatric patients to aid in conducting an assessment that could indicate a

need for immediate intervention prior to requesting the rapid response team (RRT) (Penney et al., 2021). The categories in the PEWS tool include behavioral, cardiovascular, and respiratory systems identified in the patient (Penney et al., 2021). These categories can each score from a zero to a three. Any PEWS that is higher than a three, flags the nurse to assess the patient for a potential intervention (Penney et al., 2021). The PEWS tool has shown to aid in performing timely interventions and improving patient safety and outcomes (Penney et al., 2021).

The PEWS tool has been implemented worldwide in pediatric inpatient institutions and pediatric oncology clinicians heavily utilize this tool. Through risk factor identification, it can assist with identifying need for intervention (Agulnik et al., 2018). Although the goal is to minimize PICU transfers, it can be inevitable in this population as the patients can become acutely ill due to complications from their treatment. Unfortunately, changing patient dynamics may lead to a PICU transfer. However, PICU transfers can be chaotic or the PICU may lack bed spaces at that time leading to delays in care. The implementation of the PEWS tool in the pediatric oncology population has been helpful to escalate and standardize patient care to improve safety (Agulnik et al., 2018). An opportunity exists to impact the use of the RRT and subsequent admissions to the PICU. It is estimated 9,910 children under the age of 15 in the United States will be diagnosed with childhood cancer in 2023 (American Cancer Society, 2023). This is a large population that may require rapid responses or transfers to the PICU throughout their course of treatment.

Although the PEWS tool has standardized care for nurses and physicians to identify clinical changes in a patient, the tool can be further be utilized in combination with the Watcher Program to identify changes sooner. Nurses manage patient care around the clock compared to the providers. Thus, the provider may not notice a change in clinical picture as rapidly as the

nurse. The Watcher Program could bridge the gap in communication between clinicians and prevent delays of care to prevent further deterioration. Currently, a similar Watcher Program is utilized in a pediatric inpatient setting. Emergent transfers decreased by more than 70% through enhancing a sense of accountability and collaboration through situational awareness (Evans et al., 2021). This is a significant impact to prevent unsafe transfers to the PICU and improving patient outcomes. However, further research and similar implementations are needed to showcase the program can be used across all pediatric inpatient units including pediatric hematology/oncology.

Significance

Cancer is one of the leading causes of death amongst children and adolescents. The significance of death is high as pediatric cancer is the second leading cause of death in children ages 1-14 (American Cancer Society, 2023). Although the survival rate is improving, children with cancer experience various side effects or comorbidities during treatment. Comorbidities can include sepsis, organ dysfunction, and organ support needing earlier recognition and intervention (Cawood et al., 2021). These comorbidities can further influence the mortality rate. Cautious monitoring of children during cancer treatment is critical. Thus, it is imperative to create a strategy for early intervention.

In the pediatric hematology patient population, patients with sickle cell disease deal with a chronic illness which may require intermediate care from complications. Complications can include pain crises, bone necrosis, osteomyelitis, severe anemia, acute chest syndrome (ACS), pneumonia, pulmonary embolisms, pulmonary hypertension, stroke, and acute kidney injury (Ettinger et al., 2023). These complications may require critical care interventions and may

present acutely. Again, early recognition is crucial as some of these complications may require a transfer to the PICU.

An admission to the PICU may be perceived as a setback for some patients and families. A sense of loss of control occurs as intense intervention is needed. Patients and families experience barriers in the PICU such as communication, exposure to environmental stressors, and challenges in continuity of care (Leimanis & Zuiderveen, 2018). Reducing the chances of being transferred to the PICU is important to consider as it is a stressor for patients and families. This may extend the patient's stay and create uncertainty. Therefore, the Watcher Program is essential as it may assist in preventing unwanted PICU transfers and prevent additional stressors on the patients and families.

Literature Review

The scientific literature demonstrates the need to monitor pediatric hematology/oncology patients diligently. Currently there is limited evidence as that a Watcher Program, or similar programs utilize a nurse's situational awareness along with the PEWS tool in pediatric oncology patients. However, literature only records hospital protocols utilizing the PEWS scoring tool and RRT, to identify declining patients and subsequent interventions. The purpose of this review is to help identify if PEWS and RRT have been effective in impacting PICU transfers and patient outcomes in the pediatric hematology/oncology population.

A literature review was conducted through the following databases PubMed, Embase, and Cochrane. The keywords and/or MeSH terms used include "Pediatric oncology", "Pediatric hematology", "PICU", "rapid response team", "PEWS", "early warning system", "situational awareness". Limitations in literature included publication dates to 10 years (between the years 2013-2023). Inclusion criteria were pediatric hematology/oncology patients ages 1-18 years

currently admitted in the hospital setting. Exclusion criteria included non-pediatric hematology/oncology patients who are critically ill and individuals who were directly admitted into the PICU. The PEWS tool is currently implemented for all pediatric patients, so it is important to distinguish in the literature which populations were studied. In addition, individuals directly admitted into the PICU are not candidates for review as there were no prior assessments conducted by the pediatric hematology/oncology nurses and/or the care team.

More than 130 articles resulted from the search terms that were utilized. Search terms included (Hematology [Title]) AND (Oncology[Title] OR cancer[Title] OR neoplasm[Title]) AND (pediatric*[Title] OR child*[Title] OR adolescent*[Title]) AND ("Watcher Program*"[Title] OR "situational awareness"[Title] OR "situation awareness"[Title] OR PEWS[Title] OR "early warning*"[Title] OR "rapid response"[Title]). 14 articles were reviewed through the John Hopkins Nursing Evidence-Based Practice model. 5 Level I articles, 1 Level II article, 3 Level III article, and 5 Level V articles were identified. The levels of evidence indicate the strength of study, and the research/non-research showcased. Three common themes were found between the 14 articles. Themes included identifying risk factors associated with adverse outcomes, implementing the PEWS tool, and the improvement in communication across the care team.

