No disclosures or conflict of interest

Baylor Scott & White Healthcare System

Learner Objectives:

1. **Identify the characteristics of peripheral intravenous sites and assessment results from a participating study site in an international study**

2. **Integrate practice changes based on presented research findings**

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Purpose of the Study

Over a billion Peripheral Intravenous Catheters (PIVCs) are inserted each year in hospitalized patients worldwide.

In an effort to understand how PIVCs are managed, an international study, "One Million Global Catheters: PIVC Worldwide Prevalence Study" was initiated by a group of investigators in Sydney, Australia

Background of Significance

The objectives of the study were to assess:

- ✓ The prevalence of PIVCs and their management practices.

- ✓ Characteristics of the patients and their PIVCs.

- ✓ The prevalence of localized symptoms.

- ✓ PIVC securement and dressing practices.

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Review of Literature

According to Becerra, Shirley & Safdar (2016), peripheral intravenous catheters (PIVCs) are deemed critical for medical care but at the same time they expose patients to bloodstream infections, endocarditis and thrombophlebitis and thus prevention of complications must focus on optimizing their use. There are many avenues of research to be explored with intravenous catheters. How PIVCs are changed varies among populations, leading us to question how frequently should they be changed. Many PIVCs can be safely changed when clinically indicated (Keogh, 2013), yet most facilities hold to a 72-96 hour change. While the focus of most healthcare facilities has been on central vascular access devices, more people are exposed to the shorter dwell time catheters which are not exempt from causing infections and yet receive very little attention (Hadaway,2012).
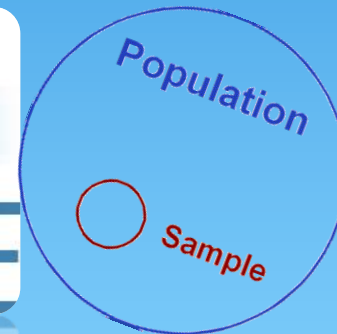
Research Design

A convenience sample of 181 medical/surgical patients were recruited and consented by bedside nurses from a large urban teaching hospital to participate in this prevalence study in March of 2015.

Setting

Baylor University Medical Center is a large not-for-profit Magnet designated hospital in Dallas, TX, with 1,025 licensed beds.

Our study was conducted on 12 units consisting of General Med-Surg, Neuro, Cardio, Uro-Colorectal, Bone Marrow Transplant, and Ortho-Trauma

Sample

Our participants were comprised of adults with nearly an even split of males (50.28%) and females (49.72%), with a total of 181 patients. Each patient was selected based on their being admitted to the unit on the day of the study. There were no exclusion criteria.
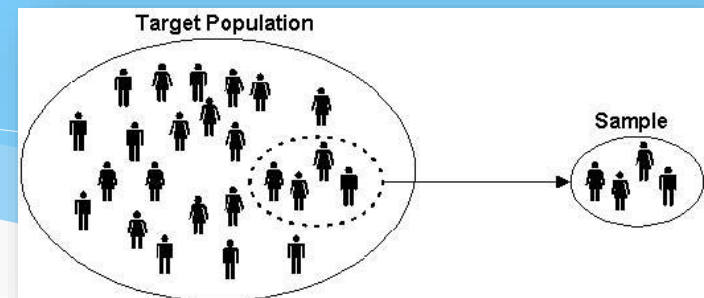
Human Subject Protection

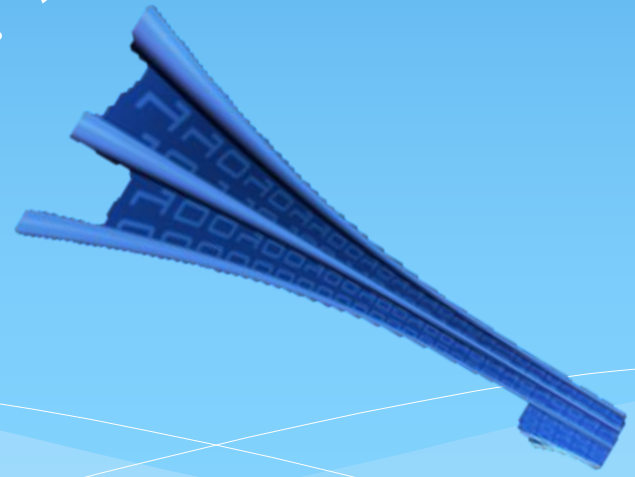The study received approval from the Healthcare System Institutional Review Board.

All of the research team was trained in Human Subjects Protection and Data Collection for this study.

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Procedures

A validated data collection tool was utilized by bedside nurses. All observational data collected was redacted and maintained in a locked secure area. Data was then electronically sent to the study principal investigators in Sydney via a secure modality. Statistical Software (SAS version 9.1; SAS Institute, Inc., Cary, NC) was utilized for statistical analysis.

