

Title:

The One Million Global Peripheral Intravenous Catheter Study: Findings From a Large Urban Hospital

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Session Title:

Health Promotion of Patients With Catheters

Slot:

M 08: Sunday, 30 July 2017: 10:15 AM-11:00 AM

Scheduled Time:

10:15 AM

Keywords:

Peripheral intravenous catheters, Research and international

References:

Alexandrou, E., Ray-Barruel, G., Carr, P. J., Frost, S., Inwood, S., Higgins, N., . . . Rickard, C. M. (2015). International prevalence of the use of peripheral intravenous catheters. *Journal of Hospital Medicine*, 10(8), 530-533. doi:10.1002/jhm.2389

Becerra, m. B., Shierley, D., & Safdar, N. (2016). Prevalence, risk factors, and outcomes of idle intravenous catheters: An integrative review. *American Journal of Infection Control*, 44, 167-172. doi:10.1016/j.ajic.2016.03.073

Keogh, S. (2013). New Research: Change peripheral intravenous catheters as clinically indicated, not routinely. *The Journal of the Association for Vascular Access*, 18(3), 153-154. doi:10.1016/j.java.2013.03.005

Abstract Summary:

This educational activity will describe the participation of a large urban hospital in the United States participating in an international study involving more than 50 countries and 418 participating hospitals. The session will present the specific findings of the participating hospital in comparison and contrast to the other participating facilities.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
1. The learner will be able to identify the characteristics of peripheral intravenous sites and assessment results from the participating study site in this international study.	Table 1 and Table 2 from the presentation will articulate the specific characteristics of the peripheral IV sites and the assessment results.
2. The learner will be able to integrate practice changes based presented research findings.	Discussion presented at the end of the presentation may prompt practice changes for certain facilities if applicable.

Abstract Text:

Purpose:

Over a billion Peripheral Intravenous Catheters (PIVCs) are inserted each year in hospitalized patients worldwide and data on the care and management of these devices is largely unknown. However, data on the prevalence of PIVCs and their management and infection practices across countries and regions are limited. While PIVCs are deemed critical for medical care, they expose patients to bloodstream infections, endocarditis and thrombophlebitis (Bacerra, Shierley & Safdar, 2016). There are many avenues of research to be explored with intravenous catheters. Should PIVCs routinely be changed out at 72-96 hours? Are there any ramifications to having idle PIVCs? According to Keogh (2013) many PIVCs can be safely changed only when clinically indicated. 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. . The worldwide study included fifty one countries with 418 participating hospitals, fifty three of which were in the United States with a total of 5048 patients (Alexandrou et al, 2015). The total number of PIVCs submitted into the One Million Global (OMG) database was 40,620. The study objectives were to assess the prevalence of PIVCs and their management practices, identify patients and PIVC characteristics, the prevalence of localized symptoms, and PIVC securement and dressing practices.

Methods:

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. The study received approval from the Healthcare system institutional review board. A validated data collection tool was utilized by bedside nurses who were trained in Human Subjects Protection and data collection for this study. All observational data collected was de-identified 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. Each site was then presented with individual findings in addition to individual countries and region findings.

Results:

The majority of the patients were 18 years and older (99.5%), and half of them are men. Eighty seven percent of PIVCs were inserted for IV fluid and IV medications orders, and the majority were inserted by IV team and nurses (99%). Ninety four percent of the PIVC sites had a borderless transparent polyurethane dressing which reportedly were clean, dry and intact (87%). The majority of PIVC site assessments were documented in patients' charts in last 24 hours (91%) and with no clinical symptoms (88%). A small proportion of PIVC sites with blood in line (3.9%), pain/tenderness on palpation (2.8%), and bruising/dried blood around PIVC (2.8 %). PIVC site selection was usually the forearm (40%) with a 20 gauge(35%) or 22 gauge (34%), respectively.

Table 1. Patients and PIVCs Characteristics

	XX Facility (%)	Country (%)	Comparison (%)	Overall (%)
Age groups				
< 18 years	0.55	7.29	7.01	10.35
≥ 18 years	99.45	91.30	91.47	87.47
Not reported	-	1.41	1.52	2.17
Sex				

Male	50.28	48.12	51.68	50.59
Female	49.72	51.62	47.92	48.88
Not reported	-	0.26	0.39	0.53
Reason for PIVC insertion				
IV fluids	12.15	18.58	15.27	15.88
IV medications	74.59	61.87	64.40	64.95
Taking blood	2.76	3.76	5.78	4.98
Patient unstable/	-	1.53	2.58	2.07
Requiring resuscitation				
Blood product transfusion	0.55	1.45	2.22	2.33
Parenteral nutrition	-	0.14	0.46	1.11
Chemotherapy	-	0.08	0.80	1.53
Unknown	9.94	12.60	8.50	7.15
PIVC inserted by				
IV team	22.65	10.84	2.90	2.49
Nurse	76.24	69.67	62.73	70.35
Doctor	-	1.45	16.95	14.14
Technician	0.55	4.73	2.68	2.71
Other	0.55	0.12	0.11	0.08
Unknown/ Not documented	-	13.2	14.64	10.22
Where was the catheter inserted				
Emergency department	18.78	26.76	23.36	18.19
Operating room	4.97	8.87	12.38	10.85
ICU/CCU	1.10	5.19	5.31	6.29
General ward/unit/clinic	67.96	42.85	45.81	54.57
Radiology/Procedure room	2.76	0.99	1.39	1.10
Ambulance/EMS	1.10	2.56	1.89	1.31
Other	-	-	0.04	0.25
Unknown/Not documented	3.32	12.78	9.81	7.43
PIVC position/site				
Hand	25.97	22.46	27.80	32.66
Wrist	9.94	10.99	12.74	13.45
Forearm	40.33	35.62	33.70	31.20
Antecubital fossa	17.68	26.23	19.66	15.20
Upper arm	4.97	2.95	4.11	4.20
Foot	-	0.73	1.13	2.05
Head/ Neck	-	0.12	0.15	0.33
Other	1.10	0.85	0.47	0.68
Missing	-	0.04	0.23	0.22
Catheter gauge/size				
14 G (orange)	-	0.04	0.37	0.44

16 G (grey)	2.76	1.29	2.35	1.85
18 G (green)	12.71	17.23	17.56	14.52
20 G (pink)	34.81	45.78	44.64	40.12
22 G (blue)	34.25	27.91	25.38	26.83
24 G (yellow)	14.92	6.18	4.41	11.28
26 G (purple)	-	-	0.16	0.71
Not visible/ Missing	0.55	1.05	4.32	3.29
Other	-	0.52	0.80	0.97

Table 2. PIVC Site Assessment Results

	XX Facility (%)	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/heparinized saline	-	0.69	2.88	4.75
Other	-	0.10	0.27	0.59
No order	17.68	41.92	51.35	46.70

Conclusion:

Contribution in this international study was a clear positive learning experience for the bedside nurses to have a "lived experience" in conducting research in a large urban teaching hospital. Involvement in this study promoted the transformation of knowledge and practice among 51 countries and 418 hospitals. Study results pertinent to our site specific findings revealed slight gaps in PIVC site maintenance, vigilance of PIVC dressing assessments to maintain dry and intact PIVS dressing, and documentation practices in comparison to other participating facilities. Additionally, nursing practice changes will be supported by additional education and policy making with regards to PIVC site management. As a result, future patient outcomes such as decreased infiltrates, decreased peripheral line infection rates and decreased pain, will be impacted by the increased awareness and education of the bedside nurses assessment skills of PIVC insertion sites and management of the PIVC site.