Identifying Risk Factors Associated with Adverse Outcomes

Several recent studies identified risk factors which may contribute towards unfavorable outcomes in pediatric hematology/oncology patients (Cardenas-Aguirre et al., 2022; Cawood et al., 2021; Ettinger et al., 2023; Gershkovich et al., 2019; Leimanis et al, 2018; and Tran et al., 2022). Unfavorable outcomes may include unplanned PICU admissions/transfers or prolonged treatment courses. A common theme throughout the articles showed the lack of resources and

surveillance currently implemented in hospitals leading to adverse events. Cardenas-Aguirre et al. (2022) and Cawood et al. (2021) discussed how the lack of resources or set protocols can provided a major setback in the pediatric oncology patient population. The mortality risk is higher in pediatric oncology patients compared to other critically ill children in the hospital setting. Developing a system to aid in managing this population is critical to improve early identification strategies for potential deterioration. Cardenas-Aguirre et al. (2022) completed a retrospective review of all the pediatric oncology patients admitted into the PICU evaluating interventions and length of stay. These results demonstrate a need for a structured program to be implemented in hospitals to improve communication and moderate the number of unplanned PICU transfers. Cawood et al. (2021) identified the increased risk for mortality from sepsis, organ dysfunction, and need for organ support. Earlier recognition is key to prevent sepsis and organ dysfunction. Utilizing the PEWS tool and bridging the gap in communication would aid in identifying signs of deterioration and improve outcomes. Through a 10-year retrospective review, the study found the mortality rate to be higher in pediatric oncology patients at 18.8% compared to all patients at 10.5% (Cawood et al., 2021). This indicates a need for additional monitoring in the pediatric oncology population to aid in identifying early warning signs of deterioration.

Ettinger et al. (2023), Hanafy et al. (2020) and Gershkovich et al. (2019) studied admission data on hematology patients in the PICU. Gershkovich et al. (2019) identified patients with hematologic malignancies are at a higher risk of deterioration and death. They further analyzed if rapid response systems (RRS) are useful in this patient population and what the in-hospital mortality rate was. The study found that with RRS, the mortality rate increased after RRS was activated (Gershovich et al., 2019). This shows the need for increased monitoring in

this patient population as the delays in communication may have caused the higher mortality rate due to the delay in care. Ettinger et al. (2023) focused on patients with sickle cell disease from the hematology population. The retrospective review showed the mortality rate with admission to the PICU was 1.8% (Ettinger et al., 2023). Although low, these patients were found to be at a high risk for stroke or needing invasive respiratory support if presenting with acute chest syndrome (Ettinger et al., 2023). Hanafy et al. (2020) completed a retrospective review on sickle cell disease patients as well from the hematology population. This study was conducted in the Kingdom of Saudi Arabia and reviewed admissions to the PICU over a 6-year timeline. Most admissions to the PICU were due to acute chest syndrome (30%) and cerebrovascular accidents (18.2%) (Hanafy et al., 2020). In addition, patients were admitted to the PICU for stroke precautions and blood transfusions (Hanafy et al., 2020). The mortality rate in this study for the sickle cell disease patients in the PICU was low at 3.4% (Hanafy et al., 2020). Overall, these complications can increase the mortality rate underscoring the need to identify the risk of complications sooner.

Leimanis et al. (2018) and Tran et al. (2022) identified psychosocial and social determinants of health (SDoH) factors that affected the patient contributing to increased mortality risk. Tran et al. (2022) conducted a systematic review identifying SDoH factors that may be risk factors contributing to the survival of pediatric cancer patients. 25 studies were reviewed, and it revealed poverty and insurance factors were associated with survival (Tran et al., 2022). A transfer to the PICU or increased length of stay due to complications could potentially impact a patient from an economic standpoint. Leimanis et al. (2018) completed a qualitative study analyzing pediatric oncology patients and families experiencing barriers in the PICU. Findings showed a need for communication involving the care team and the patient/family

to reduce psychosocial issues from arising (Leimanis et al., 2018). Having an additional monitoring program with communication between patients, family, and the care team would be valuable towards preventing psychosocial issues. Both studies showed the importance of identifying risk factors associated with SDoH and communication that could further complicate patient care and outcomes.

Implementing the PEWS Tool

Studies highlighting outcomes and improvement through PEWS implementation include Agulnik et al. (2017), Agulnik et al. (2018), and Soeteman et al. (2023). The goal of PEWS is to aid in identifying signs of clinical change sooner, which has been found throughout the a forementioned studies. Agulnik et al. (2017) completed a retrospective case control study to examine the correlation between unplanned PICU transfers and PEWS scoring. Results showed PEWS scores increased 24 hours prior to an unplanned transfer with a *p* value of .0006, which aided in identifying organ dysfunction and septic shock sooner (Agulnik et al., 2017). Additionally, Agulnik et al. (2018), conducted a quantitative study to evaluate the PEWS tool and escalation algorithm before and after implementation in a pediatric oncology unit. Results showed the implementation of the PEWS tool led to an increase in RRT activations from 1.3 to 12.2/1,000-inpatient days without an increase in code blue activation or unplanned PICU transfers (Agulnik et al., 2018). Due to identifying a need for RRT through the PEWS tool, unplanned transfers through RRT intervention increased transfers from 11.5% to 60.5% (Agulnik et al., 2018). These results indicated PEWS has increased monitoring in this patient population and demonstrated the importance of recognizing early warning signs.

Soeteman et al. (2023) conducted a prospective cohort study in a Netherlands pediatric oncology ward, evaluating BedsidePEWS that is used in their hospital to prevent clinical

deterioration. The study demonstrated the PEWS tool as a strong prognostic factor for a PICU

transfer and identified clinical deterioration sooner. The BedsidePEWS score helped identify the

need for escalation of care from 1.4% to 99.9% (Soeteman et al., 2023). The PEWS tool

implemented in this hospital was shown to be effective and significantly changed the ways of

communication in their institution. Overall, the PEWS tool is used worldwide to critically

analyze a patient's clinical status and provide emergent care as needed.

Improvement in Communication

The following studies, Penney et al. (2021), Mirochnick et al. (2022), Gillipelli et al.

