Pilot of a Randomized Trial Comparing Outcomes of Three Types of Peripheral Intravenous Catheters (PIVC):

Utilizing the Plan, Do, Study, Act (PDSA) Cycle

Submitted by Heather Galang, MSN, RN-BC, CNL; Gina Yost, BSN, RN; Laura Yoder, PhD, RN; and Erica Lewis, PhD, RN

MAGNET RECOGNIZED
AMERICAN NURSES CREDENTIALING CENTER

JAMES MADISON UNIVERSITY
SCHOOL OF NURSING

sentara nurse

SENTARA®

INTRODUCTION & BACKGROUND

On June 16, 2015 Sentara RMH Medical Center (SRMH) changed peripheral intravenous catheters (PIVCs), for purposes of standardization across a healthcare system.

Previous Product
BD Saf-T-Intima©

The **Saf-T-Intima©** is an all in one closed-system device.

Standardized Product
BD Insyte Autoguard©

The **Bd Insyte Autoguard©** is an open-system device.

Courtesy and © Becton, Dickinson and Company Reprinted with permission

LITERATURE REVIEW

	Open-System	Closed-System
***Phlebitis** (González et al, 2013)	↑	↓
***Infection** (González et al, 2013)	↑	↓
Blood Exposure (Richardson et al, 2011; Delisio, 2012)	↑	↓
***Unplanned Reinsertions** (Tamura et al, 2014)	↑	↓
***Complications** (Bausone-Gazda et al, 2010)	↑	↓
***Dwell Time** (González et al, 2013)	↓	↑

*Studied with an integrated closed system with stabilization platform

PROBLEM STATEMENT

Currently there is no clinical trial evaluating the current standard of practice, an open system PIVC, to two closed system PIVCs, particularly in terms of **patient satisfaction**, **complications of care**, or **cost**; making it difficult to ascertain which of the three PIVC systems are best for patients.

PILOT DESIGN

GUIDING MODEL (PDSA CYCLE)

SETTING	• Cancer Center • Treatment Center • Emergency Department (ED) • Inpatient
ENROLLMENT	• Inclusion/Exclusion Criteria • Consent • Randomization
RESOURCES	• Inserting Clinicians • Inserting Clinicians • PIVC Workgroup
INSTRUMENTS	• BD Saf-T Intima© • BD Insyte Autoguard© • BD Nexiva©
DATA COLLECTION	• Patient Questionnaire • Clinician Questionnaire • Electronic Health Record
DATA ANALYSIS	• Content Analysis • % Compliance • Response Rate • Initial Costs

RESULTS

Table 1. PIVC Pilot demographics

Inserting Clinicians (n=9)	**Subject Enrollment (n=36)**
ED (n=3)	Unsuccessful Insert (n=2)
Cancer Center (n=2)	Saf-T Intima© (n=9)
Treatment Center (n=2)	Nexiva© (n=20)
Inpatient (n=2)	Insyte Autoguard© (n=7)
Consenting Clinicians (n=7)	**Subjects Declining (n=4)**
ED (n=1)	Prior to Consent (n=3)
Cancer Center (n=2)	During Consent (n=1)
Treatment Center (n=1)	
Inpatient (n=1)	
Other (n=2)	
Missing data points from PIVC Pilot (n=20)	
Electronic Health Record (EHR) data points (n=6)	
Clinician Questionnaire data points (Paper) (n=4)	
Patient Questionnaire Forms (n=10)	

CONTENT ANALYSIS

Theme	Categories	
Saf-T Intima© Experience	Insertion 5 Hurts Less 4 Comfort 3	Device Design 3 Prefers PIVC 2
Nexiva© Experience	Reinsertion 6 Hurts Less 6 Device Design 6 Easy Insertion 6 More Comfortable 2	Prefers PIVC 2 Difficult Insertion 1 Does not Prefer 1 Easier to Move 1 Difficult to Move 1
Insyte Autoguard© Experience	Bleeding 4 Reinsertion 4 Does not Prefer 3	Hurts More 2 Prefers PIVC 1 No Bleeding 1
Enrollment	Difficulty During Consent 9 Insufficient Numbers 7	
Clinician Role	Staff Knowledge 12 Staff Availability 4 Clinician Training 5 Staffing Issues 6 Staff Professionalism 2	

LESSONS LEARNED

- Obtaining consent was a challenge
- Enrollment was slower than anticipated
- Enrollment in the Emergency Department was not feasible
- Technology development was a barrier to data collection

CLINICAL IMPLICATIONS

- Engage leadership for resource allocation
- Know your resources; engage early
- If possible, avoid areas where patient throughput is critical
- Consider literacy of enrollment population

ACKNOWLEDGEMENTS

Many thanks to the mentors and team members associated with this study, including Donna Hahn, DNP, RN, NEA-BC; Linda Hulton, PhD, RN (Academic Advisor); Erica Lewis, PhD, RN (Team Leader); Susan Winslow, DNP, RN, NEA-BC (Team Member); Laura Yoder, PhD, RN; Gina Yost, BSN, RN; and the Sentara Quality Research Institute (QRI).

For questions or to request a full list of references, contact Heather Galang, MSN, RN-BC, CNL at galanghl@dukes.jmu.edu