

Fall 12-18-2015

Empowering Patients with Central Venous Catheters: Utilizing Evidence-Based Video-Assisted Education to Reduce Central Line-Associated Bloodstream Infections

Pritam C. Steiner

University of San Francisco, pritam.c.steiner@gmail.com

Follow this and additional works at: <https://repository.usfca.edu/capstone>



Part of the [Pediatric Nursing Commons](#)

Recommended Citation

Steiner, Pritam C., "Empowering Patients with Central Venous Catheters: Utilizing Evidence-Based Video-Assisted Education to Reduce Central Line-Associated Bloodstream Infections" (2015). *Master's Projects and Capstones*. 201.
<https://repository.usfca.edu/capstone/201>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Empowering Patients with Central Venous Catheters: Utilizing Evidence-Based Video-Assisted
Education to Reduce Central Line-Associated Bloodstream Infections

Pritam Christina Steiner, BSN, RN

Clinical Nurse Leader Prospectus

University of San Francisco

Fall 2015

Abstract

An evidence-based Central Venous Catheter (CVC) dressing change video was created to enhance patient independence, and to increase resource efficiency among nursing staff in an inpatient pediatric setting in which Central Line-Associated Bloodstream Infection (CLABSI) rates were rising. Pediatric oncology patients confer the highest risk of developing CLABSIs due to long-term CVC access, neutropenic effects of treatment regimens, and constant fluctuations between inpatient, outpatient clinic, and homecare settings. Use of video-assisted education is anticipated to standardize and improve patient care, decrease healthcare costs, and increase nurse productivity, and is widely supported by research. Qualitative data collection was conducted by surveying patients and nursing staff to identify the project's need, obtain baseline competency levels, and evaluate the effectiveness of the video upon implementation. 71% of nurses identified time as the greatest barrier to education. 94% of nurses selected videos as being a resource that could assist them in providing patient education. 100% of patients stated that the video enhanced their overall understanding of the CVC dressing change process. Significant increases in confidence levels of independently performing CVC dressing changes were shown in over 62% of the patients surveyed. Inpatient nurses are often the first to initiate patient education, and this video provides supplemental resources to facilitate CVC teaching, and overcome some of the primary barriers faced in the inpatient setting during patient education processes.

Keywords: Film-based Education, Video-Assisted Education, Pediatric Oncology, Central Venous Catheters, Central Line-Association Bloodstream Infections

Empowering Patients with Central Venous Catheters: Utilizing Evidence-Based Video-Assisted Education to Reduce Central Line-Associated Bloodstream Infections

The Clinical Nurse Leader (CNL) role focuses on providing direct patient care (the heart of nursing) in complex situations; and overseeing, coordinating, assessing and improving the delivery of evidence-based practice (EBP). The ability to combine the needs of patients, staff, and healthcare stakeholders by facilitating the lateral integration of care delivery enables the CNL to improve clinical processes, enhance healthcare delivery and outcomes, and meet the needs of a specific cohort of patients within a clinical microsystem. To serve as a leader in a collaborative setting to ensure that patients receive the best care possible and benefit from the latest innovations in care delivery is the driving force behind the CNL role, and is what stimulated the initiation of a Central Venous Catheter (CVC) patient education video within this particular microsystem.

Clinical Leadership Theme and Global Aim Statement

The CNL themes reflected by this CVC Education Project are Clinical Outcomes Manager, particularly as an Educator, and Team Care Environment Manager. Furthermore, there were two CNL competency areas that this project has required: 1) “Essential 2: Organizational and Systems Leadership, Competency 2: Assume a leadership role of an interprofessional healthcare team with a focus on the delivery of patient-centered care and the evaluation of quality and cost-effectiveness across the healthcare continuum” (AACN, 2013, p.10), and 2) “Essential 3: Quality Improvement and Safety, Competency 1: Use performance measures to assess and improve the delivery of EBP and promote outcomes that demonstrate delivery of higher-value care” (p. 12). In undertaking the task of creating a CVC dressing change video for patient education and staff training, a collaborative approach was taken to ensure that staff needs were met in order to

deliver quality care and education to patients. Performance measurement was utilized at various stages throughout this project by conducting microsystem analyses, carrying out multiple Plan-Do-Study-Act (PDSA) cycles, and obtaining support from key stakeholders involved in the project's implementation. Evidence-based guidelines were reviewed and incorporated into the project, as well as utilized for staff engagement and education. The role of the CNL as an educator was most integral to this project's success, as varying educational needs of both patients and staff needed to be addressed in order for the CVC dressing change video to enhance knowledge, skills, and attitudes.

The aim of this project was to improve and streamline the initiation of CVC dressing change procedures in the pediatric inpatient setting by implementing a CVC dressing change educational video. The process began with the lead team analyzing qualitative feedback obtained from staff and patients over the course of three months, and ended with EBP being implemented and staff-to-patient communication and education being enhanced. By working on this process, we expected decreased Central Line-Associated Bloodstream Infection (CLABSI) rates with resulting cost-effectiveness, increased patient satisfaction and comfort throughout their hospital stay and upon discharge, and enhanced staff morale through improving their skillset and knowledge of quality CVC care delivery and patient education. It was important to work on this because it would help lower the rates of life-threatening CLABSIs of our very vulnerable and prized pediatric population, and empower patients and their caregivers to care for their CVCs independently once discharged home.

Statement of the Problem

The nature of the project is based upon the high risk of CLABSIs this specific cohort of patients experiences, as well as the need expressed by this population for additional educational

materials in order to successfully and independently care for their CVCs upon discharge. Because pediatric oncology patients confer the highest risk of developing CLABSIs, and parents are responsible for caring for their child's CVC once discharged, it is imperative that educational tools are improved upon, standardized, and consistently implemented in the inpatient setting upon initial admission to ensure that teaching and comprehension is occurring and parents are confident in performing invasive CVC skills in the home care environment without the guidance of their healthcare providers.

The cost of treating CLABSIs is substantial, both in terms of morbidity and financial resources expended. To improve patient outcomes and to reduce healthcare costs, strategies must be implemented to lessen the incidence of CLABSIs. During the pre-assessment phase of the project, which consisted of one-on-one patient interviewing, the majority of parents expressed that CVC education was not provided early or regularly enough and was not standardized across the inpatient and outpatient settings. Many parents felt overwhelmed by the amount of information provided to them during initial hospital admission, and had low confidence levels in performing CVC maintenance care independently once discharged from the hospital. After obtaining qualitative feedback, the project was identified and two educational tools were created for implementation: 1) An introductory brochure for oncology patients and their families during initial admission, which provides general information on what to expect during hospitalization (Appendix A), and 2) A CVC dressing change video for parents to watch throughout hospitalization, and to take home upon discharge (see Appendix B for screen shots taken from the video). These resources were created in order to address the needs expressed by patients, ease the workflow and resource expenditure for nursing staff, and facilitate communication during educational processes.

Project overview

In September of 2015, a total of 48 pediatric oncology patients had CVCs. These patients fluctuate between the inpatient, outpatient clinic, and home care settings, and therefore face many discrepancies in CVC care due to a lack of standardized education. Even though a policy is in place for pediatric CVC maintenance, inconsistencies in care practices and education were found in both the inpatient and outpatient settings. In August 2015, three CLABSIs were identified and reported as Hospital Acquired Infections (HAIs). In September, one patient from August was re-infected, and an additional CLABSI case was identified. The Infection Prevention Department is required to report these infections, which results in the hospital being responsible for the associated costs, as no reimbursements are provided for HAI readmissions. The average cost of treating a CLABSI in a pediatric patient at this institution is around \$36,000 per hospitalization—an estimated total cost of \$180,000 in two months following the identification of the five hospital-acquired CLABSIs. The ultimate goal of this project is to decrease CLABSI rates among this population in both inpatient and home care settings to zero. However, short-term goals are to reduce occurrence of just a few cases per month. If the rates experienced in the Fall of 2015 were to not be halted, and 2.5 cases per month continue to persist, an average of 30 CLABSIs may transpire among this population within a year (which would afflict around 62% of pediatric oncology patients annually). 30 HAI CLABSIs per year would result in a total cost of \$1,080,000 and would significantly impact the hospital financially. Furthermore, the mandatory reporting of these HAIs impacts the Infection Control Department's standings and also the overall standing of the hospital's quality improvement measures.

The required resources for this project have included my time of over 250 clinical hours (which could be translated into the costs of a California CNL salary), the time required by other

stakeholders, such as the Clinical Nurse Specialist (CNS), the Clinical Nurse Educator (CNE), the Pediatric Department Manager, as well as the Infection Control, Compliance, and the Media Departments), and has also required DVD costs for the video to be available for patients who do not have access to the Internet (100 DVDs for \$330). The average annual salary for a CNL with less than five years of experience in California will start at \$84,000. To be generous, only 1/12 of each member's salary was attributed to this project's budget, as full-time involvement was not required (CNL \$7,000 + CNS \$8,166 + CNE \$5,416 + Unit Manager \$8,500 + Media Specialist \$4,333 + Infection Preventionist \$5,666 + DVDs \$330). The total cost for this project is estimated to be around \$39,411. Using the above estimates, if there is a 50% (15 case) reduction in CLABSI occurrences per year, then an annual savings of \$500,589 would be achieved. Over the span of just two years, the hospital could have potential savings of over \$1,001,178 with a 50% CLABSI reduction. Even a mere 25% reduction of CLABSIs (7.5 cases per year) among the pediatric oncology population would result in an annual savings of over \$230,000. If the ideal goal of reducing CLABSI occurrences by 100% is reached, the hospital stands to save over 1 million dollars annually. It is clear that the cost benefit analysis proves that the projected outcomes outweigh the resources expended and required to implement this project (refer to Appendix C for a chart portraying the cost-benefit analysis).

Although the financial benefits of this project could lead to significant healthcare cost savings, we cannot overlook the non-monetary gains of implementing extensive educational support to our vulnerable pediatric population with CVCs. The primary reason for this project is to provide our patients with the best possible care by reducing the likelihood of them acquiring a life-threatening infection. Our patients deserve to be treated for their illnesses without the fear of contracting a CLABSI. This project helps to promote patient compliance and self-sufficiency

because there are avenues and resources for patients and their families to tap into whenever and wherever they may need to. The patients and their families will also develop a greater sense of confidence as they become more included in the planning and execution of their own health care. Patient satisfaction will be enhanced, as the comfort of having an experienced and dedicated healthcare team to educate them will provide assurance and also maintain a trusting relationship between patients and their providers. The CVC dressing change video will enable parents to deliver quality care to their children, provide an educational environment for children to learn about their ailment and healthcare, and create a sense of autonomy and continuity of care as the families transition from the inpatient to the outpatient and home care settings.

The primary goals of this project were to increase patient autonomy and satisfaction by empowering them to care for their CVCs independently prior to discharge and once in the home care setting. I also hoped to engage staff on a multidisciplinary spectrum in order to incorporate multiple viewpoints and address the need for enhanced staff collaboration, as well as nurturing therapeutic partnerships with patients. By engaging nursing staff in this quality improvement goal, streamlined care can be delivered to this vulnerable population. It was essential to meet the educational needs of patients and staff in order to ensure safe and cost-effective care delivery, as well as efficient use of both human and fiscal resources. The primary outcome measurement was completed by tracking CLABSI rates among this specific cohort of patients, with a long-term end-goal being a reduction in CLABSIs among this cohort of patients both in the inpatient and outpatient settings, thus achieving national quality initiatives set forth by the Joint Commission and the Institute of Medicine (IOM).

The Joint Commission (2012) projects CLABSIs prolonging hospital lengths of stay by up to three weeks (p. 9). In children, CLABSIs occur at a rate of 0.7 to 7.4 infections per 1000

catheter days and can cost an average of \$45,000 per infection. Furthermore, it is estimated that as many as 65% to 70% of CLABSIs may be preventable with the implementation of evidence-based strategies (The Joint Commission, 2012, p. 10). While my proposed CLABSI reduction project encapsulates multiple IOM quality improvement categories, such as safety, effectiveness and patient-centered care, the primary IOM category that this project truly touches on is efficiency; avoiding waste and ensuring that care is designed to eliminate unnecessary use of “equipment, supplies, ideas, and energy” (HHS, n.d.). As discussed by Resar et al. (2011), categories of waste include adverse events and complications, such as health care acquired CLABSIs (Resar et al., 2011, p. 4). Resar and colleagues also touch on the importance of a “frontline staff approach” to reducing waste and improving patient outcomes. Because frontline staff “[are] closest to the work and best positioned to identify potential waste”, it is essential to foster an environment in which nurses work closely in collaboration with patients and their families, as well as the interdisciplinary team to initiate clinical practice changes (Resar et al., 2011, p. 4).

The initiatives set forth by the Joint Commission and the IOM heightened the sense of urgency needed to address the adverse events associated with CVCs among this patient population. By drawing on EBP, identifying categories of waste, and including frontline staff, as well as patients and their families in the project, we were able to begin to address national healthcare initiatives and achieve higher standards of CVC care. The global aim was to establish national guidelines and recommendations as priority initiatives, while utilizing the CNL role in order to assess specific microsystem needs and barriers.

Rationale

The microsystem assessment, derived from materials from the Great Big Greenbook

Assessment (GBGA) considered the 5 Ps of the microsystem—Purpose, Patients, Professionals, Processes, and Patterns—and found multiple areas in need of quality improvement for this specific cohort of patients and microsystem (see Appendix D for the full assessment). Project process mapping was utilized to create a general sense of the steps needed for the project's initiation, which were derived from the information obtained during the GBGA (see Appendix E for a detailed review of the Process Map). A multidisciplinary, focused approach to reducing CLABSIs was needed in order to pinpoint and address specific areas of improvement. It became clear that the Infection Prevention Department needed to work closely with the members of this microsystem in order to conduct Root Cause Analyses (RCAs) and to identify gaps in CVC care. Staff nurses and educators needed to contribute to increasing the quantity of and enhancing the quality of CVC patient education materials. Nurse leaders and policy committee members were responsible for reevaluating nursing practice by drawing on evidence-based guidelines and procedures specific to reducing CLABSIs amongst pediatric oncology patients. The outpatient and inpatient oncology departments needed to communicate more often and more effectively in order to streamline patient education, as the goal of the outpatient clinic is to have all patients performing CVC care independently without relying on the clinic nursing staff and resources to do so. Providing patients with the resources and skills necessary to perform comprehensive CVC care in the home setting will be both time and cost-effective, as nursing staff in the outpatient clinic can focus on teaching newly diagnosed patients, and patients will spend less travel time coming to the clinic for CVC services that they could be taught to while hospitalized in the inpatient setting.

The data that showed the need for this project was based upon rising CLABSI rates among this specific patient population. At any given time, 40-60 pediatric oncology patients will have

CVCs within the institution, and since my undertaking of this project, a 10% increase in CLABSI rates among pediatric oncology patients has occurred. Parents have requested additional educational tools, as well as earlier education initiation in the inpatient setting. Inpatient teaching tools initially consisted solely of observation and return demonstration, and on-going, comprehensive, and standardized visual education was not consistently provided to patients in the inpatient setting prior to hospital discharge. No supplemental educational tools were available in the inpatient unit, which inhibited a streamlined approach to patient education and limited the ability of nurses to provide individualized education for patients with different learning needs. The lack of supplemental educational materials in the inpatient setting often led to faulty practices occurring in the home care environment, or patients relying on the outpatient clinic for re-education and continued assistance with CVC care maintenance.

The stakeholder analysis revealed that a multidisciplinary, collaborative effort needed to be implemented in order for this project to be carried out with success (Appendix). Not only was my goal to involve patients, their families, and nurses as key stakeholders, I also wanted to ensure that I obtained stakeholder buy-in from upper management, as well as approval from various other key players, such as the Infection Control, Compliance, Quality, Home Health Education, Case Management, Outpatient Management, and Media and Information Technology Departments). It was essential to tailor specific parts of the project to address the concerns and values related to each individual department. For example, the Infection Prevention Manager played an integral role in ensuring that the video aligned with her recent institution-wide CLABSI-reduction strategies. I made sure to meet with her on a regular basis, as well as include her in the editing process of the film to ensure that the microsystem-specific project aligned with institution-wide initiatives. Furthermore, the expertise from the Infection Prevention Department

while conducting RCAs on CLABSI cases was profound and provided me with much insight as to why these infections were occurring, and what barriers I needed to address prior to moving forward with the project.