(2023), and Evans et al. (2021), identified change in communication through implementation of

the PEWS tool aiding in identifying early signs of deterioration. Penney et al. (2021) conducted a

quality improvement program utilizing the Plan-do-study-act (PDSA) model. After

implementing the PEWS tool, Likert scale surveys showed a significant decrease in the

percentage of unnecessary RRT activations from 33% to 3.5% with improved nursing/physician

communication (Penney et al., 2021). Collaboration and communication have been shown to

prevent further deterioration when discussing earlier interventions with the PEWS tool.

Mirochnick et al. (2023) conducted a case study reviewing 71 semi-structured interviews with

the care team in a pediatric oncology patient center. Results showed clinicians and nurses felt

more knowledgeable about the patient's care with the PEWS tool and believed the tool would

reduce morbidity/mortality in their patients (Mirochnick et al. 2023). The PEWS tool creates a

feedback loop for the care team based on interventions applied.

Gillipelli et al. (2023) conducted a qualitative study with semi-structures interviews in the

PICU setting with the pediatric oncology patients' parents. Results showed there was

improvement in communication when utilizing the PEWS tool and it allowed for relationship-

building between the care team and families (Gillipelli et al., 2023). Parents know their child's

normative states and may be able to recognize their child's deterioration sooner. Thus,

recognizing patient changes may come easily for the parent consistently at the bedside. In

addition, nurses may poorly explain to parents how patients as assessed and what warrants more

thorough examination. Discussing the PEWS tool and scoring with parents ensures more

vigilance for everyone involved in the patient's care.

Evans et al. (2021) evaluated the PEWS tool and an existing situational awareness

framework in pediatric patients. This was one of the only studies found to examine the pediatric

hematology/oncology population and recognize the need for early recognition to prevent further

clinical deterioration. Results showed more than 70% of PICU transfers were decreased and

nurses felt empowered to state their concerns about their patient, even without an impending sign

of deterioration (Evans et al., 2021). This shows the need for the nurse's situational awareness

skills to be incorporated with the PEWS tool when evaluating the patient's clinical status.

Practice Implications

The literature review revealed the PEWS tool can impact patient care by providing

guidance for the care team when a patient requires intervention. Expedient intervention may

impact the patient's outcome. It has impacted the quality of care and created communication for

all members of the care team. The PEWS tool identified impending deterioration, allowing

bedside nurses to communicate effectively with providers. In the Mirochnick et al. (2023) case

study, providers stated they felt more knowledgeable, confident, and empowered.

In healthcare organizations and communities where resources are limited, the PEWS tool

is beneficial towards improving patient outcomes and quality of care. The addition of the

Watcher Program would allow the care team to follow a consistent protocol. The PEWS tool and

the Watcher Program are cost-effective and easy to apply in the hospital setting. Both can be easily implemented during staff meetings or through a training module. Although the PEWS tool has created more communication between the care team, implementing the Watcher Program can further impact communication between the nurses and the rest of the care team including staff in the PICU. The Evans et al. (2021) study is one of the first to use a situational awareness framework in addition to the PEWS tool. This would further aid in identifying alarming signs sooner in the patient and plan smoother transfers to the PICU. This is the impetus for the Watcher Program

Future Research Suggestions

Evaluating previous studies can offer further research opportunities to build the body of scientific literature. The main limitation from this review, is the dearth of literature on projects like the Watcher Program. In addition, the 14 articles reviewed showed a lack of representation of ethnic minority individuals in the samples. Sample sizes are already small as transfers to the PICU or initiating rapid responses do not occur daily on the pediatric hematology/oncology units. In addition, there is a lack of diversity in the patient population as some cancers may be more common than others. Results may have been affected if certain diagnoses have a higher tendency for risk of complications. Lastly, resource limited hospitals like the Cardenas et al. (2022) study, may be biased towards higher tendencies for poor patient outcomes.

Overall, literature has shown the PEWS tool to be effective towards improving patient outcomes. However, the PEWS tool has been studied as a tool alone versus being implemented along with a Watcher Program. Literature is limited regarding the need for additional monitoring utilizing situational awareness skills and the PEWS tool together. Pediatric hematology/oncology patients require frequent interventions as they can rapidly deteriorate. Implementing the Watcher

Program would further bridge the gap in communication between the pediatric

hematology/oncology unit, PICU unit, and care team members. Further studies of a Watcher

Program utilized by pediatric hematology/oncology nurses is needed.

Theoretical Framework

The theoretical model selected to assist in disseminating this QI project was the Change

Theory of Nursing by Kurt Lewin (Petiprin, 2020). There are three stages to the Change Theory

of Nursing, which includes unfreezing, change, and refreezing. Unfreezing involves identifying a

need for a new model and letting go of an old pattern that may be counterproductive (Petiprin,

2020). In this case, the PEWS tool was utilized; however, it was identified that there is a need of

increased monitoring for these patient populations. The next stage is the change stage that

involves changes in thoughts, feelings, and or behavior (Petiprin, 2020). This involved the

proposal of the Watcher Program to the stakeholders and presenting how it can be coupled with

the PEWS tool concurrently to aid in managing the patient's care. Lastly, the refreezing stage is

establishing the new intervention that is to become the standard operating procedure (Petiprin,

2020). This was implementing the Watcher Program at CHOA's Scottish Rite campus. Appendix

A, Figure 1 visualizes the Change Theory of Nursing model applied to the QI project.

Methods

The purpose of this evidence-based practice QI project was to investigate implementing

the Watcher Program for detecting deteriorating pediatric hematology/oncology patients and

understand its impact on patient outcomes. This QI project answered the question of whether

implementing the Watcher Program will aid in recognizing clinical signs of change prior to

symptoms worsening. Therefore, this led to the creation of the PICO question, "In pediatric

hematology/oncology patients ages 1-21, how does implementing a Watcher Program impact

further deterioration and patient outcomes compared to current practice?" Thus, the aim of this QI project was to implement a Watcher Program to increase monitoring in the pediatric hematology/oncology patient population. Project objectives included appropriately identifying a Watcher patient, interventions provided improved the patient's outcome, decrease in the number of unsafe PICU transfers, patient was able to remain on the unit, and increase the confidence in the nurses situational awareness.

