



NK5EO – Nurses are involved with the design and implementation of technology to enhance the patient experience and nursing practice.

Provide one example, with supporting evidence, of an improvement that occurred due to a change in nursing practice that resulted from clinical nurses' involvement with design and implementation of technology. Supporting evidence must be submitted in the form of a graph with a data table that clearly displays the data.

AND

Provide one example, with supporting evidence, of an improvement in the patient experience that resulted from clinical nurses' involvement with design and implementation of technology. Supporting evidence must be submitted in the form of a graph with a data table that clearly displays the data.

Example 1: Nursing Practice: Implementation of Ultrasound Technology to increase the percentage of patients with successful PIV placement upon initial attempts in the Medical Intensive Care Unit.

Background/Problem:

According to the Centers for Disease Control, central line-associated bloodstream infections (CLABSIs) lead to thousands of deaths and billions of dollars in health care costs. Preventing CLABSIs begins with reducing central line use. Capitalizing on opportunities to insert peripheral intravenous (PIV) catheters is an essential strategy to reduce CLABSIs. Prior to 2014, nurses in the Medical Intensive Care unit (MICU) were using traditional methods of visualization and feel to identify veins for PIV insertion. However, many of the patients in the MICU are diagnosed with multiple chronic conditions and suffer from insufficient venous access. Blindly inserting PIV catheters into patients with multiple chronic conditions and resulting frail veins was not easy. Nurses struggled to obtain quality PIV access and were interested in exploring methods to increase efficacy and efficiency of PIV placement insertion by maximizing the success with initial insertion attempts.

Goal Statement:

By using ultrasound technology to enhance peripheral intravenous catheter insertion use, MICU nurses will increase the percent of patients receiving successful PIV placement with <3 attempts.

Description of the Intervention/Initiative/Activity(ies):

In January 2014, J. Grady Johnston, M.Div., BSN, RN, CCRN, began discussions with Drs. Kyle Enfield, MD, Alexandra Kadl, MD and Diane Gomez Manjarres, MD, about



using ultrasound to facilitate the identification of peripheral veins for catheter insertion. As Medical Director and physician leaders in the unit, their collaboration was paramount to the potential change. The medical team was supportive of the plan and offered to help train RNs on the use of ultrasound. At the February Critical Care Procedure meeting, Chair Katelyn Overstreet, BSN, RN, CCRN, and Vice-Chair Grady Johnston discussed the goals of utilizing ultrasound to insert peripheral lines and reviewed informational readings on the topic. The consensus from the shared governance committee was in support of the MICU initiative, and planning efforts were underway.

In follow-up discussion during the March meeting, the committee decided that in order to alleviate risks, a stringent educational program would be implemented. The group was in agreement that the procedure was a high enough risk, and low enough volume, that detailed educational materials would be required. They also concluded that experienced clinicians such as shift managers and Clinician IIIs in the MICU would receive training first.

Over the next several months, training materials and roll-out plans were created. Committee members approved the training program which consisted of didactic presentations on the procedure, hands-on practice with the ultrasound machine, and observed practice insertions. The successful completion of 5 precepted insertions was required before the RN was considered proficient to perform the intervention independently.

An additional aspect of readying clinicians for this new practice was an evaluation of the available technology. As Johnston and his colleagues began training with the two ultrasound machines on the unit, they noted that the machines were cumbersome and associated with less accurate insertions. The available technology did not meet the needs, and the clinicians advocated for a device with a better design that would be more accurate and user-friendly. The clinicians felt that an updated model would improve their technique and enhance their ability to readily insert PIV catheters.

Johnston identified a new model that would meet the goals of the project. He shared the attributes of the new device with his clinical colleagues and Nurse Manager, Rick Carpenter, MSN, RN. With the support of Dr. Richard Shannon, Executive Vice President of the Health System, and his charge to build a safe and efficient care environment, Carpenter procured the requested device.

With the new ultrasound machine, Johnston oversaw the training of 9 MICU RNs. All of the 9 RNs successfully fulfilled the requirements of the training.