The fishbone analysis, or RCA diagram, showed various causes leading to decreased patient satisfaction, and increased hospital readmissions and CLABSI rates. It was essential to identify the people, processes, environment, and materials contributing to the lack of standardized CVC education. The processes and materials in place were limiting the ability of the people (frontline staff) to engage patients in comprehensive CVC education during hospitalization. After reviewing the limitations found in the environment assessment, I realized that issues such as high patient acuity and a lack of time and training could be addressed by providing nurses with training opportunities outside of the clinical setting. Furthermore, the video would assist in reducing the concerns of time constraints faced by frontline staff, as it could be used as a supplemental resource for patients during initial hospital admission. The video would allow for discharge education to occur on day one of initial hospital admission if patients were ready to learn (see Appendix G for the Fishbone Diagram and a more detailed look at the identified causes and effects).

The Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis displays multiple areas of patient satisfaction and quality improvement, while also highlighting methods for mitigating weaknesses and threats that may limit the project's ultimate success and sustainability. Many strengths and opportunities were identified, such as potential increases in patient satisfaction and staff knowledge, and also an increase in ease of workflow and efficient use of resources. Because this video is the first policy-based educational film related to direct patient care within this institution, it is fruitful for opportunities for the entire institution to reassess overall patient

education processes. It was essential to identify and mitigate the weaknesses and threats found early on in the project, so that they would not interfere with the project's implementation (see Appendices H and I for the SWOT chart, and a more detailed view of how I was able to mitigate the anticipated threats and weaknesses associated with the project).

After conducting these assessments and analyses, it became clear that the planning of the project needed to be concise, driven by data, time-sensitive, and continuously monitored and evaluated in order to ensure a successful adoption. The primary rationale for implementing this project was not only based on infection prevention initiatives and providing a safe environment for patients, but also to foster an environment of teamwork and collaboration among nursing staff. It was apparent that practice changes needed to take place, and in order for this to happen, EBP presentations and comprehensive staff training and engagement needed to be of primary concern.

Methodology

In order to initiate the objective of enhancing CVC education, patient and staff surveys were conducted, and multiple cycles of the PDSA approach were utilized (refer to Appendix J to see the four PDSA cycles used throughout the project). The video was created due to an increased need of visual educational materials requested by patients and staff and to streamline education based on institution policy in order to address the rising rates of CLABSIs. The goals were to enhance patient independence by providing nurses with resources for comprehensive patient education, and also to enhance nursing knowledge on current evidence-based CVC practice guidelines.

Initial data collection during the pre-assessment interviews on how many patients perform CVC care independently at home versus coming to the outpatient clinic revealed a large number

of patients relying on the outpatient clinic, which showed that a substantial human and fiscal resource burden was occurring. After surveying the inpatient setting, it became apparent that CVC teaching was not occurring consistently during initial admission, and that barriers to education needed to be assessed. Patients and their parents were surveyed during one-on-one interviewing. The interviews addressed how long they had a CVC, whether or not they perform dressing changes independently in the home, when their educational needs are highest, and which sort of educational materials would most benefit them. This information was used to determine the need for additional, visual educational resources, and is what triggered the project of creating a CVC dressing change video. Once the video was created, nurses were given an opportunity to view the video and were surveyed during their quarterly in-service training sessions (see Appendix K for the presentation given to nurses), which allowed for data collection via surveys from 100% of pediatric medical and intensive care staff nurses (see Appendix L for the survey given to nursing staff). In addition to staff data collection, an educational plan was derived for nurses to evaluate the success of their patient's knowledge retention of CVC care prior to discharge (see Appendix M for this education evaluation tool). After collecting data from the nursing staff (see Appendix N for the results), eight patients were surveyed using a primary questionnaire prior to viewing the video and a secondary questionnaire after viewing the video; these two data sets were compared to evaluate the effectiveness of the dressing change video (please see Appendix O to view the primary patient survey and Appendix P to view the secondary patient survey).

I anticipate the video being of great use for inpatient education; however, I am concerned that it may replace current teaching methods of nurse observation and patient return-demonstration, as opposed to being used as a supplemental resource. I predict patients being

more comfortable performing CVC dressing changes, however, also having increased concerns due to nurses not following the steps exactly as shown in the video when demonstrating the procedure to patients. Subsequent PDSA cycles may need to be conducted after the implementation of the video in order to reassess and alleviate these patient concerns. The weaknesses and threats identified in the primary SWOT analysis must also continue to be mitigated using a collaborative approach. As other weaknesses and threats arise, qualitative data analysis obtained from patients and staff, and additional PDSA cycles will help guide the project's long term success and sustainability. Lewin's Force Field Model of Change with its three steps of "unfreezing", "moving", and "refreezing" is a theory that was beneficial in stimulating acceptance of change among nursing staff (N651 Module 5 PowerPoint, 2015). This theory allowed for a fluid approach to implementing a new change amongst a group of stakeholders within a clinical microsystem.

First, I "unfroze" the frontline staff by providing them with a sense of safety and control in this endeavor. This was accomplished by incorporating their concerns about implementing this change within the unit, and allowing for a transparent environment for them to express their own ideas regarding the change. The goal here was to create a shared vision, in which all involved members were respected, treated equally, and heard. By allowing others to engage in the greater idea, a sense of identity within the unit was created among individuals, and any aversions to change were identified and solved prior to initiating a new change. I have engaged multiple members of the interdisciplinary team in this project and have consistently involved frontline nursing staff in the successful implementation of this project.

Once the "unfreezing" phase commenced, and frontline staff became ready for change, the "transition" phase began. This was a time to encourage nurses to step outside of their comfort

zones and try new, innovative methods of patient education. Working together was key during this step because implementing a big idea is a journey, and not just a single step. An individual makes a single step, however, the journey of change must be accomplished in unison, with support from and for all those involved in the project's vision.

Once staff began acting on these newly implemented changes, the “refreeze” phase began, and leadership needed to remind staff to focus on one task at a time, as opposed to waiting for the next change to occur. During this phase, we circled back to the “unfreeze” phase, and once again, involved staff by checking in with how they perceived the new situation, encouraged them by showing them that their involvement in the change had been beneficial, and asked them what needed to be improved upon, eliminated, or sustained.

What I especially appreciate about Lewin's Change Model is that it mirrors the PDSA cycle in which continuous assessments and evaluations can be performed in order to achieve a shared vision. The PDSA approach can be utilized to perform a Force Field Analysis (FFA) in order to increase driving forces, decrease restraining forces, and have greater chances of positive changes within the clinical microsystem. The FFA requires extensive support from management, and also the engagement of nurse leaders with frontline staff at the point of care. The project aims will be continuously evaluated with post-implementation reviews in order to address any barriers that are causing resistance to change and to make the changes successful, on going, and sustainable. CNL Essential 4 of “Translating and Integrating Scholarship into Practice” most closely reflects the utilization of Change Theories to improve care delivery within a microsystem. Competency 7—“Leading change initiatives to decrease or eliminate discrepancies between actual practices and identified standards of care,” and Competency 8—“Disseminating changes in practice and improvements in care outcomes to internal and external audiences”

(AACN, 2013) align with how I utilized Lewin's Theory to stimulate change within my microsystem.

Literature Review

(P) Population: Pediatric (oncology) patients with CVCs

(I) Intervention: Film-based education or video-assisted education

(C) Comparison: Return-demonstration versus film-based/video-assisted education

(O) Outcome: Increased patient autonomy and empowerment and reduced CLABSIs

The evidence to support the project is wide-ranged and encompasses many aspects of care delivery among this specific cohort of patients. CLABSI reduction is a national initiative of the Joint Commission, and can be achieved with the implementation of EBP guidelines, such as streamlining CVC bundles, and enhanced patient and staff education. Pediatric oncology patients have the highest risk of contracting CLABSIs and suffer stark health consequences due these risks. The cost of treating CLABSIs among this population is financially detrimental to the institution and detrimental to the health outcomes of patients. Film-based education has proven to be effective with patients across multiple healthcare disciplines, and more specifically among chronically ill pediatric patients and their families. Film-based CVC and CLABSI training courses have also proven to be successful in enhancing nursing and point of care staff engagement, as well as knowledge and skill acquisition.

Schooley, San Nicolas-Rocca, and Burkhard (2015) aimed to improve patient satisfaction and knowledge through the use of video-assisted teaching in their work *Patient-Provider Communications in Outpatient Clinic Settings: A Clinic-Based Evaluation of Mobile Device and Multimedia Communications for Patient Education*. Their objectives of increasing patient understanding of medical conditions and discharge instructions, as well as enhancing patient

perceptions toward providers (physicians, nurses, and other staff) align closely with my project's aim (Schooley, San Nicolas-Rocca, & Burkhard, 2015, p. e2). 180 days of longitudinal data collection of 284 patients was utilized for this study. Half (142) of the patients received video-assisted teaching, while the other half received traditional, verbal teaching. Ten medical residents were to implement the teaching, half of which would initiate video-assisted teaching. The results showed strong evidence of enhanced patient perception of providers, as well as an increased understanding of medical conditions among the patients who received the video teaching (Schooley et al., 2015, p. e13). The goals set forth by Schooley et al. in using video teaching, were based upon good interpersonal relationships, patient-centered communication, and the facilitation of information exchange in order to enhance the quality of patient-provider relationships, increase patient illness recovery, and decrease costs of care (p. e4). The findings revealed that patients perceived tablet device education as helpful, and also that this type of education made it easier to communicate with providers about complex medical information and treatment options. The medical residents were also surveyed and agreed that there was an increase in patient understanding and compliance, as well as increased "precision, clarity, and visualization" of medical treatments and conditions with the use of educational videos and images (p. 12).

This study also sheds light on three previous studies that were successful in implementing videos and other visual teaching methods to increase patient understanding of provider instructions. Meade et al. (1994) found that educational videos enhanced colon cancer knowledge, especially among patients with low literacy levels, Leiner (2014) found cartoons to increase awareness of and compliance with polio vaccinations, and Choe et al. (2009) found that video-assisted discharge instructions improved outcomes of patients with lacerations and sprains

(Schooley et al., 2015, p. e7). Video-assisted teaching empowers patients to meet their own healthcare needs upon discharge, while also strengthening communication and relationships with their providers. Providers, too, are empowered by having additional teaching resources available to facilitate patient learning, communication, and therapeutic relationship building. The positive patient and provider outcomes presented by Schooley et al. show the impact that video-assisted teaching can have in the clinical setting on patient knowledge, health care compliance, and patient-provider communication and relationships.

Schooley et al. also highlight the importance of institution's tailoring educational resources to meet their patient's specific needs. Because public media channels, such as YouTube, are becoming more common, more external outlets for medical education for patient education exist. However, these public media outlets often confer significant problems, as they can be "fraught with poor educational value, and the quality cannot [always] be assumed" (Schooley et al., 2015 p. e7). Carr, Alexandrou, Jackson, and Spencer (2013) agree that video-sharing can be clinically beneficial, as it allows people to watch and learn at their convenience, an unlimited number of times until knowledge is comprehended, so that a deeper, less visceral level of learning is achieved (Carr, Alexandrou, Jackson, & Spencer, 2013, p. 178). However, in their work *Assessing the Quality of Central Venous Catheter and Peripherally Inserted Central Catheter Videos on the YouTube Video-Sharing Website*, the quality of CVC YouTube education was assessed and showed stark results. Their goal was to assess the quality of adherence to current evidence-based CVC guidelines in YouTube videos. 27 videos met their criteria for review. Only five (18%) of the videos displayed proper skin preparation techniques, and a startling 11 (41%) compromised aseptic technique (Carr et al., 2013, p. 180). Hand hygiene, skin asepsis and sterile technique are evidence-based CVC maintenance strategies that exist in order to promote

infection prevention. The evidence presented by Carr et al. highlight the necessity of creating institution-specific CVC education videos. Supplies and policies and procedures often differ among institutions, and in order to provide patients with accurate and realistic educational materials upon discharge, procedures must align with what is being taught and provided in the inpatient setting. Given the lack of evidence-based adherence in the YouTube videos reviewed by Carr et al., it is clear that utilizing public, web-based videos for patient education can pose great risks to patient safety and contribute to adverse health outcomes. Evidence-based guidelines must be the focus of all patient education, especially when patients and their caregivers are required to perform invasive medical procedures in the home care setting. This evidence was the driving force behind creating a CVC dressing change film that was specific to my institution's evidence-based CVC dressing change policy and supplies. My goal was to provide patients with an evidence-based video that would align with how nurses were performing these tasks in the clinical setting. Furthermore, it was essential to use the supplies they would be receiving in the home setting in order to ensure that the education was realistic, standardized and easy to emulate.

McCall and Oliveira (2015) created an institution-specific CVC video in order to standardize discharge teaching and increase caregiver knowledge and comfort level with CVC care. The approach taken by McCall and Oliveira in their work *Development of an Instructional Video to Reinforce Patient Education Regarding Central Venous Cather Care* was similar to mine, as they conducted pre and post surveys on patients, caregivers and nursing staff. The survey results given prior to viewing the video showed significant discrepancies in knowledge and practice among staff, patients, and caregivers. Following the viewing of the video, an overall increase in knowledge and comfort level was shown among staff, patients, and caregivers, which

provides hope for the long-term success of my project. Furthermore, the focus on cancer and bone marrow transplant patients by McCall and Oliveira show that video education for this specific population can be highly beneficial, given the many challenges they face regarding CVC maintenance responsibilities upon discharge.

Commins' (2013) study's purpose was to train patients and their parents in basic infection-prevention strategies, such as the use of proper hand hygiene, and gloves and masks during CVC maintenance care in his work *Simple Outpatient Protocols Reduce CLABSI by 48%*. A nursing team led the educational training sessions and pre and post CLABSI rate assessments were conducted. This study showed a 48% reduction in CLABSIs with families who received education on CVC safety, and it was estimated that the education may have prevented more than 70 hospital admissions of the 300 participants (Commins, 2013, p. 2). These families were able to monitor their own compliance and demonstrate their own abilities to care for their child's CVCs due to the collaborative educational sessions they participated in. The benefits of comprehensive patient education and partnerships with patients show clear improvements in CVC outcomes in terms of infection prevention when a collaborative effort is put forth. I have championed a collaborative approach throughout my project by involving nurses, providers, and patients and their families in the planning and execution of the project. Furthermore, engaging nursing staff in proper CVC care is essential to improving patient outcomes. By providing transparent environments for nurses to learn and enhance their own knowledge and skillsets, quality care delivery and patient education and health care compliance can be enhanced.

Baumgarten et al. (2013) shared results from Ochsner Health System's participation in a nationwide collaboration to reduce CLABSIs in their work *Bridging the Gap: A Collaborative To Reduce Peripherally Inserted Central Catheter Infections in the Home Care Environment*.

Their outpatient peripherally inserted central catheter (PICC) infection rates were unacceptably high, so the study intervention attempted to reduce PICC infections in the home care environment. Typically, home health nurses or outpatient infusion centers cared for PICCs per protocol. However, because no standardized protocol existed, each facility had a different way to care for PICCs, which lead to inconsistent maintenance and higher CLABSI rates (Baumgarten et al., 2013, p. 355). An order set and a nursing checklist for dressing changes was created, which was linked to the hospital's home health discharge orders so that teaching and discharge instructions would align. By utilizing a standardized PICC protocol, care was streamlined and collaboration occurred across the continuum of care. By implementing a standardized approach to care, a 46% reduction of CLABSIs occurred in the home care environment and many discrepancies among dressing change strategies were eliminated (p. 356).