Participants and Setting

Between April 2024 and July 2024, all patients with an oncological/hematological disorder aged 1-21 receiving care at CHOA Scottish Rite Aflac Hematology/Oncology inpatient unit were eligible to be a Watcher patient. This study was conducted in Atlanta, Georgia at the CHOA Scottish Rite Hospital Aflac Cancer and Blood Disorders Center's Hematology/Oncology inpatient unit. This unit collaborates with the Winship Cancer Institute of Emory University and the Children's Oncology Group (COG). They provide comprehensive interdisciplinary care for all cancers and blood disorders. The most common disorders include leukemia, lymphoma, thrombosis, osteosarcoma, Wilms tumor, thalassemia, anemias, and sickle cell disease. The Aflac Cancer and Blood Disorders Center sees over 8,900 patients yearly and is one of the largest pediatric hematology and oncology services in the country. At the Scottish Rite location, chemotherapy administration, monoclonal antibody therapy, apheresis, blood product administration, central line maintenance and end of life care are provided.

The stakeholders of the unit include the pediatric hematology/oncology unit director, nursing managers, providers, and nurses. In addition, the PICU's providers and nurses will be involved in the implementation of the Watcher Program. Clinical partner, Dr. Margaret Gettis, from CHOA's Nursing Research and Evidence-based Practice department and Laura Bass,

Manager of Clinical Operations Aflac Cancer and Blood Disorders Center CHOA Scottish Rite, aided in overseeing the facilitation and implementation of the project.

Variables

When a patient was identified as a Watcher patient, the criteria triggering the Watcher status were the variables studied. The patient's age, gender, and diagnosis were the independent variables of the project. The dependent variables included the PEWS score, if the patient was transferred to the PICU, if a rapid response was called, and if the patient's Watcher status resolved. In addition, the pathway of identifying a Watcher patient was reliable and valid as it can be used for every pediatric hematology/oncology patient who met the criteria as shown in Appendix C, Figure 1.

Project Assumptions, Limitations, and Barriers

For this QI project, it can be assumed all pediatric hematology/oncology patients who were inpatient were present for treatment or symptom management ranging from the ages of 1-21. It can also be assumed that the nurses knew how to interpret the PEWS score and knew when to recognize if a patient is declining. The nurses and providers were all informed of the Watcher Program and participated if they recognized the patient should be considered a Watcher patient.

Limitations of this project included a small sample size that was analyzed in a four-month period. Additionally, this project did not focus on a specific pediatric hematological/oncological diagnosis. This potentially hindered the sample size on various diagnoses and may have affected the significance. Conducting the QI project over a four-month period was a time constraint, as the implementation and analysis needed to be completed in this timeline.

Potential barriers identified in this QI project was the lack of bed space. CHOA's Scottish Rite Hospital Aflac Hematology/Oncology inpatient unit has a total of 30 private rooms. When

the unit was full, patients were placed in various units across the hospital. These patients were

not able to participate in the QI project as the nurses taking care of these patients off the unit

were not a part of the Aflac care team. In addition, patients who required end of life care did not

participate in the study and further intervention was not necessary for this patient population.

Ethical Considerations

Prior to implementation, a proposal was submitted to the organization's Institutional

Review Board (IRB) and Emory University IRB for review. IRB determined the study was not a

research activity and was given a not-human research determination on March 26, 2024. All

members involved in the Watcher Program are to protect the patients' rights and privacy. This

includes pediatric hematology/oncology unit staff and PICU staff. All staff at CHOA are Health

Insurance Portability and Accountability Act (HIPPA) trained and are required to maintain

HIPPA compliance.

Design

The theoretical model applied towards this QI study was the Change Theory of Nursing

by Kurt Lewin (Petiprin, 2020). This framework was applied towards the nurses and care team at

CHOA's Scottish Rite Hospital Aflac Hematology/Oncology inpatient unit as shown in

Appendix A, Figure 1. The care team included physician providers and advanced practice

providers. The Watcher Program was proposed to the stakeholders and education on the program

was provided. A survey was collected from the nurses prior to the educational meeting on the

Watcher Program to gage their level of understanding of when a patient is deteriorating and their

level of comfort with communicating with providers. A post survey was conducted at the

completion of the study to assess the level of understanding of the Watcher Program and whether

it was effective in improving patient care.

Intervention

The Watcher Program was modeled after a QI initiative at Arkansas Children's Hospital (Evans et al., 2021). CHOA's Egleston Hospital Aflac Hematology/Oncology inpatient unit created a pilot model based on this initiative. This was then introduced to CHOA's Scottish Rite Hospital Aflac Hematology/Oncology inpatient unit and was adapted to accommodate the brain tumor patient population that is primarily seen at Scottish Rite. The project was conducted from April 15, 2024, and was completed on August 01, 2024. A timeline of the project is showcased in Appendix B, Table 1. The nurses and charge nurses of the unit were educated on the Watcher Program and pre /post data was collected. The providers of the unit were also educated about the Watcher Program and how it was to be implemented. An algorithm for identifying a Watcher patient was created and was adapted into an EPIC (electronic medical record) function for the nurses to utilize when documenting a Watcher patient. The criteria for the Watcher patient are shown in Appendix C, Figure 1. The criteria included the following: Pediatric Early Warning System (PEWS) score >= 5; >1 fluid bolus for fluid resuscitation within the last 12 hours; staff, patient, or family concerned about the patient's status; needing oxygen without improvement; critical hemodynamic/electrolyte imbalance requiring labs every 6 hours and frequent intervention; rapid response team in the last 8 hours without transferring to the Pediatric Intensive Care Unit (PICU); and transfer from the PICU to the floor or experienced a code blue in the last 24 hours. To accommodate the brain tumor patient population, altered mental status was added to the criteria.

The algorithm for management of a Watcher patient is shown in Appendix C, Figure 1. If a patient met Watcher criteria, the bedside nurse, charge nurse, or provider initiated a bedside Watcher huddle. All three members must be present within one hour of initiating the huddle. The

collaborative plan was then documented in EPIC. The plan included the concern, plan of action, person notified expected outcome, outcome deadline, and escalation plan. Once the patient achieved the expected outcome determined by the provider and within the expected timeframe set by the provider, the patient was no longer a Watcher patient and was cleared. Identified Watcher patients were mentioned daily during provider rounds, to aid communication between the charge nurses and providers. When a patient was identified as a Watcher patient, it was then recorded in the REDCap survey tool to aid in collecting data. No other resources or additional budgeting was needed for this study.

