



## Commentary

## Journal Club: Developing a user-friendly report for electronically assisted surveillance of catheter-associated urinary tract infections



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### Key Words:

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The article chosen for this Journal Club commentary describes the development and testing of a report format using automated data to report urinary catheter utilization and catheter-associated urinary tract infections (CAUTIs).<sup>1</sup> This research sought to address a gap in knowledge regarding the optimal display and content of data reports, communicating to diverse audiences, which used surveillance data from Department of Veterans Affairs' electronic health records. The specific research aim of this project was to develop and pilot test report formats deemed usable and trustworthy by the end user, and discover the best way to deliver to the ideal audience automated data, which is formatted and presented in a way that is acceptable to the end user.

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## METHODS

To develop the prototype report format, researchers used an iterative design process, the Rapid Iterative Testing and Evaluation method, to facilitate CAUTI tracking and reporting. End users were asked to review the report taking as much time as needed and then rate 4 domains of the report using a Likert scale.

Participants were also asked to provide open-ended, written feedback on each domain. After each round of interviews, these qualitative data were analyzed by the research team using a consensus-based approach to develop preliminary themes.

## RESULTS

Forty-five interviews over 5 rounds were completed. It is unclear if each interview had a unique participant or the same over each iteration. The average time spent looking at the report was 35, 34, 46, 67, and 41 seconds for versions 1-5, respectively. Scores for understanding were all  $\geq 4$ ; however, scores for all other domains varied

across all versions. Providers reported wanting more patient-specific data, whereas infection preventionists wanted more urine culture information.

Qualitative comments displayed in Figure 1 of the article detail the perceptions and concerns of the various stakeholders and evolution of responses over report form iteration. The researchers' work illustrates the impact effective design of analytic reports can have on efficient and effective clinical care, especially in terms of infection prevention.

## DISCUSSION

This study identified that the different provider types had different data format preferences and content needs. Providers who did not have a role in urinary catheter or CAUTI tracking or reporting had very little interest in CAUTI summary reports. Bedside nurses who have limited CAUTI reporting activities preferred information specific to their roles of documenting urinary catheter insertion and maintenance. These findings may be relevant in development of automated, standardized report formats using electronic data to track and report urinary catheter utilization and CAUTIs outside of the Veterans Administration.

This exploratory, descriptive study was a single-site study, which limited generalizability. The sample size was adequate for purposes of exploration and qualitative data saturation. Although

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not a limitation of this study, it is of note that by design the small group sizes prevented the authors from having sufficient power to detect potential differences in the quantitative assessment of the key domains. The study contributes value by demonstrating how the information needs of different provider types vary and ultimately impact the perceived value of the data by the receiver.

Although not specifically addressed by the authors, their article evokes the concept of data visualization. Data visualization is defined as “the graphical display of abstract information for two purposes: sense-making (also called data analysis) and communication.”<sup>2</sup> Furthermore, “important stories live in our data and data visualization is a powerful means to discover and understand these stories, and then to present them to others.”<sup>2</sup>

One way to evaluate the display of data using data visualization concepts is to ask 5 questions of the display<sup>2</sup>:

1. Does the display clearly indicate how values relate to each other?
2. Are the quantities represented accurately and clearly?

3. Does the display make it easy to compare quantities?
4. Is it easy to see ranked order of values?
5. Is the information on how to accomplish a goal intuitive, and does the display encourage the user to pursue the goal?

Combining the lessons, the researchers discovered the concepts of data visualization adds to the infection preventionists body of knowledge in terms of data point selection and effective, clear, and concise graphical display for various audiences with the shared aim of decreasing infections and patient harm.

## References

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