This article is relevant to my project; as one of the most complex issues associated with pediatric oncology patients with CVCs is that they constantly fluctuate between the inpatient, outpatient clinic and home care settings. Because multiple care providers (including their parents) are involved in their CVC care, it is essential that a standardized approach be taken for CVC dressing change education and implementation in order for discrepancies and adverse events to be eliminated. The 46% reduction in CLABSIs seen by Ochsner Health System reiterates the benefits of standardizing care, particularly among patients who are frequently hospitalized and have CVC access devices for long durations of time. Even though my video project will be initially piloted in the inpatient setting, the ultimate goal is to utilize the video as a standardized teaching tool in the outpatient setting as well. Given the results presented by Baumgarten et al., it is promising that a standardized approach to CVC education among the inpatient and outpatient settings will ultimately have significant benefits on patient outcomes.

Nailon and Rupp (2015) also discuss the benefits of streamlining CVC education and care in their work *A Community Collaborative to Develop Consensus Guidelines to Standardize Out of Hospital Maintenance Care of Central Venous Catheters*. They reiterate that increased CLABSI rates occur in patients who often transition between various health care settings. Pediatric oncology patients, who have CVCs for long periods of time face many discrepancies in practice, which ultimately increases their risks of acquiring CLABSIs. Their recommendations, too, were to standardize care based on current EBP. Their goal was to address the problems related to CVC care faced by outpatient settings. The three problems they identified as occurring in outpatient settings were: 1) no mandated reporting surveillance systems, 2) no set indicators on what constitutes adverse CVC events in outpatients, and 3) difficulty linking data among inpatient and outpatient settings (Nailon & Rupp, 2015, p. 116).

Nailon and Rupp aimed to standardize CVC guidelines based on current EBP, create film-based educational materials for patients, and include outpatient and homecare settings in surveillance reporting systems (p. 117). Three educational videos were created in both English and Spanish that reviewed the benefits of the different types of CVCs, complications that could arise, proper hygiene practices, dressing and cap changes, monitoring the integrity of the catheters on a daily basis, and information on when to notify one's health care provider and/or seek medical attention (pp. 117-118). The findings showed little changes in CLABSI rates, however, there were significant decreases in catheter occlusion rates and increases in catheter patency rates (p. 119). Overall, standardizing care, and providing patients with educational materials showed improvements in CVC maintenance care and catheter integrity. Although there was no method of data collection regarding patients' perception of the helpfulness of the videos, the other findings are promising and substantive in regard to patients complying with EBP CVC

maintenance guidelines, especially when they are standardized and available on film. My project has taken Nailon's and Rupp's future practice suggestions to collect qualitative data on patients' perceptions of film-based CVC education, and although I expect to see improvements in catheter maintenance care and also a reduction in CLABSIs, I am hopeful that the qualitative survey data obtained from patients will show the benefits of video education in enhancing patient and caregiver knowledge and comfort levels of providing CVC care independently in the home setting.

Xavier's (2013) quasi-experimental study analyzed the effectiveness of a video-assisted teaching module regarding CLABSI prevention knowledge among staff nurses working in an intensive care unit. Xavier's work *A Study to Assess the Effectiveness of Video Assisted Teaching Module Regarding Central Venous Catheter Related Blood Stream Infections and its Prevention on Knowledge of Staff Nurses Working in the ICU* recognizes the complexity of nursing management in regard to CVC care. Nursing expectations of CVC management include: 1) catheter site care, such as dressing changes; 2) line changes; 3) site assessments; 4) error prevention; 5) frequency of line changes; 6) knowing the most effective solutions/antiseptics for cleaning lines and ports; 7) understanding dressing techniques in terms of type, frequency and method of dressing; and 8) acquiring evidence-based competencies (Xavier, 2013, p. 62). Furthermore, it is the acquisition of these skills that need to be at the expert-level in order for teaching to be properly translated to patients. In this study, nurses were given a pre-test prior to viewing a CVC training video. The pre-test mean score was 19.5. Following the viewing of the training video, nurses were given a post-test, which showed a mean score of 29.6 (p. 64). The difference in pre-test and post-test results showed a 24% total enhanced knowledge score of nurses in terms of caring for CVCs and preventing CLABSIs (p. 64). These results indicate a

significant improvement in nursing knowledge after the implementation of video-assisted education. Xavier emphasizes that the lack of guideline adherence for preventing CLABSIs may be due to a lack of nursing knowledge of these guidelines (p. 62). I have placed much emphasis on training all pediatric nurses (both medical-surgical and intensive care) in the maintenance of CVCs and infection prevention. Presenting the project to nurses during skills day sessions has provided them with the necessary knowledge of the latest guidelines regarding CVC care, and has also increased their comfort level in caring for and educating patients with CVCs. Even though the video itself is intended for patient use, I have seen positive results from and increased knowledge of nursing staff through their viewing of the CVC dressing change video.

Several other studies suggest that nursing education and training enhance patient discharge education and home CVC maintenance compliance. Horvath et al. (2009) found that an intensive educational training module enhanced nursing knowledge by 15% in their work *Reducing Central Venous Catheter-Related Bloodstream Infections in Children With Cancer* (Horvath et al., 2009, p. 232). Nurses underwent a comprehensive educational program, which emphasized nursing skills, but also the inclusion of patients and their families in practice changes. Not only was nursing knowledge enhanced, a substantial reduction in catheter hub infection was achieved. Prior to the implementation of the nursing training program, 57% of catheter hubs were found positive for infection, whereas only 36% were found positive for infection after the implementation of the training program (p. 236). Kelly, Green, and Halney (2015) also implemented an educational intervention for nursing staff, which, too, yielded positive results related to nurse education and knowledge acquisition in their work *Implementing a New Teaching and Learning Strategy for CVAD Care*. Nurses attended a didactic CVC training workshop in which dressing changes and other CVC skills were taught, practiced, and discussed.

Prior to the training, a high number of nurses did not feel confident changing CVC dressings (Kelly, Green & Halney, 2015, p. S7). The researchers found a multitude of qualitative benefits after implementing the workshops. Nurses felt significantly more comfortable and confident knowing that they had a safe, uninterrupted practice environment outside of the clinical area in order to apply theory to practice (p. S8). The studies by Horvath et al., and Kelly, Green, and Halney echo my involvement of nursing staff in the implementation of this project. Nurses have been continuously involved in the editing process of the film, as well as provided with opportunities to provide feedback regarding the implementation process. They have also been provided with additional training and education on the latest CVC practice guidelines, as well as opportunities to practice their CVC clinical skills in a didactic group environment under the supervision of the CNS and CNE, which has shown significant improvements in their CVC skill acquisition.

The literature review reveals essential clinical practice information that is in support of this CVC video education project. All of the studies emphasize the importance of comprehensive staff training in order to ensure quality care delivery and appropriate patient education. Much of the evidence is in support of video-assisted teaching, as this method allows learners to comprehend complex clinical information and acquire clinical skills through learning by repetition, visualization and familiarization. The evidence also suggests that the creation and use of institution-specific videos allow for the dissemination of EBP in a structured, standardized, and safe format. A review of the research has deepened my understanding of different learning styles and educational techniques, and also the importance of staff education and engagement in stimulating improvements in patient education and overall health outcomes. Standardized, supplemental, visual educational tools coupled with staff knowledge acquisition will assist

patients in comprehending complex treatment information related to their individual health care needs. These factors are driving forces behind improved patient satisfaction, enhanced patient-provider relationships, the implementation of infection prevention strategies, reduced hospital readmissions, and also a time and cost-effective approach to quality care delivery across the continuum of care for a specific cohort of patients.

Expected Results

The foremost expectation of this project is an overall increase in patient satisfaction and comfort level of performing this very specialized, invasive homecare responsibility. I anticipate the project being successful not only because it came to life due to patient requests, but also because of the extensive amount of research that supports film-based education. Delivering innovative teaching tools for patients and increasing their comfort and confidence levels in being prepared to care for their CVCs prior to discharge from the hospital without relying on clinic teaching for many months thereafter are the goals. It is expected that patients who receive video-assisted teaching will be able to care for their CVCs significantly sooner than those who do not, and the ability for nurses to initiate teaching earlier than they previously had will play a pivotal role in achieving this time-sensitive outcome. Nurses will become more engaged in the guidelines for CVC maintenance care and infection prevention strategies and realize the importance of engaging in partnerships with their patients and their patients' families and caregivers. On a more tangible level, the use of human and financial resources in both the inpatient and outpatient settings will be reduced. With more comprehensive patient education being initiated during hospitalization, fewer resources in the outpatient clinic will be expended, such as nursing time and dressing change supplies. Long-term outcomes will hopefully reflect a reduction in CLABSIs among this population due to the reinforcement of evidence-based

guidelines, such as infection prevention strategies. Some other conclusions that may emerge from this project are the need for additional film-based educational materials within this specific microsystem, but also across the entire institution. This video is projected to pave the way for regional practice changes in the type of educational materials provided to many different patient populations.

Evaluation and Summary Report

The global aim of this project was to address the need of a lack of CVC education occurring in the inpatient setting, with end goals being a reduction, or elimination of CLABSIs. More specifically, the goals of this project were to enhance patient independence in performing invasive CVC care in the home setting, provide nurses with additional resources in order to help teach patients evidence-based CVC care, and to streamline education among patients who have high risks of developing CLABSIs due to constant fluctuations between various health care settings. This project embodies innovation through the use of technology, quality care delivery by focusing on discharge teaching upon initial diagnosis and throughout initial hospitalization, enhanced patient satisfaction by addressing individual healthcare needs and learning styles, and resource efficiency by standardizing EBP and creating supplemental teaching tools that can facilitate patient education in a time and cost-effective manner.

The methodology used to obtain data for this project allowed for thorough qualitative data collection of both patients and staff in order to gauge baseline needs and comparative data upon evaluating the project's implementation. Presenting this project during quarterly in-service training sessions enabled 100% of nursing staff to deliver feedback, voice concerns, and participate in surveys for data collection (see Appendix N to review graphs and charts pertaining to the survey results). 69 nurses were surveyed, 58% of which were "sometimes" (1-44%) the

time) the first to initiate CVC education (Appendix N1). The majority of nurses (67%) felt that patients were “sometimes” (1-44%) ready to engage in CVC education during initial hospitalization (Appendix N2). 42% of nurses identified that patient education should occur “during admission”, “throughout hospitalization”, “upon discharge”, and “after discharge”, which reflects an understanding among nurses for initiating patient education as soon as possible, and also of the importance for continued education once patients leave the inpatient setting (Appendix N3). However, the majority of nurses (93%) selected that teaching should occur “throughout hospitalization”, which emphasizes the acknowledgment of our inpatient nurses as being integral patient educators. The greatest barriers to providing central line dressing change education were “not enough time” (71%), and “parents not [being] at the bedside regularly enough” (64%) (Appendix N4). The identification of these two barriers to education reiterates the importance of this project. By having a video as a resource, nurses can initiate the teaching process without spending extended amounts of time at the patient’s bedside to do so. Parents can view the video, begin to learn the dressing change process, and configure questions and concerns so that when nurses have more time for teaching, communication can be more focused and efficient. Furthermore, by providing videos to patients during hospitalization, parents can initiate their own learning process and pace without the guidance and time of the nursing staff. The most significant information obtained from surveying nursing staff was that 94% (65/69) selected “videos” as being a resource that could enhance their ability to teach patients about their CVCs, with the use of sample supplies and mannequins being the second most desired resource (90%), and step-by-step written instructions as the third (84%). Given that “videos” was the number one selected resource nurses wish they had, it is clear that the production of the CVC dressing change education video addressed the microsystem’s educational needs from the frontline staff

perspective (Appendix N5).

Eight patients (and/or their parents) were surveyed prior to viewing the CVC dressing change video, and re-surveyed after viewing the video (please refer to Appendix O to view the primary survey given to patients, and Appendix P to review the secondary survey given to patients). A variety of patients with different socioeconomic backgrounds, ages, diagnoses, and length of CVC access were interviewed. Patients ranged from three months to 17 years of age, and the time of CVC access ranged from four days to 14 months. Three patients had CVC access for 0-3 months, two for 3-6 months, and three for more than 12 months. No patients fell into the 6-9 month or 9-12 month gaps. Those who had CVC access for less than 3 months were not performing CVC dressing changes independently, whereas those who had their CVCs for more than 12 months were (See Appendix Q1). After speaking with the families with long term CVC access (12+ months), I learned that it took them, on average, around 3-4 months to feel comfortable performing the dressing change at home, however, they expressed that had they had the video during the initial education process, they would have been able to perform this task independently at home much sooner, and would not have needed to rely on the outpatient clinic for this service. Five of the eight respondents (63%) expressed that the risk of infection was the most concerning aspect of their child going home with a CVC (See Appendix Q2), which aligns with the project's ultimate goal of reducing the high risk of CLABSIs this patient population faces. Videos, pamphlets and brochures, and step-by-step written instructions were identified as the most helpful tools to improve the CVC educational processes for patients, which further reinforced the needs expressed by patients during the initial interviewing process prior to the project's topic identification and the creation of the video (See Appendix Q3).

Prior to viewing the video, 63% of patients expressed that identifying and setting up the

changing dressing supplies was the most challenging aspect of the procedure, with removing the old dressing (50%) and identifying concerning symptoms and when to see a doctor (50%) as the second most challenging tasks (See Appendix Q4). After viewing the video, the same number of respondents selected these areas as being the most helpful things presented in the video (See Appendix Q5). The majority of patients expressed that it would be most beneficial to view the video “prior to CVC placement”, however, also selected “during initial hospitalization”, “after CVC placement”, and “right before discharge” as good times to view the video (See Appendix Q6). The data obtained from patients after they viewed the video showed significant improvements in terms of understanding, skill acquisition, and confidence levels. 100% of patients felt that the video enhanced their overall understanding of what a CVC is and how to perform a CVC dressing change. Confidence levels of patients increased significantly after viewing the video. Patients who had CVC access for a less amount of time, showed noteworthy increases in confidence levels (See Appendix Q7). For example, patient 1, who had only had a CVC for four days at the time of viewing the video, had an increase in confidence level from a one to a five after viewing the video. Patient 6, who had their CVC for 12 months, and was performing CVC dressing changes independently, went from an eight to a 10 after viewing the video. Patients 7 and 8, who also had their CVCs for more than 12 months, did not show any improvements in confidence levels, however, expressed that the video educated them more thoroughly and provided them with helpful techniques that they were unaware of prior to viewing the film.

The data collected from nursing staff revealed significant overlaps in what was expressed by patients in the secondary surveys. Both patients and nurses identified the sterile process as a challenging aspect of the CVC dressing change. When nurses were asked for an open-ended

response of the most difficult aspect of the central line dressing change, 43% responded with “remaining sterile”, “sterile technique”, and/or “sterile gloving”. This information assisted us in planning topics to be addressed in the video, which is why we included a detailed segment on sterile gloving and maintaining the sterile field. Other specific areas of concern expressed by patients and staff were also addressed in the film in great detail, such as supply identification and set up, step-by-step instructions with chronological guides, and how to identify concerning symptoms and when to call or see the doctor.

The results reveal significant improvements in patient confidence and knowledge acquisition, but also show promise that the implementation of the video will prepare patients to perform CVC dressing changes sooner than they had been prior to having the video as a learning resource. The most challenging tasks were addressed in detail throughout the video, targeting specific areas that may have been contributing to the resistance to learn, the lack of confidence, the reliance on the outpatient clinic for continued dressing change assistance, and possibly even the rising rates of CLABSIs. Even though this project yielded many positive results among patients, it is clear that a larger sample size of patients may have created stronger results. The results provided by this project reflect a primary analysis of video-assisted education within this microsystem. Time constraints and a small sample size of patient surveys were the primary limitations of this project’s data collection. However, I am confident that as more patients are provided with the video, patients, staff, the microsystem, and the greater institution will experience a surplus of both qualitative and quantitative benefits.