Measures and Analysis

The proposed evidence-based practice QI project utilized a quasi-experimental approach by collecting data from the electronic medical record and comparing data to the Egleston campus who also piloted the Watcher Program. Data was collected via REDCap, which is an online data collection tool (Vanderbilt, n.d.). The EPIC system is a secure online medical record tool, and REDCap is managed by the organization with access only provided to the project lead, clinical partner, and organization's nurse data analyst.

The following outcomes were reviewed: the algorithm appropriately identified a Watcher patient, the interventions improved the patient's outcome, the patient was able to stay on the unit, and the Watcher status was resolved. All data was analyzed from what was recorded into EPIC by the bedside nurses and disseminated into REDCap. Simple descriptive statistics were utilized for this study. The analysis focused on the quantitative and qualitative responses regarding using the Watcher Program.

Results

Over a four-month period, thirty-eight patients were identified as Watcher patients at CHOA Scottish Rite's campus. Approximately, 44.7% of the patients were over 11 years old and 52.6% of the patients were male. Majority of the hematology patients were patients with sickle cell disease and a majority of the oncology patients were patients with acute lymphoblastic leukemia as shown in Appendix D, Figure 4. On average, a patient was identified as a Watcher patient around four to seven days into admission as shown in Appendix D, Figure 5. The bedside nurse was first to primarily identify the patient requiring Watcher status.

When comparing the PEWS score prior to being identified as a Watcher patient, the second to last PEWS score was around zero to four. Right before being identified as a Watcher patient, the patients' PEWS score was around zero to four as well. On average, a patient was on Watcher status for less than 24 hours. Common interventions completed while on Watcher status included increased vital sign monitoring, blood administration, additional unscheduled labs, and the bedside nurse needing other staff member support. Approximately, 89.5% of the patients who were identified as a Watcher patient were able to remain on the unit for greater than 48 hours after being identified. Five of the patients still required the RRT to be called, however, only two of the patients identified required the RRT support within the first four hours of being identified. In addition, only three patients who were identified as Watcher were transferred to the PICU within 48 hours of being identified. From the 38 patients who were identified as a Watcher patient, two patients were deceased. However, both patients' Watcher statuses were discontinued prior to being changed to "do not resuscitate" status. These patients passed away weeks after the Watcher status was discontinued.

Findings in Comparison

CHOA's Egleston campus has a larger patient population seen for pediatric oncology/hematology disorders. When comparing data between the campuses, the Egleston campus had 41 patients identified as Watcher patients. Bone marrow transplant patients were not included as this patient population has a longer length of stay on average. The average age of a Watcher patient identified was greater than 11 years old, and majority of the patients were male. The most common diagnoses identified were acute lymphoblastic leukemia and acute myeloid leukemia as shown in Appendix D, Figure 6. The average length of admission prior to being identified as a Watcher patient was 24-72 hours as shown in Appendix D, Figure 7. The bedside nurse was the first to identify the patient as a Watcher patient. The PEWS score charted second to last being identified as a Watcher patient was zero to four. The last charted PEWS score before Watcher status was zero to four as well. On average, the patient was on Watcher status for 24-48 hours. Additional resources the patient required included blood administration, bolus administration, increased vital sign monitoring, additional unscheduled labs, staffed members clocking out late to take care of the patient or document on the patient, change in nurse-to-patient ratio, and the bedside nurse needed other staff member support. Approximately, 80.6% of patients were able to remain on the unit for greater than 48 hours after being identified as a Watcher patient. Out of the 41 patients identified, 12 patients required the RRT. Nine of these patients required the RRT within the first four hours of identifying the patient as a Watcher. Nine patients were also transferred to the PICU in less than 48 hours after being identified. One patient identified required three fluid boluses prior to being transferred. No patients were reported deceased.

Evaluation of Nursing Change

To evaluate the nursing staff's understanding of the Watcher Program, a pre and post survey was conducted. Appendix E, Table 1 showcases the major findings of the pre and post surveys regarding the nurses level of confidence. Appendix E, Table 2 showcases the nurses level of understanding. The pre-survey was disseminated after receiving education regarding the Watcher Program to grasp nurses' level of understanding prior to implementation. For the pre-survey, thirty-one nurses responded and 32% of the nurses have had six to ten years of nursing experience followed by 32% with less than a year to two years of experience. Six of the 30 nurses worked on both campuses (Egleston and Scottish Rite). A post-survey was conducted with the same questions as the pre-survey once data collection was completed. This survey was to see if the nurses' level of confidence increased with the initiation of the Watcher Program. Only fourteen nurses responded to the survey and primarily the nurses who have been practicing as a nurse for less than a year to two years responded.

Overall, the findings show that there is still a need in educating the staff regarding the Watcher Program. However, the nursing staff did understand the goal and what the Watcher huddle entails. In addition, it can be assumed the nursing staff's confidence did increase when compared to prior to implementation. However, there were less responses from the nursing staff and the less experienced nurses primarily participating in the survey, which can be associated with lower scores of confidences. To improve confidence in the staff, quarterly education can be provided to reinforce the goal of the Watcher Program.

Limitations

When reviewing the Watcher Program data, one nurse did not document the Watcher status correctly due to lack of education. The assistant nurse manager was informed, and the nurse was given follow up education. Additionally, the Egleston campus representative did not

properly input the data as there are 123 patients not recorded under a specific location. These patients were not included in the data review as the data recorded was not finalized by the Egleston campus representative. Nurses from both campuses received the same training, but there may be a variation in nursing culture. In addition, two units were included in the Egleston location for data collection, 6-west is a sister unit utilized for pediatric hematology/oncology patients overflow as well as other patients. It is reported that the nurses have a higher patient-to-nurse ratio, which suggests they may have less time dedicated for each patient under their care. Lastly, the two patients who were deceased were terminally ill were discontinued from Watcher status prior to being identified as "do not resuscitate".