Study Results

	BUMC (%)	Country (%)	Comparison (%)	Overall (%)
PIVC site assessment				
No clinical symptoms	87.85	79.87	82.21	81.73
Pain/tenderness on palpation	2.76	4.06	3.97	5.60
Redness > 1 cm from insertion site	1.10	1.55	1.31	1.24
Swelling > 1 cm from insertion site	1.66	0.77	0.76	0.91
Purulence	-	0.04	0.04	0.03
Itch / rash under dressing	-	0.32	0.22	0.25
Blistering/skin tears under dressing	-	0.04	0.05	0.05
Bruising/dried blood around PIVC	2.76	5.84	4.31	3.20
Palpable hard vein cord beyond IV tip	-	0.26	0.25	0.42
Streak/red line along vein	-	0.28	0.22	0.34
Induration/hardness of tissues > 1 cm	-	0.22	0.17	0.20
Leaking PIVC	-	1.23	0.69	0.63
Extravasation/infiltration	-	0.14	0.22	0.30
Blood in line	3.87	4.81	4.96	4.53
Partial/complete dislodgement of PIVC	-	0.50	0.55	0.51
Other	-	0.08	0.06	0.06
PIVC site assessment documented in the patient chart in last 24 hours?				
Documented	90.61	88.71	62.36	53.72
Not documented	7.73	5.69	28.85	36.40
Not applicable (line newly inserted)	1.66	5.61	8.79	9.88
PIVC dressing type				
Borderless transparent polyurethane	94.48	54.68	58.33	56.08
Window transparent polyurethane	2.21	43.21	28.43	21.57
Sterile gauze and tape	1.66	0.20	8.08	6.22
Chlorhexidine-impregnated dressing	-	0.61	0.19	0.24
Tape only	1.66	0.61	3.33	12.71
Other	-	0.18	0.28	0.18
No dressing	-	0.04	0.14	0.17
Missing	-	0.48	1.23	2.83
PIVC dressing assessment				
Clean, dry and intact	87.29	79.34	78.64	78.25
Moist and soiled with blood/discharge	1.10	2.81	3.15	3.32
Dry and soiled with blood/discharge	6.63	6.87	6.44	5.99
Loose or lifting edges	3.87	8.84	8.22	8.47
Other	1.10	1.55	3.02	3.16
Missing	-	0.59	0.54	0.81
PIVC and administration set securement				
Sutureless securement device	-	12.36	4.71	5.29
Sterile tape strips around PIVC	17.13	7.29	18.02	15.27
Non-sterile tape around PIVC	4.42	7.27	6.11	13.06
Non-sterile tape over PIVC dressing	35.36	27.40	15.40	14.90
Non-sterile tape around admin set	4.42	18.42	11.79	11.31
IV admin set securement device	-	3.49	1.58	2.68
Splint/bandage/tubular net	1.10	3.19	15.91	11.80
Site dressing only	34.25	13.93	16.70	15.26
Other	0.55	1.47	0.50	0.46
No securement	1.66	2.93	6.81	7.33
Missing	-	-	2.49	2.65
If the patient receives an IV flush bolus to keep PIVC patent, what is the flush solution used?				
0.9 sodium chloride	82.32	57.29	45.50	47.96
Heparin/heparinised saline	-	0.69	2.88	4.75
Other	-	0.10	0.27	0.59
No order	17.68	41.92	51.35	46.70

Study Results

Good News

- ✓ **87.29 % of dressings were clean, dry and intact**
- ✓ **87.85% of PIVCs were asymptomatic**
- ✓ **90.61% of PIVCs had been charted on within the last 24 hrs**

Opportunities

- ❖ **6.63% of our PIVCs were soiled with blood/discharge**
- ❖ **3.87% of dressings had loose/lifting edges**
- ❖ **2.76% had pain/tenderness on palpation**
- ❖ **1.66% had swelling**
- ❖ **3.87% had blood in line**
- ❖ **7.73% of PIVCs had not been documented on in the last 24 hrs**
- ❖ **17.68% had no orders for IV flush to keep PIVC patent**
- ❖ **20.44% of the PIVCs were idle**

Implications for Practice

➢ **Routine PIVC documentation and assessment every shift**
➢ **Use of PIVC grading scale for Phlebitis/Infiltration**
➢ **Ensure proper maintenance and care of PIVCs**
  ➢ **Proper flushing orders are present**
  ➢ **PIVC is removed promptly if symptomatic**
➢ **Reduce number of idle PIVCs**
➢ **Policy changes**
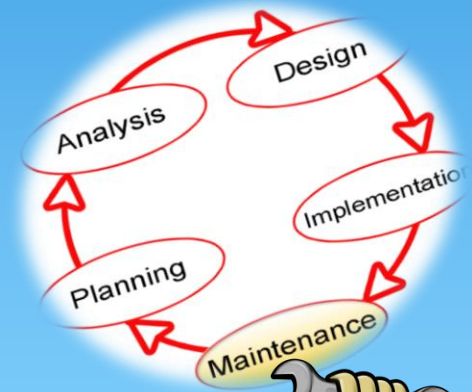
Conclusions

➢ **Clear positive learning experience for the bedside leaders**

➢ **"lived experience" conducting research in a large urban hospital**

➢ **This study promoted the transformation of knowledge and practice among 51 countries and 481 hospital sites**

➢ **Patient outcomes such as decreased infiltrates, decreased PIV infection rates and decreased pain are being assessed.**

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