Timeline

This project took many unexpected turns throughout its 18-month long process (see the Gantt chart in Appendix R to view the expected versus actual project task completion times). At

first, I was expecting the video to be completed and rolled out to patients within two months of approval. I did not anticipate the approval process to take more than 6 months. I began planning this project in June 2014 with great support from the Department Manager, CNS and CNE. At the time, it was apparent that pediatric oncology patients were the majority of those with CVCs, so it seemed fitting to investigate the educational processes that had been occurring within the microsystem. I began by conducting a unit analysis of both staff and patient education regarding CVC care. The goal was to establish videos that would educate patients on all aspects of CVC maintenance (including dressing changes, sterile gloving, blood draws, and cap changes) that they were expected to perform at home. However, I soon realized that gaining approval, filming, and publishing even just one video would be incredibly challenging.

From June 2014 until August 2014, I was able to obtain the data necessary to show a need for the project, and in collaboration with the Department Manager, identified the topic for the project. For about three months, I interviewed patients in the inpatient and outpatient settings to obtain feedback related to their educational needs. Patients in both the inpatient and outpatient settings were requesting visual educational tools in order to independently care for their CVCs in the home setting. It became clear that CVC dressing changes would be the first video topic to pursue, as this was a task that most patients were going to regularly perform at home. Once I established this video as the priority, I intended to film the video independently with a long-term patient and a seasoned nurse as the actors. The goal was for the video to be completed by December of 2014. However, I was introduced to the Media Department Specialist, who is the institution's videographer, and realized that if I partnered with him, the end product would be substantially better in terms of professional quality. Initially, my intentions were geared simply at providing patients with supplemental teaching materials. However, I knew that if I had the

video branded by my institution, the chances of it being picked up by our regional medical committee would be greater. The opportunity to dispense this film across the region, and for it to reach many patients at various institutions was exciting, and quickly became a personal goal of mine.

From September 2014 to December 2014, I focused on meeting with the videographer in order to plan the scripting, filming, and editing processes. It took me a few weeks to develop a script based on the institution's pediatric CVC dressing change policy and procedure, however, I wanted to ensure that the script was approved by key stakeholders prior to jumping into the filming. I set up meetings with the CNS, the CNE, the Department Manager, physicians, nursing staff, policy and procedure committee members, and the Infection Prevention Department to review the pediatric CVC dressing change policy and ensure its alignment with the video script. This process took an additional two months or so, however, was worth the effort because valuable input from multiple key stakeholders was obtained throughout this collaborative process.

By January 2015, the script was in place, and I was ready to move forward with the filming. At this point, I was faced with tremendous push back from both the Quality and Compliance Departments due to regulations and processes that needed to be addressed prior to filming with real patients and nurses. These were stakeholders I had not initially thought of involving throughout the project's process, but quickly realized how important their roles would be. The project came to a halt, and I found myself having to undertake additional steps in order to align the project with the Compliance Department's needs. Even though this was frustrating, it taught me a great deal about key stakeholders and the many legalities involved in developing patient education materials. I was told that the process would be easier if I did not use real

patients and limited the project to the inpatient setting, however, I had come so far and wanted to make the video as realistic as possible. Because my ultimate goal was to publish this on the institution's website, and provide it to outpatients across the region, I knew it would be of utmost importance to address the concerns put forth by the Compliance Department.

From January 2015 until April of 2015, I spent my time researching the use of mannequin's versus real actors, and also did a search on the use of external video sharing sites, such as YouTube. I gathered the information, and presented my case to the Compliance Department. My efforts paid off, project approval was gained, and I obtained written consent from all the people involved in the film as requested by the Compliance Department. In May of 2015, I was ready to film the project with a real patient, and received a call from the Compliance Manager, who shared that I would not be able to utilize a real patient after all. This was a major setback, as I thought I had finally addressed all of the barriers in order to move forward with the filming as planned. After speaking with the CNS (my preceptor at the time), we decided we would use her daughter as the child actor in the film, even though she did not have a real CVC.

In June of 2015, the filming took place over the course of just one day. This was one of the least time-consuming processes of the project. I met with the videographer once the filming was complete in order to create the voiceover and discuss the editing process moving forward. From June 2015 until September of 2015, the film was edited over and over again. This process took an extensive amount of effort and time. The reason why it took months longer than I had expected was because I wanted again to obtain feedback from staff and stakeholders, and also wanted the final product to be displayed accurately, safely, and at a 5th grade reading level. In September and October of 2015 the video was shared with the patients during one-on-one watch sessions, in which the primary and secondary surveys were conducted. I was finally able to see

the project come to fruition, as I obtained data about the patient's perception of the video and the future impact on their ability to care for their CVCs by having access to the video at home.

Moving forward, the project will be implemented in the clinical setting for inpatient education. All patients with CVCs will receive DVDs to take home upon discharge, and ultimately, it will transcend into the outpatient clinic for patient reeducation. Qualitative feedback from both patients and nursing staff will continued to be obtained in order to track the project's success and long-term sustainability by the CNS and CNE. I will continue to encourage the microsystem stakeholders to track the data in order to mitigate problems associated with the project's implementation as they arise.

Nursing Relevance

With the on-going, rapid advancements in technology, and more web-based medical information becoming available to patients, it is essential to tailor clinical practice and patient education to fit the advancements in healthcare information technology. This project shows that film-based education can help facilitate discharge education to occur from the moment the patient is admitted to the hospital. Furthermore, it has helped establish a clearer understanding of patient-specific teaching needs and meet a diverse set of learning styles. In order for patients to have increased autonomy and independence in their own healthcare maintenance, educational tools must be creative, individualized, easily accessible, and used in conjunction with other educational tools depending on individual patient preferences and needs.

The CVC dressing change film implemented within this microsystem is widely supported by research and has clearly improved patient comprehension of complex medical information, as well as enhanced patient-provider relationships. This project was identified as a key component necessary for streamlining inpatient education among a population that has a high risk of

developing CLABSIs when CVC procedures are not standardized and properly taught and performed prior to discharge. This video allows nurses to present complex, evidence-based policies and procedures to patients in a simple, comprehensive format that is easy to understand and emulate. The video has positively impacted patients' knowledge and confidence levels by addressing the most challenging aspects of CVC dressing changes, which will continue to help facilitate early discharge education in this inpatient setting and empower patients to take charge of their own healthcare upon discharge. This project captures the use of innovative teaching methods for patients who are required to learn complex medical care, and reiterates the importance of discharge education occurring across a continuum of care. Most importantly, it empowers nurses to draw on evidence-based guidelines as they evaluate their own nursing practice and nursing care models.

Conclusions

This CNL project came to life due to the recognition of a severe gap in patient education, which was resulting in unstandardized care, inappropriate use of human and fiscal resources, a lack of adherence to evidence-based guidelines, and adverse patient outcomes. Microsystem assessments revealed a clear need for improving CVC dressing change education from both the patient and staff perspective. The goals of the project were to address microsystem needs, barriers and limitations by involving the multidisciplinary team and stakeholders in spearheading the creation of innovative educational resources to enhance the delivery of care to a specific cohort of patients that was struggling to learn complex medical information. This project has truly captured the many benefits of the CNL role, and as an advocate for and member of this profession, and also as a key player in carrying out this project, I have personally seen how the CNL role can steward and affect positive changes in healthcare delivery.

References

- American Association of Colleges of Nursing (AACN). (2013). Competencies and curricular expectations for clinical nurse leader education and practice. Retrieved September 8th, 2015 from <http://www.aacn.nche.edu/cnl/CNL-Competencies-October-2013.pdf>
- Baumgarten, K., Hale, Y. Messonnier, M., McCabe, M., Albright, M., & Bergeron, E. (2013). Bridging the gap: A collaborative to reduce peripherally inserted central catheter infections in the home care environment. *The Ochsner Journal*, 13 (3), 352-358.
- Carr, P.J., Alexandrou, E., Jackson, G.M., & Spencer, T.R. (2013). Assessing the quality of central venous catheter and peripherally inserted central venous catheter videos on the youtube video- sharing web site. *Association for Vascular Access*, (18) 4, 177-182. doi: 10.1016/j.java.2013.06.001.
- Commins, J. (2013). *Simple outpatient protocols reduce CLABSI by 48% - HealthLeaders media*. Retrieved September 11, 2015 from <http://www.healthleadersmedia.com/print/qua-297073/simple-outpatient-protocols-reduce-clabsi-by-48>
- Horvath, B., Norville, R., Lee, D., Hyde, A., Gregurich, M., & Hockenberry, M. (2009). Reducing central venous catheter-related bloodstream infections in children with cancer. *Oncology Nursing Forum*, 36 (2), 232-238. doi: 10.1188/09.ONF.232-238.
- Kelly, L., Green, A., & Halney, K. (2015). Implementing a new teaching and learning strategy for CVAD care. *The British Journal of Nursing*, 24 (8), S4-S12.
- McCall, J., & Oliveira, O. (2015). Development of an instructional video to reinforce patient education regarding central venous catheter care [Abstract]. *Biology of Blood and Bone Marrow Transplantation*, 21 (600), S392-S393.
- N651 Module 5 PowerPoint. (2015). Change management. Retrieved September 29th, 2015 from

https://usfca.instructure.com/courses/1555155/pages/module-5-introduction-and-readings?module_item_id=16212221

Nailon, R., & Rupp, M.E. (2015). A community collaborative to develop consensus guidelines to standardize out-of-hospital maintenance care of central venous catheters. *Infusion Nurses Society, 38* (2), 115-121. doi: 10.1097/NAN.0000000000000092

Resar, R.K., Griffin, F.A., Kabcenell, A., Bones, C. (2011). Hospital inpatient waste identification tool. *IHI Innovation Series White Paper, 1-38*. Retrieve September 8th, 2015 from https://lmscontent.embanet.com/USF/MSN/N651/Docs/N651_M2_IHI.pdf

Schooley, B., San Nicolas-Rocca, T., & Burkhard, R. (2015). Patient-provider communications in outpatient clinic settings: A clinic-based evaluation of mobile device and multimedia communications for patient education. *Journal of Medical Internet Research, 3* (1), e2-e18. doi: 10.2196.mhealth.3732

The Joint Commission. (2012). *Preventing central line-associated blood stream infections: A global challenge, a global perspective*. Oak Brook, IL: Joint Commission Resources. Retrieved September 16th, 2015 from http://www.jointcommission.org/assets/1/18/clabsi_monograph.pdf

Xavier, B. (2013). A study to assess the effectiveness of video assisted teaching module regarding central venous catheter related blood stream infections and its prevention on knowledge of staff nurses working in ICU. *Asian Journal of Nursing Education, (3) 2*, 61-65. Retrieved September 14th, 2015 from <http://0eds.b.ebscohost.com.ignacio.usfca.edu/eds/pdfviewer/pdfviewer?vid=2&sid=397c4771-5864-41e4-b75f-d09cdb205135@sessionmgr110&hid=104>

Appendix A

Introductory Brochure for Newly Diagnosed Oncology Patients

INPATIENT FAMILY GUIDE TO PEDIATRIC ONCOLOGY

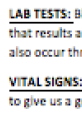
The Pediatric Oncology Team at Kaiser Permanente Santa Clara would like to welcome you to our unit. We strive to provide personalized, holistic care to your family by informing and educating you throughout and after your hospital visits. Our goal is to work together and include you and your family as an important part of the care team. We hope this handout will help guide you through the beginning stages of this very difficult time and provide you with essential information as you begin to learn about your child's illness.

MEET THE TEAM



A personalized care team of experts in the field of pediatric oncology will be dedicated to supporting your child and your family. Physicians, Nurses, Social Workers, Case Managers, Child Life Specialists and Dieticians work together to provide the best quality care for your child.

A TYPICAL DAY ON THE UNIT



LAB TESTS: Blood labs are drawn early in the morning so that results are back before the day begins. Other tests may also occur throughout the day.

VITAL SIGNS: Vitals are performed multiple times per day to give us a good understanding of your child's status.

Daily weights: Your child may be weighed every morning to give us a good understanding of their fluid status.

Input/Output: We will measure how much fluid and food your child is taking in and putting out. It is important that urine and stool are collected in measuring containers and are not flushed before the nurse checks.

ROUNDS: The care team will make daily rounds to check in with you. It is important to keep a log of questions that come to your mind as you are here, so that they can be answered during rounds. The care board in your room is also a great place for communication.

TREATMENTS: Your child will have procedures, tests and treatments that may require them to be "NPO" (NO food/drink by mouth) for a certain time period. This can be very difficult, but it is important to follow these instructions closely for your child's safety.

MEDICATIONS: Our goal is to teach you about your child's medications. Many medications will have side effects. The care team will provide interventions to help relieve some of these side effects and make your child more comfortable.

EDUCATION: You and your child will be receiving a lot of information during your hospital stay. Staff will work with your individual learning needs and go at a pace that is comfortable for you.

ACTIVITY AS TOLERATED: We would like your child to run, play, be active, and just be a kid! There is an outdoor and indoor play area connected to the unit that you are encouraged to use.



INFECTION PREVENTION



Cancer treatment places your child at a high risk for infections. The number one thing you can do to prevent infection is to wash your hands, and encourage your child and others to do so also.



MORE INFECTION PREVENTION STRATEGIES FOR YOUR CHILD:

- HYGIENE**
- Daily showers
 - Oral care

- PRECAUTIONS**
- Wear a mask in the hallways
 - No fresh flowers/plants
 - No open windows in the room

- DIET**
- Handle food safely
 - Cook food thoroughly
 - No raw fruits/vegetables

VISITORS

Parents are welcome 24 hours per day. We highly encourage visits from family and friends. We want your child to socialize, have support systems, and be able to continue with their normal routines, but it is important that your child gets enough rest and is protected from infections. All visitors must wash their hands.

Visitors with **ANY** signs of illness are **NOT** allowed to visit!

HOSPITAL SCHOOL



Our number one priority is your child's health and well-being. However, long hospitalizations can interfere with your child's education. Social Workers will work with you and your child's school to create a program in which your child can stay up-to-date with schoolwork during hospitalizations.

TALKING WITH YOUR CHILD ABOUT CANCER

Talking with your child about cancer can be frightening and overwhelming. We understand that you want to protect your child, but being completely honest about their illness and what they can expect throughout their hospital stay is important. Honesty creates trust, and your child will benefit greatly from trusting you and their care team. Talking with your child about cancer gives them a sense of control and security. Staff members, specifically Child Life Specialists, can help you find ways to talk with your child based on their age, learning level, and diagnosis. We want to help you and your child be the experts of your health care.