Discussion

The Watcher Program encompasses communication through situational awareness and early warning scoring. This QI project has shown an increase in identifying a patient deteriorating sooner, communication between care team members, and confidence in the nursing staff. This has allowed patients to remain on the unit longer without requiring the RRT or a PICU transfer. When considering the social determinants of health, the Watcher Program can increase the quality of life in this patient population through preventing prolonged inpatient stays and prevent further complications from occurring in addition to the patient's primary diagnosis.

When comparing the results between the two campuses, the Egleston campus had more variation in results. However, the Egleston campus primarily sees patients for acute lymphoblastic leukemia, acute myeloid leukemia, and sickle cell disease. The Scottish Rite campus has a higher report of acute lymphoblastic leukemia patients, sickle cell disease, and brain tumor patients. The difference in identifying a Watcher patient sooner in terms of their length of admission may be due to the different treatment plans that may influence a patient to

have a change in clinical status. In addition, the PEWS score on average prior to the patient

being identified as a Watcher patient was zero to four. This can indicate that the nurse was able

to identify that the patient required an increase in intervention prior to the patient deteriorating as

the patient's score was predominantly low. On average, the patient was on Watcher status for

about 24-48 hours. The Scottish Rite campus primarily showed it was discontinued in less than

24 hours, which may indicate there was appropriate intervention or the patient was prematurely

removed from Watcher status. However, at the Scottish Rite campus, only three patients were

transferred to the PICU in less than 48 hours, and they were not associated with being

discontinued from Watcher statues too soon.

Based on the data collected, this program can be applied towards all pediatric patients,

not just the hematology/oncology population, to aid in preventing unwanted PICU transfers

and/or further deterioration from occurring when receiving inpatient care. In order for the

program to continue to be successful, reinforcement in education is necessary to ensure the

nurses continue to understand the objectives of the program and how to facilitate it. This was one

of the barriers identified as there was a range in nursing experience present on the unit and it may

have contributed to removing the patient off Watcher status too soon. Further research is still

warranted to see if situational awareness utilized concurrently with the PEWS tool, like the

Watcher Program, is effective.

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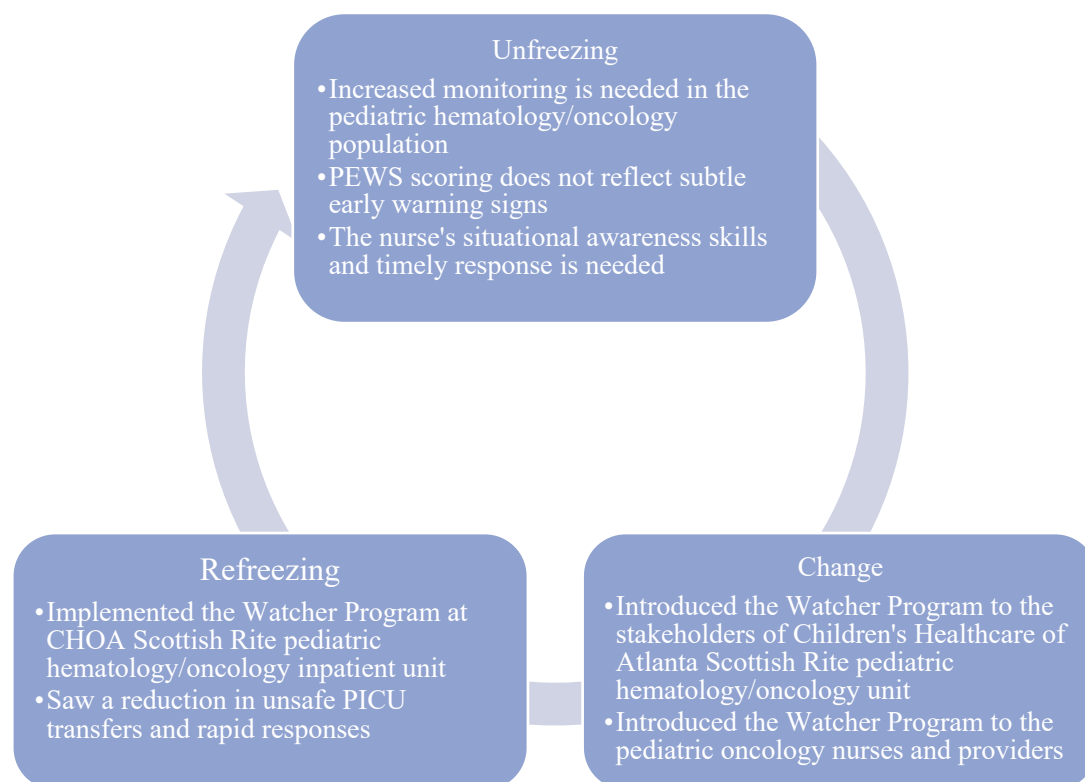
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Appendix A

Figure 1

Change Theory of Nursing Model

Note. This Change Theory of Nursing Model was applied to the Watcher Program that was

evaluated and implemented at CHOA Scottish Rite Pediatric Hematology/Oncology unit.

Appendix B

Table 1

Evaluating and Implementing the Watcher Program Timetable

	JAN 2024	FEB 2024	MAR 2024	APR 2024	MAY 2024	JUN 2024	JUL 2024	AUG 2024	SEP 2024	OCT 2024	NOV 2024	DEC 2024
Finalized study and plan to implement the study	X											
Inform the unit and educate about the Watcher Program	X											
Identify which staff will be participating in identifying Watcher patients	X											
Team leader finalizes the process workflow	X											
Team leader educates how to use the Watcher Program criteria		X	X									
Officially start the study and start collecting data				X								
Send monthly emails to staff during the study				X	X	X	X					
Data collection				X	X	X	X					
Gather the data and evaluate the study with comparison to the QI study previously completed by the organization								X	X			
Data analysis completed and complied a report									X	X		
Present the study to the organization											X	X