Participants:
NK5EO Table 1. Participants, Ultrasound-Guided PIV Insertion Initiative

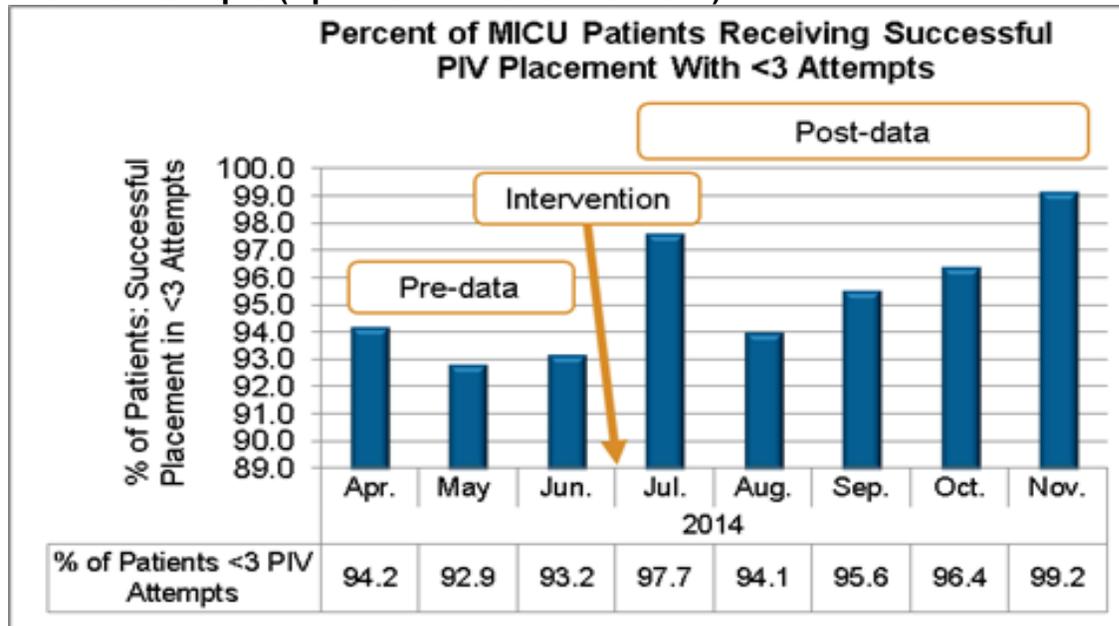
Name	Discipline	Title	Department
Kyle Enfield	Medicine	Medical Director	Pulmonary Critical Care
Alexandra Kadl	Medicine	Assistant Professor of Medicine	Pulmonary Critical Care
Diana Gomez Manjarres	Medicine	Resident Fellow	Pulmonary Disease and Critical Care
Rick Carpenter	Nursing	Nurse Manager	MICU
J. Grady Johnston	Nursing	RN Clinician III	MICU
Katelyn Overstreet	Nursing	RN Clinician III	MICU
Philip Balzer	Nursing	RN Clinician II	MICU
Stephene Hertwig	Nursing	RN Clinician III	MICU
Jen Stengel	Nursing	RN Clinician III	MICU
Alex Modisett	Nursing	RN Clinician II	MICU
Kris Blackstone	Nursing	RN Clinician III	MICU
Eleanor Glassberg	Nursing	RN Clinician II	MICU
Molly Battle	Nursing	RN Clinician III	MICU
Siu Ma	Nursing	RN Clinician II	MICU

Outcome(s):

By July 2014, the MICU had a cohort of 10 fully trained RNs in the use of ultrasound who were inserting the PIV catheters. Through the use of the new ultrasound technology, the MICU RNs were able to increase the insertion of PIVs successfully placed with the first or second attempt.



NK5EO Figure 1. Percent of MICU Patients Receiving Successful PIV Placement With <3 Attempts (April 2014 – November 2014)



Example 2: Patient Experience: Implementation of Nursing Telehealth in the Care of Heart Failure Patients

Background/Problem:

UVA Health System provides care for patients within a large geographical area. Patients with chronic illnesses who live in outlying areas are limited in the type of follow-up appointments they can attend locally (particularly appointments with specialty practices), and the complexities of traveling long distances to receive specialty care can be challenging for patients and families. The UVA Center for Telehealth serves as a multidisciplinary center to support the health system's missions of superlative clinical care, teaching, innovation and sharing of knowledge and is designed to improve access to clinical care, as well as access to health professionals and patient education. This is accomplished in partnership with a 124-site telehealth network in the commonwealth of Virginia.