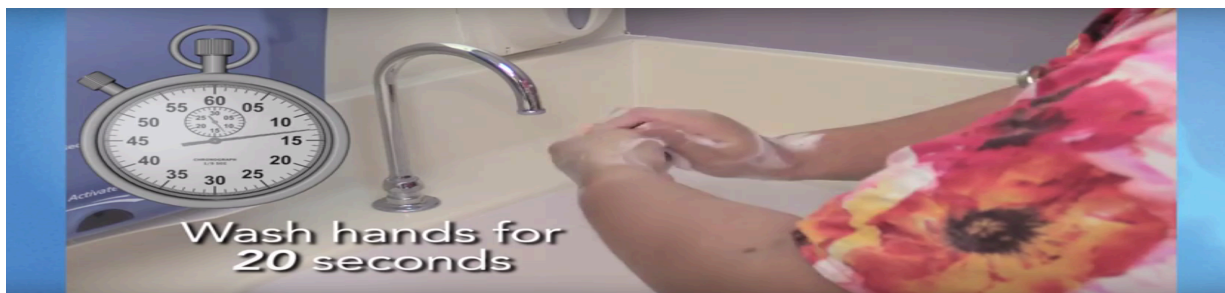
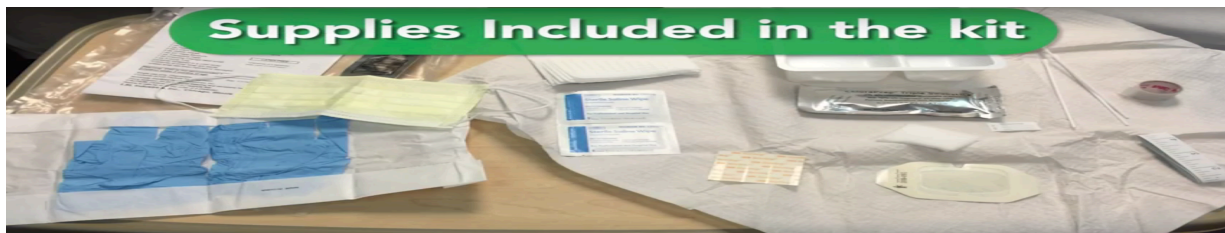
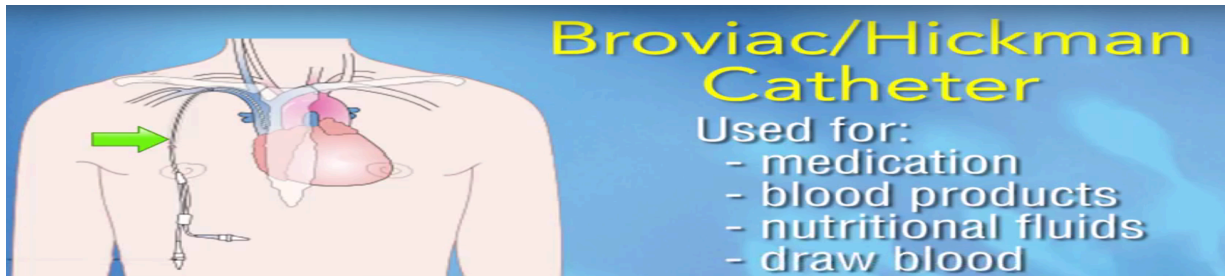
SOCIAL SERVICES

Social Workers will provide you with additional support needed to cope with your child's diagnosis. Social Workers will help guide you in making informed decisions regarding your finances and insurance, and will make referrals to other care systems as needed. Your Social Worker will also provide you with helpful support services and resources and make sure that you are receiving as much assistance as you need during and after your hospitalization.

We wish to guide you through this process as compassionate care coordinators. Please reach out to your care team for anything that you may need.

Appendix B

CVC Dressing Change Video Screen Shots



Appendix C

Budget and Cost-Benefit Analysis for Reducing Central Line-Associated Bloodstream Infections

Components	First Year Budget
Clinical Nurse Leader	\$7,000
Clinical Nurse Specialist	\$8,166
Clinical Nurse Educator	\$5,416
Unit Manager	\$8,500
Media Specialist	\$4,333
Infection Preventionist	\$5,666
DVDs	\$330 (qty.=100)
Total Expenditure	\$39,411

Figure C1. Budget Projection for First Fiscal Year (1/12 of each salary incorporated)

	25% Reduction	50% Reduction	75% Reduction
Reduction Savings	\$270,000	\$540,000	\$810,000
Annual Budget	\$39,411	\$39,411	\$39,411
1-year Net Savings	\$230,589	\$500,589	\$770,589

Figure C2. First Fiscal Year Net Savings for 25% (7.5 cases), 50% (15 cases), and 75% (22.5 cases) CLABSI Reductions (\$36,000 per infection)

Appendix D

Great Big Greenbook Microsystem Assessment

**Streamlining Central Line Dressing Changes to
Decrease Bloodstream Infections****A Microsystem Self-Assessment, Diagnosis, and Treatment Plan**

Introduction to the Microsystem: The Pediatric Oncology-Hematology unit at is a complex microsystem that is integrated into the neighboring PICU floors as needed. The care team is comprised of highly specialized, multidisciplinary providers that strive to promote patient safety and education through the use of primary, secondary, tertiary, and palliative care while emphasizing the importance of family-involvement and patient autonomy. The goal of this microsystem is to incorporate evidence-based practice at the point of care, while maintaining a holistic approach in addressing the individual needs of each patient and their family.

Step 1 (The Team): Physicians, Clinical Nurse Specialists, Nurse Educators, Nurse Managers, Child-Life Specialists, Case Managers, Nursing Staff, Infection Prevention, and patients and their family members will use a collaborative approach to streamline CVC dressing change procedures and the education behind the implementation of these procedures in both the inpatient and in-home settings.

- Patient/family surveys/interviews will be conducted weekly for a period of 2-3 months to obtain information regarding concerns related to CVC dressing changes upon discharge
- Nursing staff will be observed/audited weekly over the course of 2-3 months on dressing change techniques and will be coached at the point of care to enhance their skill set
- EBP regarding CVC dressings will be presented during daily huddles and shift reporting to promote continuity of information, team goals, and patient care
- The lead team will meet weekly to assess, formulate, and update PDSA and SDSA plans

Step 2 (Assessment):

I. PURPOSE: To provide high quality, evidence-based, innovative, cost-effective care, that is efficient, patient-centered, safe, and assists in increasing staff morale and patient satisfaction.

II. PATIENTS: Children receiving long-term, immunosuppressive, invasive treatments through CVCs who are highly susceptible to infections due to age, neutropenic effects of treatment regimens, long hospital stays, and comprehensive CVC homecare requirements (cap & dressing changes, line flushing, & blood draws). The majority of parents express fear of providing CVC care to their children and feel that education is not well established.

III. PROFESSIONALS: Experienced nurses who undergo annual training for CVC care. Rarely does the unit have travelers or floaters. Staff morale, engagement, and teamwork are high, but stress levels often interfere with workflow when patient census and acuity is high. The Nurse Educator is available as a resource during the week and provides supplemental training as needed.

IV. PROCESSES: The hospital-wide inpatient policy for CVC dressing changes occurs every Sunday. The Pediatric unit changes inpatient dressings in accordance with the schedule each family has at home. This increases patient satisfaction, however, there is low compliance noted of inpatient nursing staff and families dating and documenting dressing change procedures.

V. PATTERNS: Oncology patients “come in waves” and many patients are on similar treatment schedules. Patient education needs are highest upon initial admission and discharge. Patients are overwhelmed when given too much information on comprehensive CVC care.

VI. METRICS THAT MATTER: Overall hospital CLABSI rates have been at an all time low over the past few months, with the exception of the ED and the pediatric department. CVC labs drawn at home do not have significantly higher rates of contamination than those drawn on the unit or at the outpatient infusion center. Poor inpatient and unknown in-home dressing change techniques need further investigation and assessment. Dressing change education for patients is not sufficient or streamlined enough to ensure that aseptic procedures are

understood, and always being followed once discharged home. The Infection Prevention and Control Department is the owner of CLABSI rate data, and presents these metrics (along with other pertinent infection-related information) during daily leadership huddles in which the Nurse Manager and CNS are actively engaged. The Nurse Manager is proactive in communicating with the Infection Prevention team when infection-related issues arise, and has a keen awareness of the unit's overall infection rates. A data display wall (of infection rates and cost analyses) may be a smart tool to help engage staff understanding of the current unit status and bring to attention the importance of streamlining CVC dressing change education and practice techniques.

Step 3 (Diagnosis):

We aim to improve CVC dressing change procedures and educational materials in the Pediatric inpatient setting. The process begins with the lead team analyzing data obtained from staff and patients over the course of 2-3 months, and ends with evidence-based practice being implemented and staff to patient education being enhanced. By working on this process, we expect decreased CLABSI rates with resulting cost-effectiveness, increased patient satisfaction and comfort throughout the hospital stay and upon admission, and enhanced staff morale through improving their skill set and knowledge of quality care delivery. It is important to work on this now because it will help lower the rate of life-threatening central line infections of our very vulnerable pediatric population.

Step 4 (Treatment): The treatment will require a PDSA and SDSA approach, as well as engagement and proactive involvement of all key team members, especially family members.

I. AIM: To streamline dressing changes based on the latest evidence and human and financial resources available. To increase patient/parent comfort in and knowledge of providing comprehensive CVC care notably prior to being discharged with this invasive homecare responsibility.

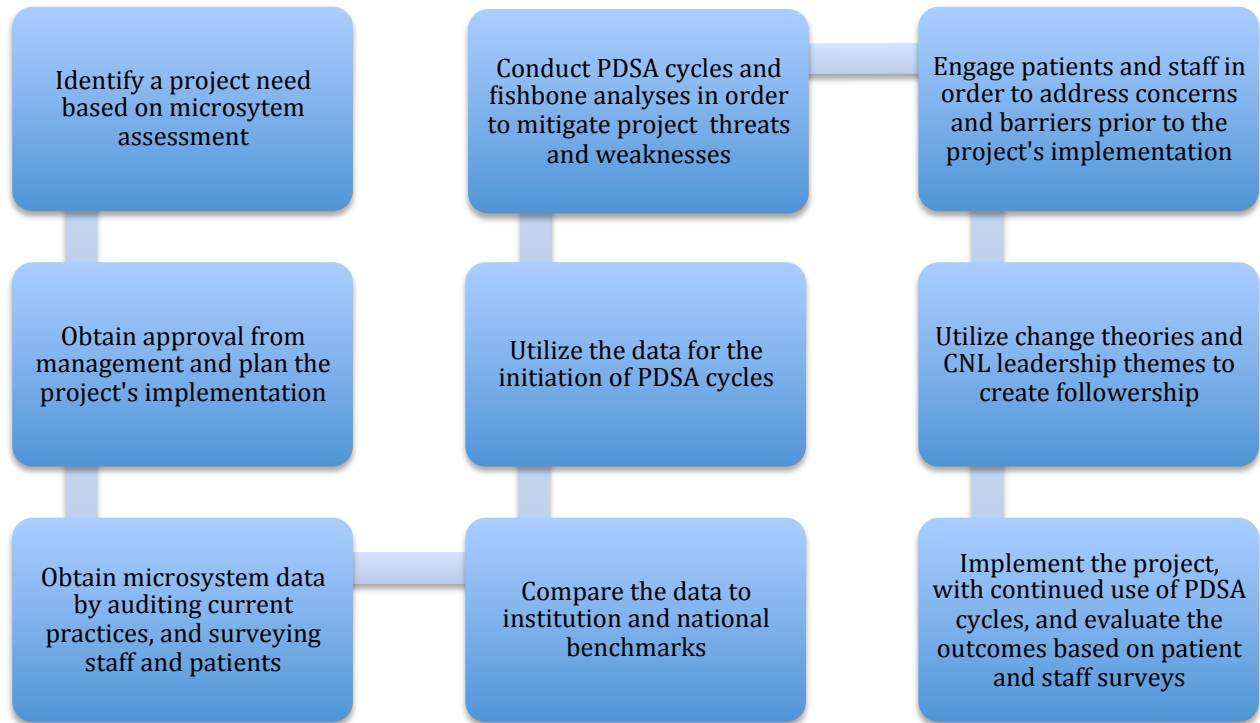
II. MEASURES: Create an expert lead team of nursing staff responsible for all inpatient dressing changes and education. Use a buddy system in the inpatient setting to ensure sterile technique is being followed, and encourage a buddy system to parents performing dressing changes at home. Utilize patient surveys to analyze which types of educational tools will be most beneficial to them upon discharge. Create (multilingual) dressing change skills videos available on the Kaiser website for families to access from home, and create supplemental skill stacks with step-by-step instructions that align with the videos. Follow up during and after, by using the same measures from Step 1 (patient/staff surveys, staff auditing, daily huddles) to ensure that measures are effective and accomplishing the team's vision.

Conclusions: Understanding and assessing the 5 P's (purpose, patients, professionals, processes, patterns) of the microsystem and engaging staff and family members in microsystem changes is essential.

- Encouragement of point-of-care staff involvement in the development of educational tools will ensure that the delivery of information is streamlined. Staff surveying for potential CVC dressing change experts must be encouraged and the opportunity provided to anyone interested in these positions.
- Supplemental educational opportunities for staff should be negotiated with hospital stakeholders and advocated for by the Nurse Manager during leadership meetings. Potential CVC and CLABSI conferences should be sought out and offered to staff, and possibly patients/families as well.
- Cause and effect diagrams, data display walls, and root cause analysis information should be incorporated on the unit for staff and family members to review.
- The incorporation of a PDSA and SDSA approach will streamline changes with specific time frames for the expected team goals. PDSA goals will be reinforced during shift reports and staff huddles, allowing for open communication. Nurses will be provided opportunities to present evidence and suggest areas of PDSA improvement. Team leaders will monitor SDSA goals by analyzing the information obtained during PDSA follow-up.
- The team must carry out and follow up with the measurements used to gauge current microsystem functioning in order to sustain, improve, or eliminate specific factors relevant to the expected outcomes. The SDSA will be the primary tool for analyzing current procedures and their sustainability/effectiveness.
- The Inpatient Greenbook Workbook will be provided to all nursing staff and referenced on a continuous basis to provide future opportunities for microsystem improvement projects.

Appendix E

Process Mapping of the Project



Appendix F

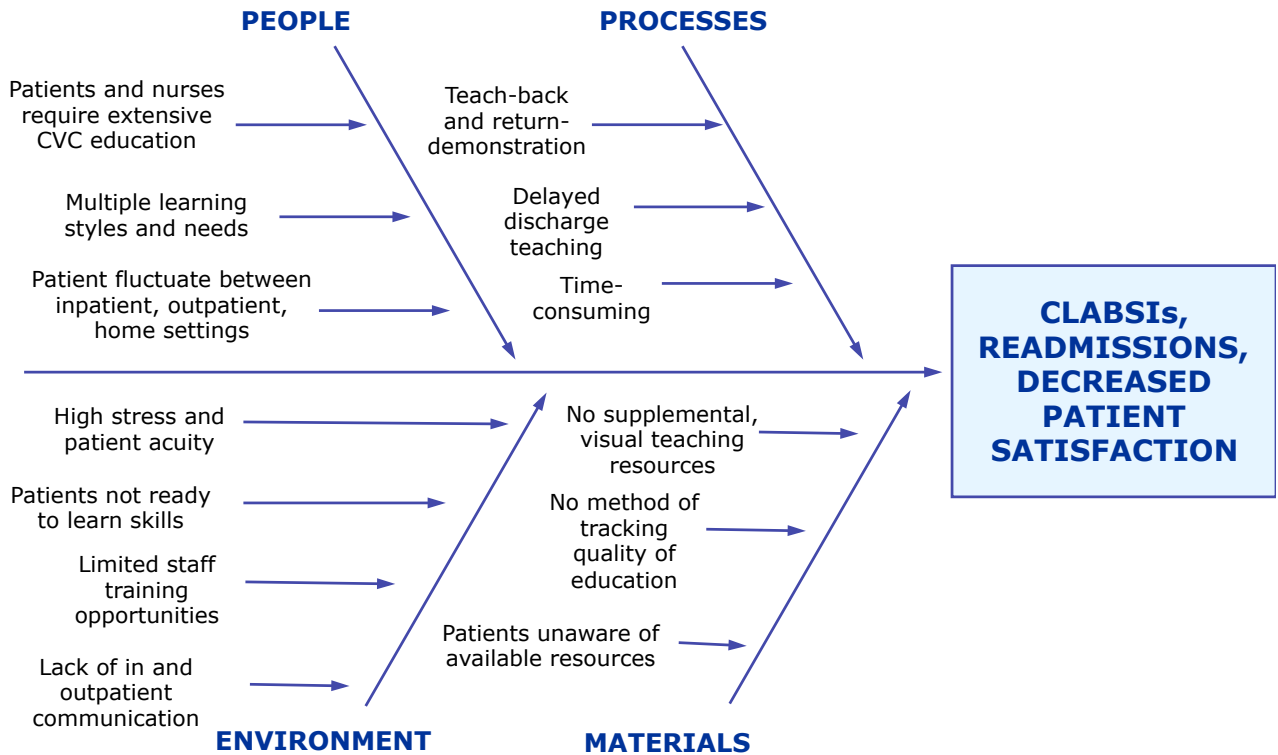
Stakeholder Analysis Matrix Displaying Impact, Influence, and Contributions