Appendix C

Figure 1

Watcher Patient Inclusion Criteria and Algorithm
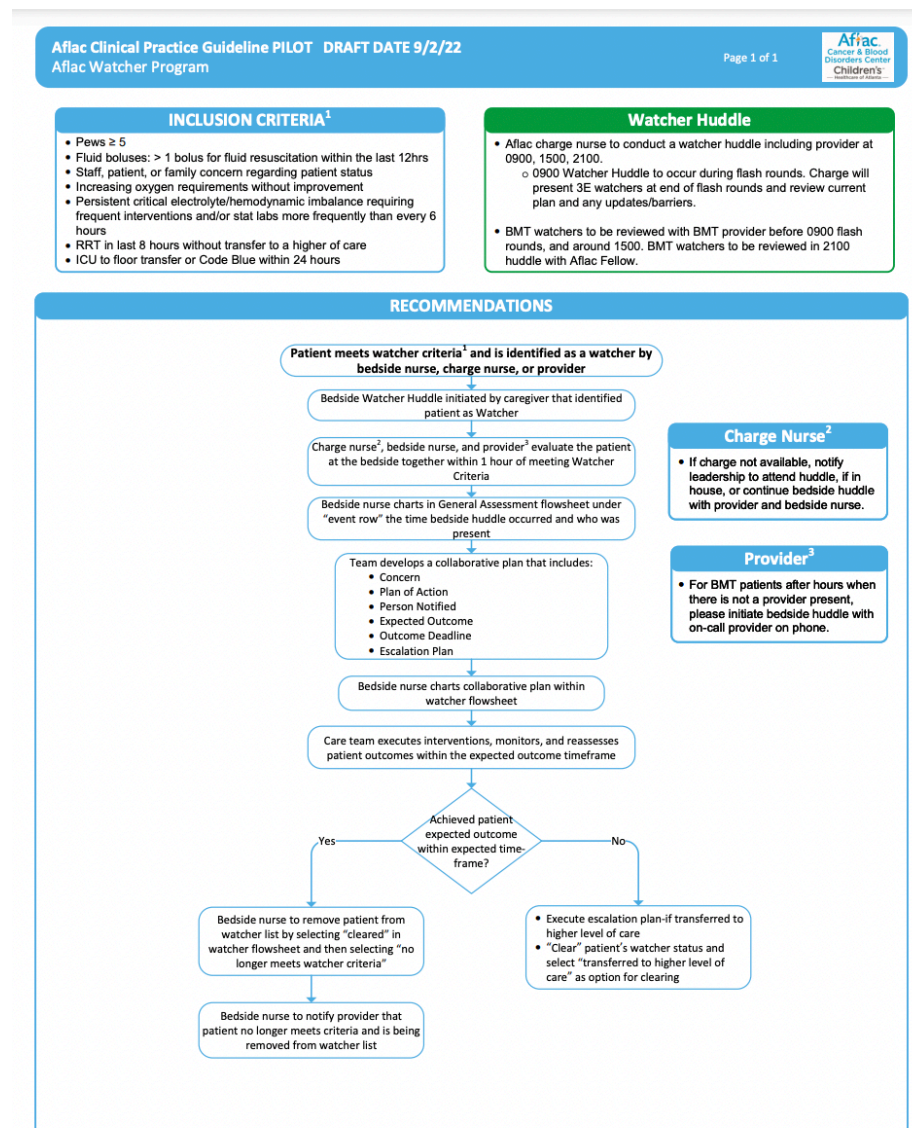
Note. The Watcher Program inclusion criteria, huddle, and algorithm is represented in this guideline. From: Aflac Cancer and Blood Disorders Center at Children's Healthcare of Atlanta. (2021). *Aflac clinical practice guideline PILOT.* Copyright 2018 by Children's Healthcare of Atlanta, Inc.
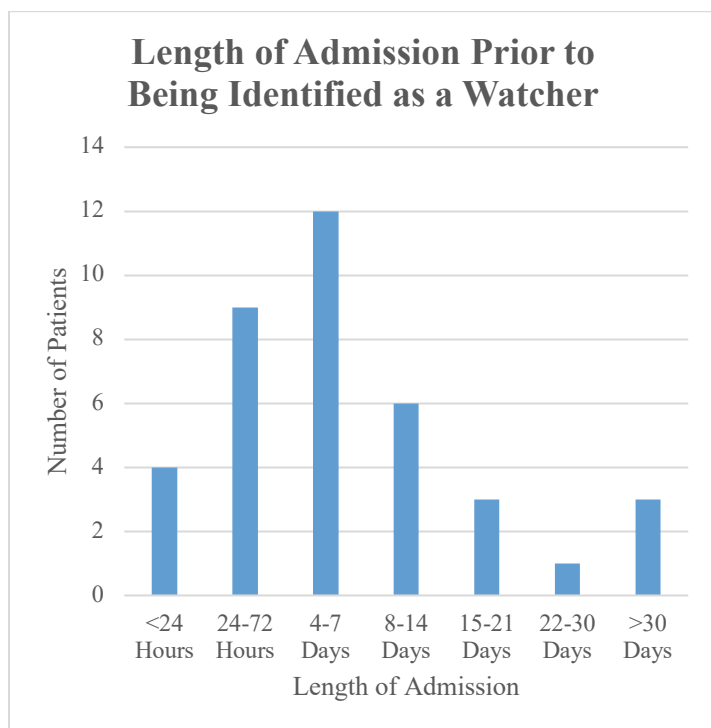
Appendix D