Patty Schweickert, DNP, RN, FNP-BC, Nurse Practitioner in the neuroradiology department, originally developed a telemedicine stroke education program in 2010. Through the program, Patty demonstrated the success of using telehealth technology as a nursing intervention to reach a rural community. After implementation of her own education program, Patty presented a proposal to the PNSO Cabinet to develop and implement a program to train other nurses interested in using telehealth for education, consults or follow-up appointments. The proposal was endorsed, and a telehealth



special-interest group was formed. Several teams were interested in developing telehealth programs, including the Heart and Vascular Center.

The Heart and Vascular Center had a successful program for managing the care of patients with heart failure. Patients with heart failure were being closely followed by a nurse practitioner after discharge and were seen in the clinic within a week of discharge for re-evaluation. The program was helping patients to avoid hospital admissions and recover more fully. However, the clinicians realized it was not reasonable to ask patients to travel to the clinic frequently, requiring them to travel long distances, take time away from work and disrupt their daily life, much in the same way as a hospital readmission. The clinicians realized that the best approach was to meet patients in their own environment. In late 2012, S. Craig Thomas, MSN, RN, ACNP-BC, ACNS-BC, CHFN, Advanced Practice Nurse 2-Nurse Practitioner, began working to incorporate telehealth technology into the care of patients with congestive heart failure through the creation of a Heart Health at Home program, with the hope of decreasing the readmission rates.

Goal Statement:

Incorporating telehealth into the care of heart failure patients at home will reduce hospital readmissions for heart failure patients.

Description of the Intervention/Initiative/Activity(ies):

From October 1 to November 30, 2012, Craig trained the first team of certified nursing assistants to become cardiac home care nursing assistants (CHAs) in the Heart Health at Home program. The CHAs received two full weeks of training. The training included didactic as well as supervised home visits with patients. The material covered signs and symptoms of congestive heart failure as well as the skill components of using the technology of iPads® and cell phones. The CHAs were taught to integrate portable telehealth devices with video monitoring into the prescriptive home visits. The first patient was enrolled in the program in December 2012.

The CHAs typically visit discharged patients at home within the first 24 hours and daily for the first week, with follow-up visits as needed. The CHAs adhere to specific protocols including performing daily weights, reviewing the plan of care, screening for complications and assisting with kitchen pantry evaluations in support of the nutrition plan. This information is documented and communicated using telehealth technology to nurses, nurse practitioners and physicians at the Medical Center. Medical Center clinicians are able to see the patient in his or her home setting and work with the CHA, patient and family to adjust the individualized plan of care. Nurse practitioners such as Craig are literally able to “see” the edematous ankles of a patient with heart failure at home with the CHA while discussing symptoms over the phone. Individualizing the patient’s care in the home setting allows the clinicians to establish strategies to readily treat minor deviations in the health condition that would otherwise lead to a hospital



admission. The technology improves the patient experience by bringing specialized care to the patient's home, eliminating the need for the patient to travel long distances to attend appointments with specialists and ultimately reducing hospital admissions.

Participants:

NK5EO Table 2. Participants, Establishing Heart Health at Home Telehealth

Name	Discipline	Title	Department
S. Craig Thomas	Nursing	Advanced Practice Nurse 2-Nurse Practitioner	Advanced Heart Failure Center
Patty Schweickert	Nursing	Advanced Practice Nurse 2-Nurse Practitioner	Radiology and Medical Imaging
David Cattell-Gordon	Telehealth	Director of Telemedicine	Telemedicine
Pace Morris	Nursing	Cardiac Home Care Nursing Assistant	Advanced Heart Failure Center
Lorraine Pike	Nursing	Cardiac Home Care Nursing Assistant	Advanced Heart Failure Center
Linda Joyner	Nursing	Cardiac Home Care Nursing Assistant	Advanced Heart Failure Center

Outcome(s):

Through the telehealth Heart Health at Home program, patients are able to receive specialized care at home. Patients enrolled in the Heart Health at Home program also spend less time in the hospital. Since the program began, the readmission rates for patients with congestive heart failure have dropped, reflecting the benefit of being able to address minor variations in the patient's health status in the home setting to keep the patient from returning to the hospital.

The telehealth Heart Health at Home program improves the patient experience by reducing hospital readmissions.



NK5EO Figure 2. UHC Heart Failure 30-Day Readmission Rate (All Cause, 3Q12-4Q13)