Stakeholder	Impact Level	Influence Level	Needs and Values	Concerns	Contributions	How to Engage
Unit Manager	High	High	Staff satisfaction, patient safety, microsystem budget, resource allocation	Budget, time, realistic goals	Decision-making, stakeholder relations	Involve in project planning and budgeting
CNS and Unit Educator	<i>High</i>	<i>High</i>	Patient and staff education, staff development	Staff training and development opportunities	Expertise, staff relations	Consult and involve during each step
Infection Control	<i>High</i>	<i>Med</i>	Infection prevention, patient safety	Risk of infection due to nonadherence	Expertise, global picture	Monthly meetings and RCAs
Media Department	<i>Low</i>	<i>Med</i>	Help with editing and team process flow	Time and lack of clinical knowledge	Expertise, institution branding	Consult and help with editing
Compliance	<i>High</i>	<i>Med</i>	Rules and regulations, legality issues, regulatory mandates, patient and staff safety and confidentiality	Breaches in confidentiality, legal repercussions	Project approval, paperwork for consent, and legal information	Meet with to discuss needs and barriers. Comply with all needs in timely manner
Quality	<i>Med</i>	<i>High</i>	Resource allocation, implementation of best practice, goal achievement, patient safety, quality improvement	Progress tracking, realistic goals, successful implementation	Global picture, advice on PDSA cycles, setting goals	Attend quality huddles to provide updates, and obtain feedback
Nursing Staff	<i>High</i>	<i>High</i>	Patient care, workflow ease, incentives, applying theory to practice	Time, resource allocation, changing current practices	Point of care expertise, insight on implementation barriers	Provide continuous training and support, and opportunity for project involvement
Patients and Family Members	<i>High</i>	<i>Med</i>	Individualized care/ education/support, early discharge teaching	Not enough time for teaching prior to discharge and fear of leaving hospital	Needs assessment, impact on patient satisfaction	Obtain feedback, meet with patients/families individually to address needs

Appendix G

Fishbone Diagram Showing Causes & Effects Contributing to Adverse CVC-Related Outcomes

CAUSES AND EFFECTS OF UNSTANDARDIZED CVC EDUCATION



Appendix H

Strengths, Weaknesses, Opportunities, Threats Analysis

STRENGTHS

- Collaborative effort among patients and caregivers
- Enhanced patient-provider relationships
- Increased patient autonomy and independence
- First policy-based educational video

WEAKNESSES

- New and time-consuming
- Difficult to track progress
- Video may need constant updates due to material and procedural changes

**SWOT
ANALYSIS****OPPORTUNITIES**

- Stepping stone for institution-wide educational films
- Outpatient teaching and streamlined care
- Empowers nurses to create innovative educational materials

THREATS

- Sustainability
- Accessibility
- Budget
- Non-transferability
- National EBP Changes

Appendix I

Detailed SWOT Analysis and Plans to Mitigate Threats

STRENGTHS: This project strives to empower patients to independently care for their CVCs in the homecare setting by providing them with a comprehensive, didactic learning environment in which they can obtain the skills necessary to carry out evidence-based practice independently in the homecare setting. It is also one of the first procedure-based patient education videos produced by the institution, which makes it very exciting as a pilot project. The project is derived from the pediatric inpatient CVC dressing change procedure, which has given policy and procedure committee members the opportunity to review and reevaluate evidence-based nursing practice related to this specific procedure and population. In addition to patient safety, autonomy and health outcome improvement, the implementation of this project is also very cost-effective and profitable for the hospital. The cost of treating a CLABSI, particularly amongst pediatric oncology patients, is substantial. By publishing this video online and providing low-cost DVDs to patients we can begin to reduce errors and life-threatening infections in dressing faulty practices that are occurring in the home care setting upon patient discharge.

WEAKNESSES: The primary weakness of this project is also one of its greatest strengths--the fact that it is very novel and time-consuming. I also worry about changes in materials and practices over time; however, this is an expected and natural component of healthcare.

OPPORTUNITIES: Because this video is one of the first procedure-based educational videos published by the hospital, it can be a stepping-stone for future creation of such videos for patient *and* staff education. Now that the stakeholders and compliance departments have been involved in this process, the process has been made easier for future projects. On a smaller scale, this project will empower nurses to take on creative, informatics-based, media-driven projects of their own to enhance quality improvement within their microsystems. Another opportunity is to initiate the video in the outpatient clinic for a streamlined approach to patient education and care. The ultimate opportunity, though, is for this project to be adopted by the regional medical center and implemented across all of our institutions across the state.

THREATS:

- 1) Sustainability: My greatest hope is that the video is properly introduced to the unit staff in order for it to be easy accessible and provided to patients. I plan to mitigate this issue by engaging the staff in a skills day session on CVCs, CLABSIs, and CVC education. I also plan to set up a station on the unit specifically for oncology patients and patients with central lines in which DVDs and educational pamphlets can be found for nurse reference and patient distribution.
- 2) Accessibility: The goal is to have patients able to access this video during hospitalization, as well as have at home upon discharge. To mitigate a lack of accessibility, I have worked with the Information Technology Departments to publish the video on our institutions website, as well as create enough DVDs present on the unit to give to patients.
- 3) Budget: Although it is cost-effective to create DVDs for patients, I worry that the unit's budget will interfere with consistent DVD production in the future. I will present a cost-benefit analysis the unit manager in order to mitigate this potential issue.
- 4) Non-Transferability: The reason why I initially chose to initiate this project was to streamline the care among the in and outpatient settings. However, at my institution, a physician-led committee is responsible for approving outpatient health education materials. In order to mitigate this issue, and have the video adopted by our outpatient clinic (upon successful pilot implementation in the inpatient setting), I have already discussed and presented the video to the outpatient health education media department chair, who will further guide me through the steps of getting this film approved for outpatient use, so that when the outpatient clinic is ready to adopt it, logistical barriers have already been addressed and a fluid transition of implementation can occur.

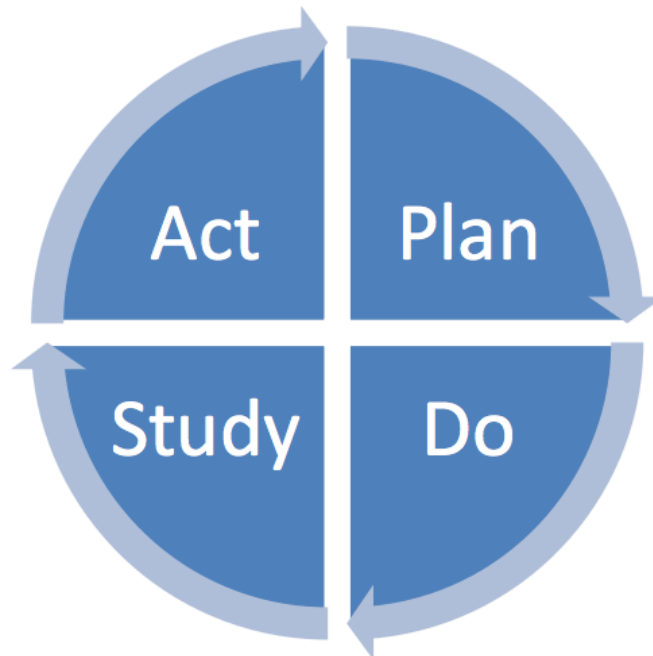
Appendix J

The Four Plan-Do-Study-Act (PDSA) Cycles

Cycle 1: Summer/Fall 2014

Project plan changed due to the needs assessment, and further data collection needed to occur

Microsystem assessment was conducted, which revealed gaps in educational practices



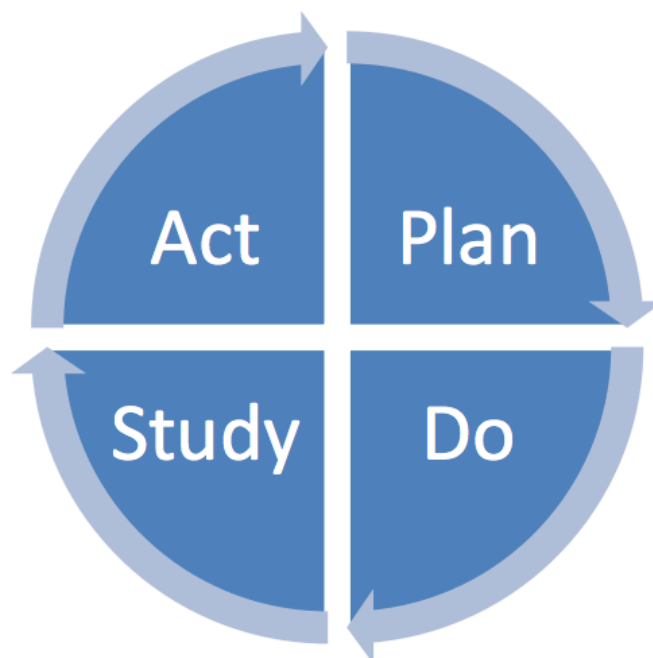
Project plan was identified in collaboration with the unit manager, infection prevention department, and unit educator

Project planning was initiated and time-sensitive goals were set

Cycle 2: Fall/Winter 2014

Meetings with the infection prevention department were held, and outpatient surveys were conducted

Data collection revealed that many patients were relying on the outpatient clinic for CVC care and CLABSI rates were rising



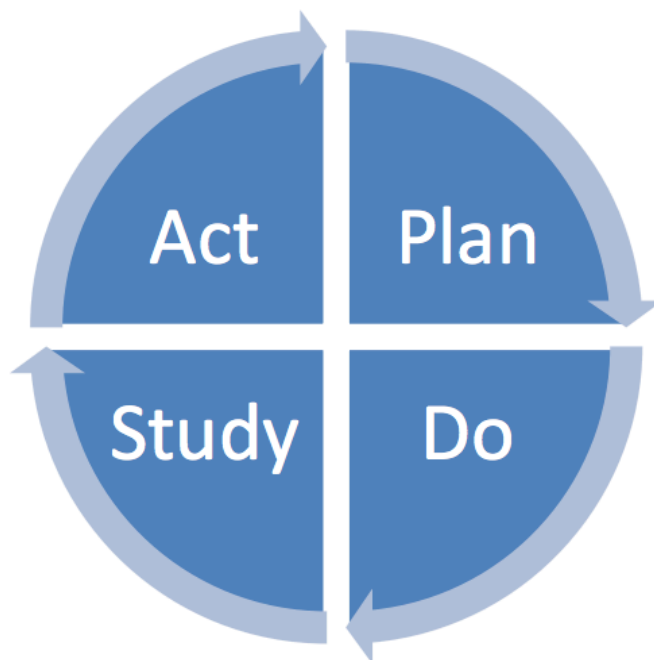
Plan to obtain data from patients and staff was created in conjunction with input from the CNS

Staff and patient surveys were conducted for 2-3 months

Cycle 3: Winter/Spring 2015

The video was filmed and shared with the multidisciplinary team for review

The feedback obtained during the “do” phase created a longer editing process, but allowed for a more comprehensive, evidence-based video to be created



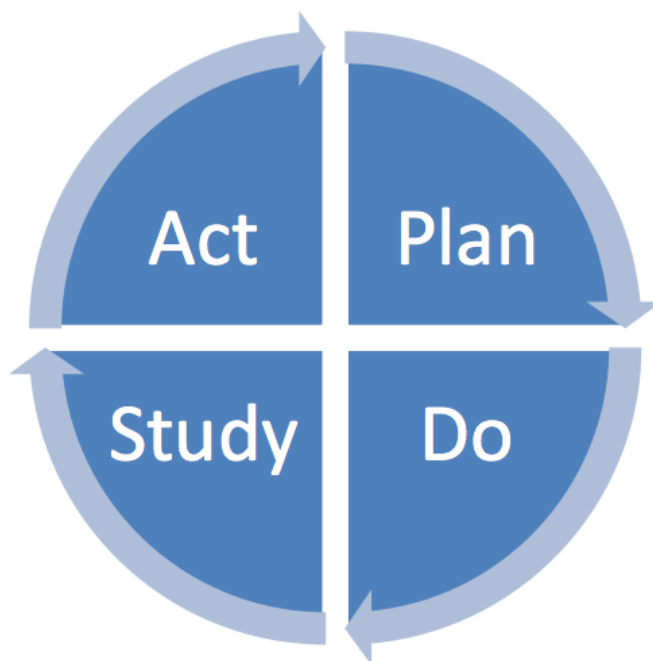
The initiation of a CVC dressing change video for patients was a hopeful step toward improving educational practices

The video script was created and shared with physicians and nurses to obtain feedback

Cycle 4: Summer/Fall 2015

The video was launched in the clinical setting and is to be provided to all patients with CVCs. Feedback is continuously being obtained from patients using a secondary survey

The nurses were surveyed regarding concerns related to the project, and post-training surveys were conducted



During the video’s final editing stages, the plan to implement the video in the clinical setting and obtain feedback was created

100% of Pedi/PICU nursing staff received in-service training on the video during their quarterly fall skills day sessions

Appendix K

In-Service Training Presentation for Pedi/PICU Nurses


Central Line Dressing Change Video

PEDI/PICU SKILLS DAY
OCTOBER/NOVEMBER 2015
PRITAM STEINER, BSN, RN
USF MSN STUDENT



SITUATION

*A CENTRAL VENOUS CATHETER (CVC) DRESSING CHANGE VIDEO HAS BEEN
CREATED*

- TO ENHANCE INPATIENT EDUCATION WHEN PATIENTS FIRST RECEIVE CVCs
 - TO HELP EASE AND GUIDE PATIENT EDUCATION PROCESSES FOR NURSES
 - TO PROVIDE ALTERNATIVE TEACHING METHODS (VISUAL, WRITTEN, AND VERBAL)
 - TO ENHANCE NURSING PRACTICE WITH EVIDENCE-BASED GUIDELINES AND PROCEDURES
 - TO DECREASE CLABSI RATES BY UTILIZING BEST PRACTICE AND INVOLVING PATIENTS IN THEIR CARE
- 

BACKGROUND

- PEDIATRIC (ONCOLOGY) PATIENTS HAVE THE HIGHEST RISK OF DEVELOPING CLABSIS
 - CLABSIs account for 84% of bloodstream infections
 - Pedi CLABSIs can cost an average of \$45,000/infection
 - Pedi BMT patients have highest CLABSI rates
 - Hospital stays prolonged by up to 3 weeks
- CENTRAL VENOUS CATHETER EDUCATION NEEDS ARE HIGHEST:
 - During initial hospitalization
 - Prior to discharge
- DISCHARGE EDUCATION STARTS UPON ADMISSION AND IS AN ON-GOING PROCESS
 - Inpatient nurses are the first to begin the education process



ASSESSMENT

- FILM-BASED EDUCATION HAS PROVEN TO BE EFFECTIVE WITH CHRONICALLY-ILL PEDIATRIC PATIENTS AND THEIR FAMILIES
- MORE EDUCATIONAL MATERIALS ARE NEEDED FOR PARENTS TO PERFORM CVC CARE AT HOME INDEPENDENTLY
 - Introductory brochure for oncology patients and their families during initial admission
 - CVC dressing change video based on KP pediatric central-line policy/procedure
 - A supplemental step-by-step handout that accompanies the CVC dressing change video

RECOMMENDATIONS

- USE THE DRESSING CHANGE VIDEO FOR ANY PATIENT WITH A CVC AS SOON AS THEY ARE READY TO LEARN
- KEEP IN MIND THE PATIENT'S EDUCATIONAL AND EMOTIONAL NEEDS WHEN TEACHING THEM ABOUT THEIR CENTRAL LINES
- THE DRESSING CHANGE VIDEO IS SUPPLEMENTAL AND SHOULD NOT REPLACE CURRENT METHODS OF CENTRAL LINE DRESSING CHANGE EDUCATION
- PROVIDE EVERY PATIENT WITH A DVD WHILE IN THE HOSPITAL, AND TO TAKE HOME UPON DISCHARGE



<https://www.youtube.com/watch?v=R3Hfd1Ztzh4>

Appendix L

NURSE SURVEY
Central Venous Catheter Dressing Change

1. How often are you the first person to initiate central line dressing change education?

- Always (90-100%) Usually (45-89%) Sometimes (1-44%) Never (0%)

2. How often do you think that the majority of new patients are ready to learn how to perform central line dressing changes during their first hospital admission?