Figure 4

Most Common Patient Diagnoses at CHOA Scottish Rite
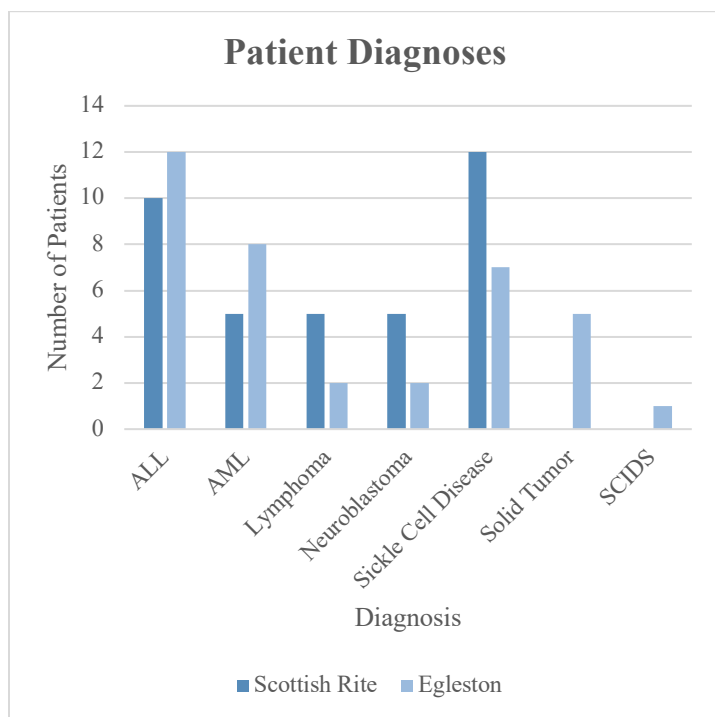
THE WATCHER PROGRAM
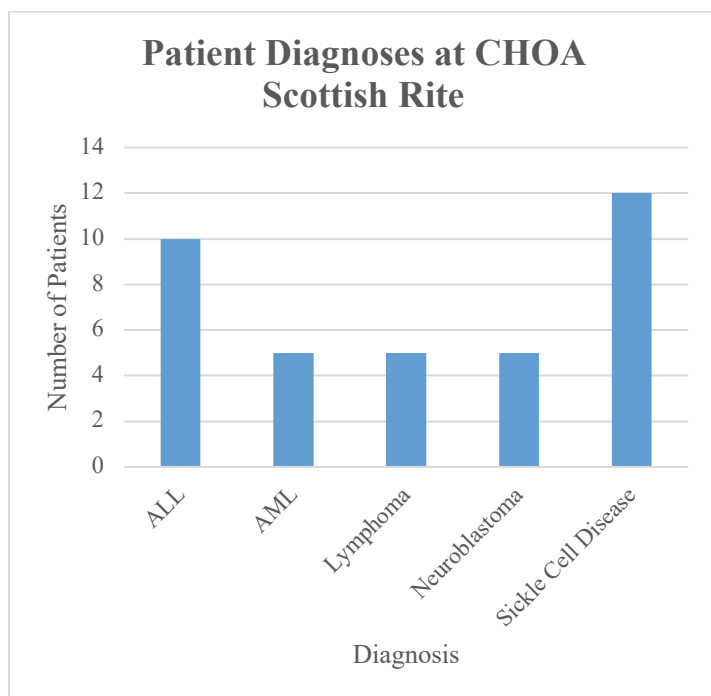
Figure 5

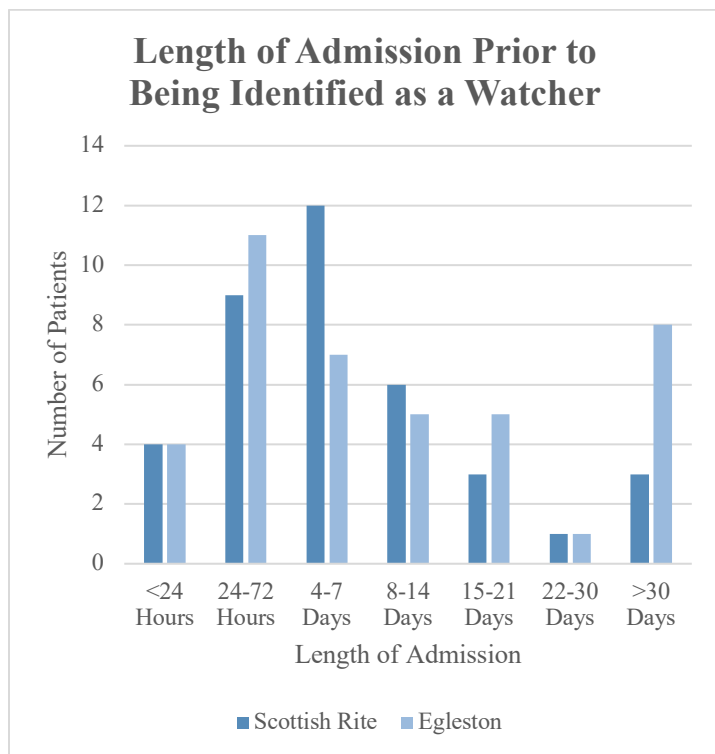*Length of Admission Prior to Being Identified as a Watcher Patient*

Figure 6

Common Patient Diagnoses Comparison Between Both Campuses

Figure 7

Average Length of Admission Prior to Being Identified as a Watcher Patient in Comparison

Between both Campuses

Appendix E

Table 1

Pre and Post Survey Results Evaluating Nurses Level of Confidence

	Number of Responses	Level of Confidence in Identifying a Deteriorating Patient	Level of Confidence Using PEWS	Level of Confidence with Communication
Pre-Survey	31 nurses	15 nurses felt very confident 5 nurses felt extremely confident	16 nurses felt very confident; 6 nurses felt extremely confident	14 felt very confident; 9 felt extremely confident
Post-Survey	14 nurses	3 nurses felt extremely confident 9 nurses felt very confident 2 nurses felt somewhat confident	7 nurses felt extremely confident 6 nurses felt very confident 1 nurse felt somewhat confident	6 nurses felt extremely confident 7 nurses felt very confident 1 somewhat confident

Table 2

Pre and Post Survey Results Evaluating Nurses Level of Understanding

	Pre- Survey	Post- Survey
Question	**(N=13)**	**(N=13)**
Correctly identified a "watcher" communicates to staff as "this patient has been identified in early stages of deteriorating"	15 nurses	7 nurses
Correctly identified a Watcher huddle is a "prompt gathering of the bedside nurse, charge nurse, and provider to determine the plan of care"	30 nurses	7 nurses
Correctly identified the plan: "concern and person notified", "plan of action, expected outcome and outcome deadline", and "escalation plan"	18 nurses	18 nurses
Correctly identified the goal of the Watcher Program is "communication, situational awareness and early recognition of a deteriorating patient"	31 nurses	13 nurses