American Journal of Infection Control 47 (2019) 1388–1389

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Commentary

Journal Club: Surveillance of home health central venous catheter care outcomes: Challenges and future directions

Adebisi A. Adeyeye DHA, MPH, RN, CIC, FAPIC [a,*], James Davis MSN, RN, CCRN-K, HEM, CIC, FAPIC [b]

[a] Infection Control Department, VA NY Harbor Health Care System, New York, NY
[b] ECRI Institute, Plymouth Meeting, PA

The topic of this Journal Club commentary is the article "Surveillance of Home Health Central Venous Catheter Care Outcomes: Challenges and Future Directions" by Nailon and Rupp.[2] This study sought to explore the feasibility of monitoring and comparing central venous catheter (CVC)-related outcomes across multiple home health and home infusion agencies (HHIAs) through the development and implementation of an innovative and practical surveillance mechanism. Findings from this study highlighted 3 main areas.

The authors suggested that a practical out-of-hospital surveillance mechanism is needed for HHIAs. In light of the focus on the patient safety and public health implications of health care–acquired infections, infection preventionists and health care organizations can use surveillance to quantify the incidence of CVC-related outcomes and other adverse events in the home care setting.

Central line (also known as central venous catheter)–associated bloodstream infections (CLABSIs) cause significant morbidity and mortality in pediatric patients, costing an average of $45,000 per infection, occurring at a rate of 0.7-7.4 infections per 1,000 central line days, and carrying an associated 1% mortality rate. Infusion therapy is provided in a variety of settings in the United States using CVCs. An estimate of 3 million CVCs are used yearly both in inpatient and outpatient settings, and indications for CVC placement in outpatient care include long-term antibiotic therapy, chemotherapy, parental nutrition, and hydration.

According to Manangan et al "an estimated 1.2 million infections occur annually in approximately 8 million adult and pediatric home health care patients in the US."[1] The major risk factor for health care–associated infection is the presence of a medical device (ie, catheters). The Centers for Disease Control and Prevention noted that several underlying conditions place patients at greater risk. Additionally, it is important to note that because patients are in their own home may likely reflect infections from the home environments. In this issue of *American Journal of Infection Control*, Nailon and Rupp[2] reported that continued exploration of CLABSI surveillance and data validation are expedient to optimize better outcomes for health/infusion practices.

ARTICLE OVERVIEW

The researchers' aim of this exploratory review of monitoring and comparing CVC-related outcomes across multiple HHIAs was to develop and implement a practical surveillance mechanism. In a detailed background review of the study, the authors provided the underlying framework for the study. The authors, Nailon and Rupp,[2] provided an insight on the emphasis on reducing hospital admissions and the increased incidence of patients living at home with a CVC and receiving home-based treatment. Although current evidence supporting these recommendations comes from investigations among patients in acute care facilities, innate risks exist regardless of care setting. In their view, the authors posited that several investigators have measured CVC-related complications in patients receiving home and or outpatient infusion therapy prospectively, but lacked focused attempt on HHIAs owing to the complex data sources of CVC-related outcomes specific to this setting type.

This study took place over a 51-month project with 10 agencies from 4 states submitting CVC-related data. The targeted population were both pediatric and adult patients on service with CVC device in place, CLABSI, and CVC occlusion event. Agencies were recruited in phases. The authors in collaboration with midwestern area HHIAs sought to develop standardized CVC care guidelines and using the Association for Professionals in Infection Control's (APIC) home health care criteria for CLABSI.

The design used in the study was an exploratory data collection of CVC-related events. Through data collection and categorizing the data elements by age (18 and younger [pediatric] and 19 and older [adult]) and additional elements including number of patients on service with a CVC in place, CVC device days, CLABSI count, CVC occlusion count, number of doses of a fibrinolytic agent used to dissolve line thromboses, and number of patients who received a fibrinolytic to dissolve line thromboses.

* Address correspondence to Adebisi A. Adeyeye, DHA, MPH, RN, CIC, FAPIC, VA NY Harbor Health Care System, 423 East 23rd St, Rm 3061 South, New York, NY 10010.
E-mail address: Adebisi.adeyeye@va.gov (A.A. Adeyeye).

The contents of this manuscript do not represent the views of the Department of Veterans Affairs or the United States Government.

Conflicts of interests: None to report.

Journal Club is an ongoing activity of the Association for Professionals in Infection Control Research Committee. As part of this activity, Research Committee members comment on select articles to demonstrate research implications for infection preventionists.

https://doi.org/10.1016/j.ajic.2019.08.001
0196-6553/Published by Elsevier Inc. on behalf of Association for Professionals in Infection Control and Epidemiology, Inc.

The authors reported that in the 51-month project, 10 agencies from 4 states submitted data voluntarily: 1 agency provided care to pediatric patients; 2 provided CVC care to adults only; and 7 provided to both pediatric and adult CVC care. Seven of the 10 agencies were home health, whereas the other 3 were home infusion agencies. Therefore, a total of 913 occlusions and 73 CLABSIs occurred during the study period, and CLABSI rate averaged 0-3.67 per year. The authors did not provide the method for calculation in both the CLABSIs and other CVC-related complications.

The study provides a significant background for an area of infection control and research that has not yielded sustainable mechanisms for surveillance previously. The explorative approach to monitoring CVC-related complications employed by the authors provided a unique level of evidence that enabled comparisons among a group of HHIAs across the United States.

DISCUSSION AND IMPLICATIONS FOR INFECTION PREVENTIONISTS

The result of this study shows that there continues to be limited data available regarding CVC-related complications in home care. Extensive work has been done to reduce CLABSIs in the hospital setting, however, there are no surveillance mechanisms available to provide ongoing monitoring of CLABSI or other CVC-related complications in HHIAs. Nailon and Rupp[2] presented a variety of approaches for a continued mechanism for CVC surveillance in home health that can be used by infection preventionists and organization as a benchmark for performances against an industry aggregate.

The authors in this study suggest surveillance data enables HHIAs to monitor the effectiveness of standardization on patient outcomes, such as CLABSI and occlusions to ascertain the possibility of developing and implementing a surveillance mechanism to monitor and evaluate CVC-related outcomes in the home setting. The authors attempted to link the results back to the literature review that suggested a dearth of well-conducted studies that address benefits and risks of examining CVC-related adverse events, identify potential contributing factors and benchmark their performance against like agencies to examine care provision processes, ensure standardization of best practices, and improve outcomes. This study explored the idea of getting the HHIAs engaged in efforts to expand and quantify the presence of CVCs in home settings to enable improvements with measuring and tracking patient outcomes as they relate to CVC care provision. This manuscript focused on patients with CVC receiving treatment at home and noted the lack of research in this population.

CONCLUSIONS

This manuscript does an excellent job of identifying gaps in best infection prevention and nursing practice on a population that has been in the shadows for a long time. This study may provide evidence that ensure integration of research into nursing practice and the infection control practice. For too long this patient population has not been included in infection prevention research. This article is of great importance to the infection control readers as it provides suggested practices based on a summary of available evidence and expert opinion. The study should stimulate further research to identifying other approaches to implementing a surveillance mechanism to monitor and evaluate CVC-related outcomes in the home setting.

References

1. Manangan LP, Pearson ML, Tokars JI, Miller E, Jarvis WR. Feasibility of nationalsurveillence of health careeassociated infections in home-care settings. Emerg Infect Dis 2002;8:233-6.
2. Nailon RE, Rupp ME. Surveillance of Home Health Central Venous Catheter Care Outcomes: Challenges and Future Directions. Am J Infect Control 24 Jun 2019. [Epub ahead of print].