- Always (90-100%) Usually (45-89%) Sometimes (1-44%) Never (0%)

3. When should patient education occur? *Select all that apply.*

- During admission
 Throughout hospitalization
 Upon discharge
 After discharge

4. What are the barriers you face while teaching patients how to perform a central line dressing change? *Select all that apply.*

- Not enough time
 Not enough resources to help teach patients with different learning needs
 Not enough supplies available on the unit
 Language barriers
 Parents not at bedside regularly enough
 Other: _____

5. What do you do when a patient/parent is unable to learn from your methods of teaching? *Select all that apply.*

- Patient/parent unable to understand due to language barrier: _____
 Patient/parent too emotional or overwhelmed by information: _____
 Parent unwilling to take on this task once discharge: _____
 Child unable to sit still and/or cooperate during teaching process: _____
 Other: _____

6. What resources would help enhance your ability to teach patients about their central lines? *Select all that apply:*

- Videos
 Pamphlets and brochures
 Step-by-step written instructions
 Simplified written policies and procedures
 Sample supplies and mannequins
 Physician support and explanation at the bedside
 Other Resources: _____
 No improvements are needed are needed for CVC education

7. Which part of the central-line education process is most time-consuming? What are some ways to improve those time consumptions?**8. Which part of the central line dressing change do you feel is most complicated for patients to learn?**

Appendix M

Methods of Evaluating Patient Education

Supporting the Project with an Educational Plan

CVC EDUCATION PROJECT

Goal: To increase patient/parent comfort in and knowledge of providing comprehensive CVC care notably prior to being discharged with comprehensive CVC homecare responsibility. Also, to decrease CLABSI rates associated with poor homecare CVC techniques.

Purpose: To streamline CVC care based on the latest evidence and on human and financial resources available.

Learner Cohort Description: This project is primarily geared at pediatric hematology-oncology patients with CVCs, however, can be applied to any pediatric or adult patient with a CVC being discharged from the hospital with the responsibility of independent CVC care. At any given time, an estimated 40-60 pediatric oncology patients will have long-term CVC access. Currently (March 2015), 26 patients have CVCs on the outpatient side, all of which are encouraged to perform CVC dressing changes and CVC maintenance care independently in the home care setting, as opposed to relying on the outpatient clinic for these services.

Objectives and Sub-objectives	Content Outline	Method of Instruction	Time Allotted	Resources	Method of Evaluation
Following CVC homecare videos and daily CVC nursing education patients (or their caregivers/parents) will upon discharge be able to:	Combination of task organization, comprehension (critical thinking), verbalization and hands-on skill training.	Combination of Cognitive, Affective and Psychomotor Domains. The parent will be adept by the use of:	Due to the comprehensive nature of CVC care, these tasks will be learned on a continuous, individual basis and not always within minutes. The following are time range estimates.	All resources will be procured from current EBP and current policies and procedures (institution and unit-specific)	Skill-specific teaching will be evaluated by various 1:1 and group techniques (periodic). Long-term (program) evaluation (summative) will be based on patient feedback via written surveys and verbal interviews.
-Properly and independently identify CVC dressing change time requirements	-Will create calendar in order to manage dressing changes exactly every 7 days. Also able to recognize when soiled and in need of change	-1 on 1 instruction & independent review of supplemental educational materials	1 minute - 20 minutes	Sample calendar from outpatient case manager.	Post-testing and observation (use of checklist)
-Identify all supplies needed for CVC dressing changes	-Puts supplies in order and applies them aseptically	-Demonstration w/ return demonstration	1 minute - 3 hours	Inpatient and outpatient CVC care kits will be compared. Picture guidebooks	Return demonstration with observation
-Demonstrate proper CVC care techniques in accordance with hospital policies and procedures	-Follows skills sheet provided, able to verbalize each step, while following aseptic technique	-Demonstration w/ return demonstration	30 minutes - unknown (may be within one hour or within one week depending on individual)	Simplified brochure with CVC care steps and pictures to supplement CVC video	Return demonstration with observation (use of policy/ procedure guidelines)
-Express concerns (emotional and physical) regarding responsibility of CVC tasks	-Summarizes and provides feedback regarding any concerns with homecare CVC procedures	-Individual and group discussion with support group and care team	1 minute - 2 hours (may not occur until after discharged home with CVC care responsibility)	Family-centered care group, daily rounding, interdisciplinary team meetings	Question and answer sessions, group therapy, surveys, interviews, and interdisciplinary learning contract review

Appendix N

Nurse Survey Results

How often are you the first person to initiate central line dressing change education?

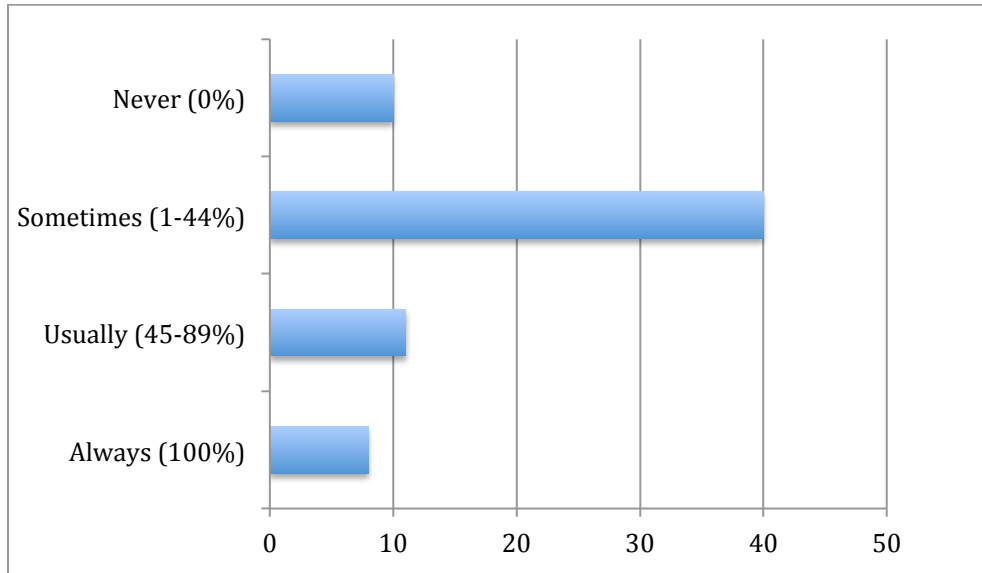


Figure N1. Nurse Survey, Question # 1

How often do you think that the majority of new patients are ready to learn how to perform central line dressing changes during their first hospital admission?

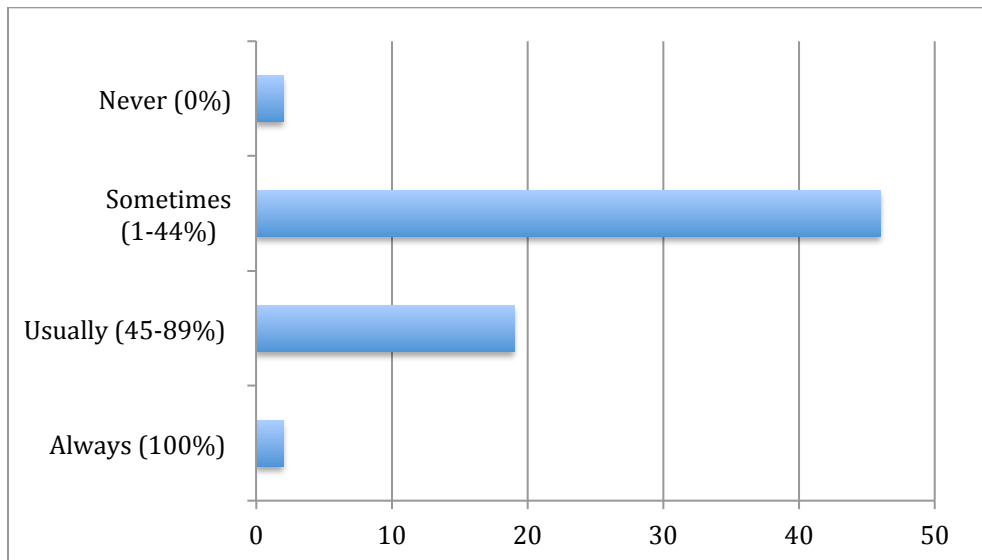


Figure N2. Nurse Survey, Question # 2

When should patient education occur? Select All that Apply.

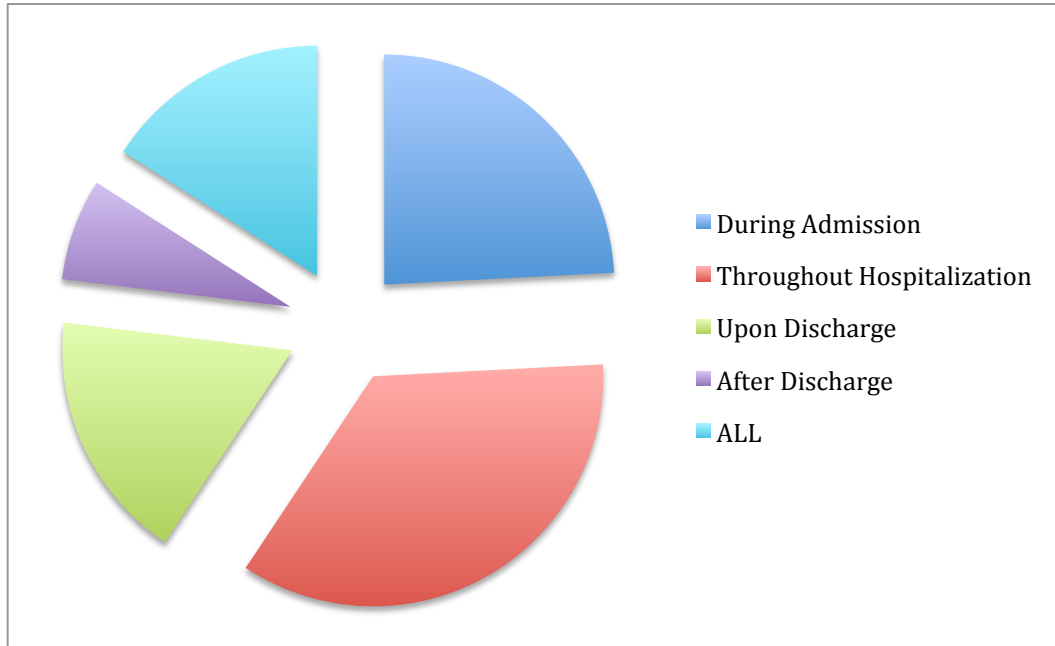


Figure N3. Nurse Survey, Question # 3

What are the barriers you face while teaching patients how to perform a central line dressing change?

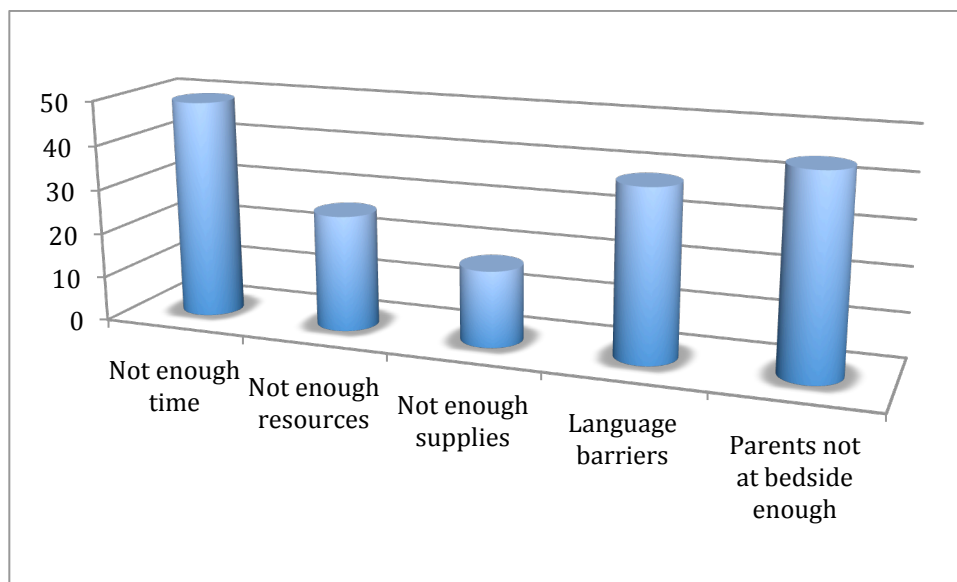


Figure N4. Nurse Survey, Question # 4

***What resources would help enhance your ability to teach patients about their central lines?
Select all that apply.***

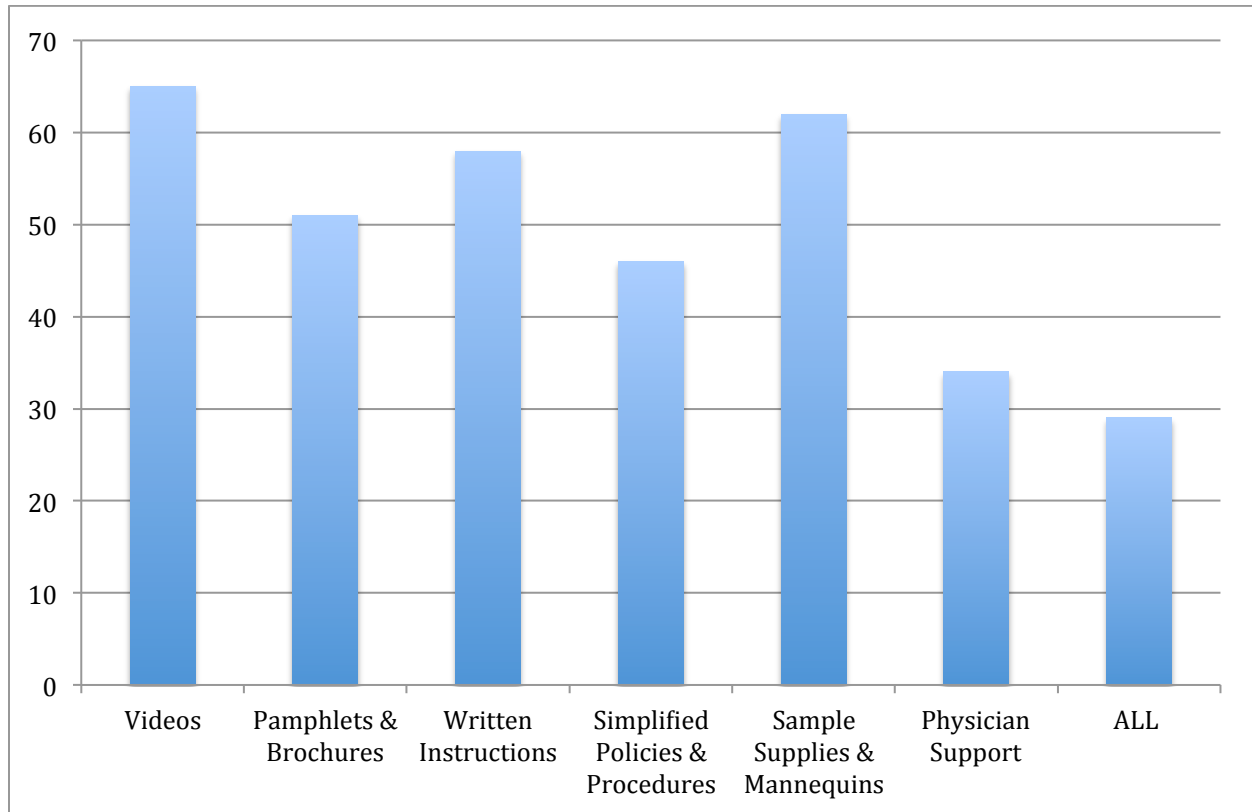


Figure N5. Nurse Survey, Question #6.

Appendix O

PRIMARY PATIENT SURVEY
Central Venous Catheter Dressing Change

1. How long has your child had a central line?

- 0-3 months 3-6 months 6-9 months 9-12 months More than 12 months

2. When your child was first admitted to the hospital, how often did you feel overwhelmed with the amount of information and education being presented to you?

- Always (90-100%) Usually (45-89%) Sometimes (1-44%) Never (0%)

3. What was the MOST concerning part about your child going home with a central line?

- The risk of infection
 Learning how to take care of the central line
 Accidentally pulling it out
 Other: _____

4. Do you currently perform central line dressing changes on your child at home?

- Yes No

If you selected “No”, and come to the clinic for the dressing changes, how long does it take for you to get to the clinic from your home? _____

5. On a scale of 1-10 (1 being not confident at all, 10 being very confident), how confident are you in performing central line dressing changes on your child? *Please circle one.*

1 2 3 4 5 6 7 8 9 10

6. Please select your top 3 most challenging parts of the central line dressing change:

- Identifying and setting up the supplies
 Removing the old dressing
 Identifying concerning symptoms and when to see a doctor
 Putting on sterile gloves
 Cleaning the site
 Putting on the new dressing

7. What tools could we use to help improve your ability to perform a central line dressing change at home?

- Videos
 Pamphlets and brochures
 Step-by-step written instructions
 Practicing on sample supplies and mannequins
 More nurse or physician support and explanation at the bedside
 Other Resources: _____
 No improvements are needed for central line dressing change education

8. Which part of the central line dressing change do you feel is most complicated to learn?**9. In which ways do we currently help you learn how to perform central line dressing changes?****10. How can we better help you learn how to perform central line dressing changes?**

Appendix P

**SECONDARY PATIENT SURVEY
Central Venous Catheter Dressing Change****1. How long has your child had a central line?**

- 0-3 months 3-6 months 6-9 months 9-12 months More than 12 months

2. How often do you think you will use the video when performing central line dressing changes at home?

- Always (90-100%) Usually (45-89%) Sometimes (1-44%) Never (0%)

3. When do you think it would be best to FIRST watch the video and learn the dressing change procedure?

- During the first hospital admission and stay
 Before your child gets a central line
 After your child gets a central line
 Right before you go home

4. Did the video improve your understanding of what a central line is?

- Yes No

5. Do you currently perform central line dressing changes on your child at home?

- Yes No

If you selected “No”, and currently come to the clinic for dressing changes, will this video prepare you to perform the dressing change at home?

- Yes No

6. After viewing the video, on a scale of 1-10 (1 being not confident at all, 10 being very confident), how confident are you in performing central line dressing changes on your child? *Please circle one.*

1 2 3 4 5 6 7 8 9 10

7. Please select the 3 most helpful things presented in the dressing change video:

- Identifying and setting up the supplies
 Removing the old dressing
 Identifying symptoms
 Putting on sterile gloves
 Cleaning the site
 Putting on the new dressing

8. What tools, in addition to the video, do you need to help improve your ability to perform a central line dressing change at home?

- Pamphlets and brochures
 Step-by-step written instructions
 Sample supplies and mannequins
 Physician support and explanation at the bedside
 Other Resources: _____
 The video is all I will need

9. Please provide any feedback (positive and negative) about the video:

Appendix Q

Primary and Secondary Patient Survey Results

Length of CVC access	Number of Patients	Performs dressing change at home	Does not perform dressing change at home
0-3 months	3	0	3
3-6 months	2	1	1
12+ months	3	3	0

Figure Q1. Patients who perform dressing changes at home versus coming to the outpatient clinic for these services.

What was the most concerning part about your child going home with a central line?

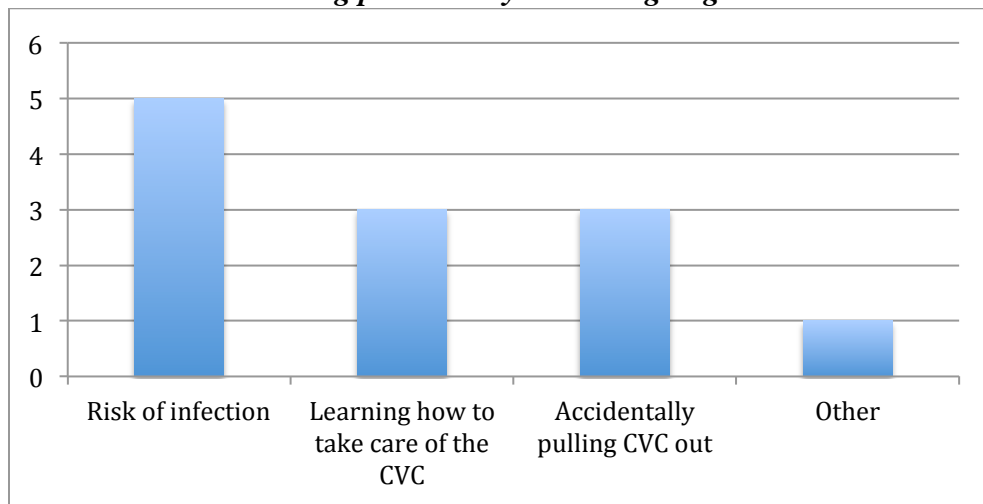


Figure Q2. Primary Patient Survey, Question #3. 63% of patients were most concerned with the risk of infection.

What tools could we use to help improve your ability to perform a central line dressing change at home?

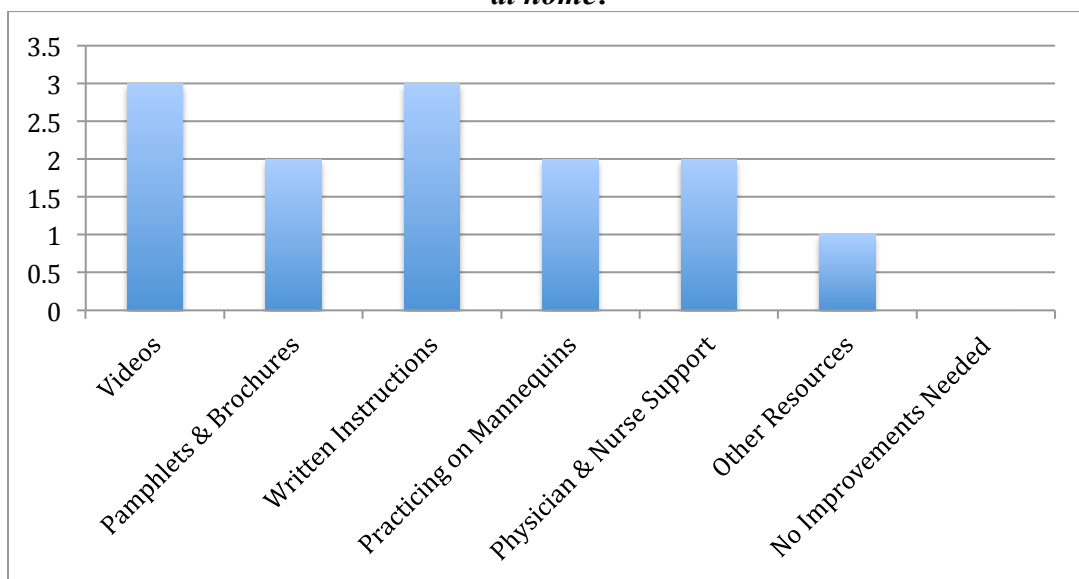


Figure Q3. Primary Patient Survey, Question # 5.

Please select your top 3 most challenging parts of the central line dressing change?

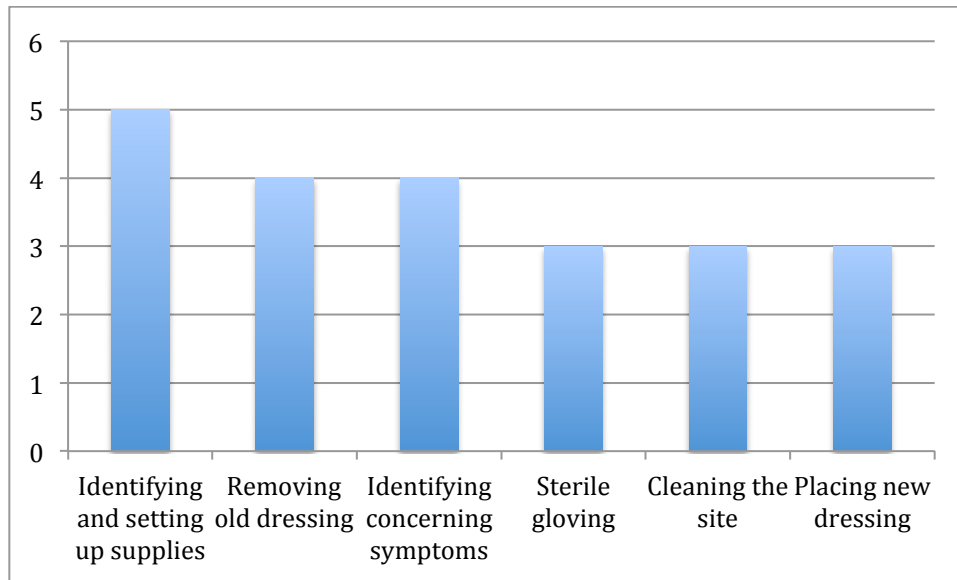


Figure Q4. Primary Patient Survey, Question # 4.

Please select the 3 most helpful things presented in the dressing change video? Did the video improve your understanding of what a central line is?

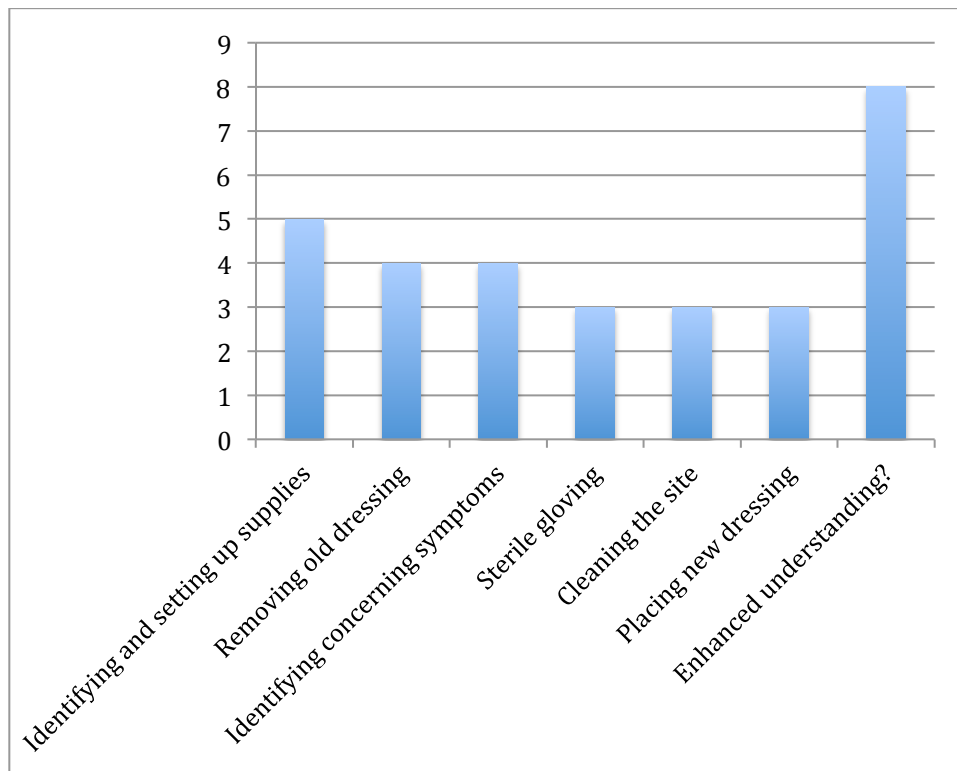


Figure Q5. Secondary Patient Survey, Question #6 and #7.

When do you think it would be best to FIRST watch the video and learn the dressing change procedure?

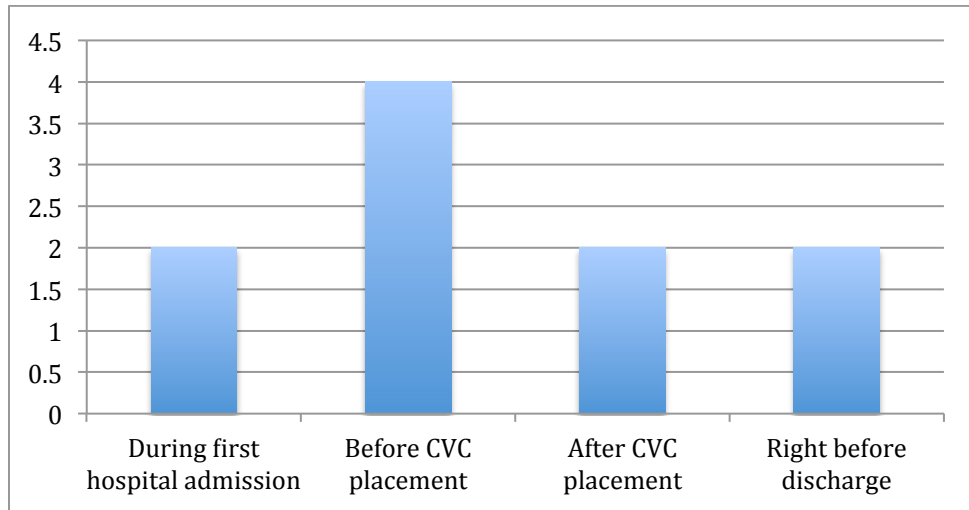


Figure Q6. Secondary Patient Survey, Question # 3.

On a scale of 1-10 (1 being not confident at all, 10 being very confident), how confident are you in performing central line dressing changes on your child?

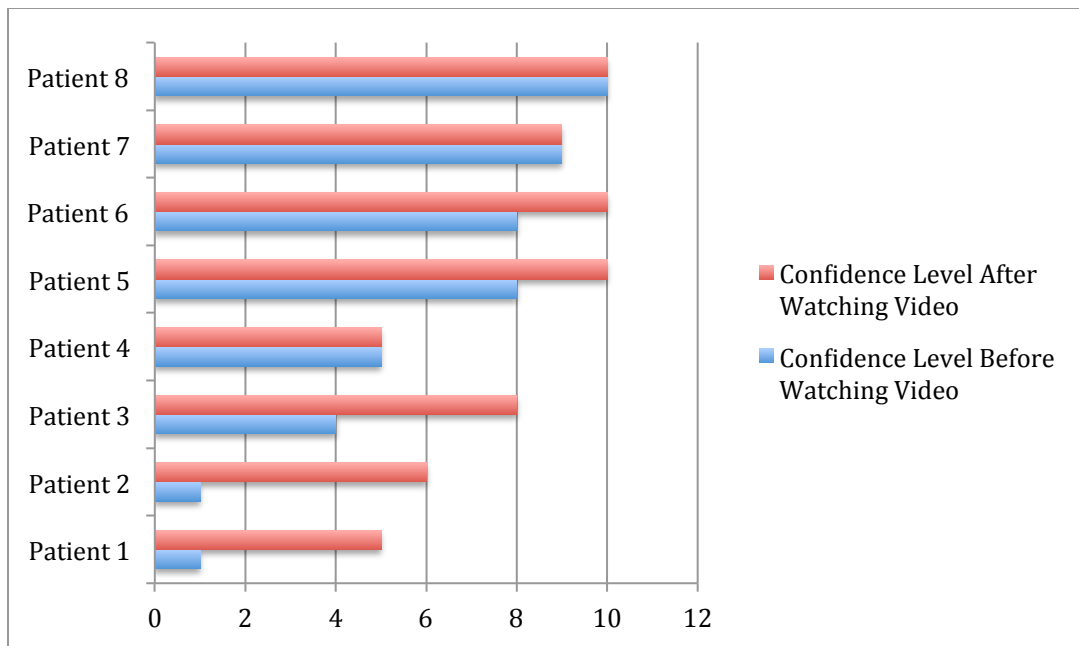


Figure Q7. Primary Patient Survey, Question # 4, and Secondary Patient Survey, Question # 6

Appendix R

Gantt Chart Showing Expected Versus Actual Time for Project Completion

