

# Use of a Multi-Modal Resident Curriculum to Tackle Rising CLABSI Rates During the SARS-CoV-2 Pandemic

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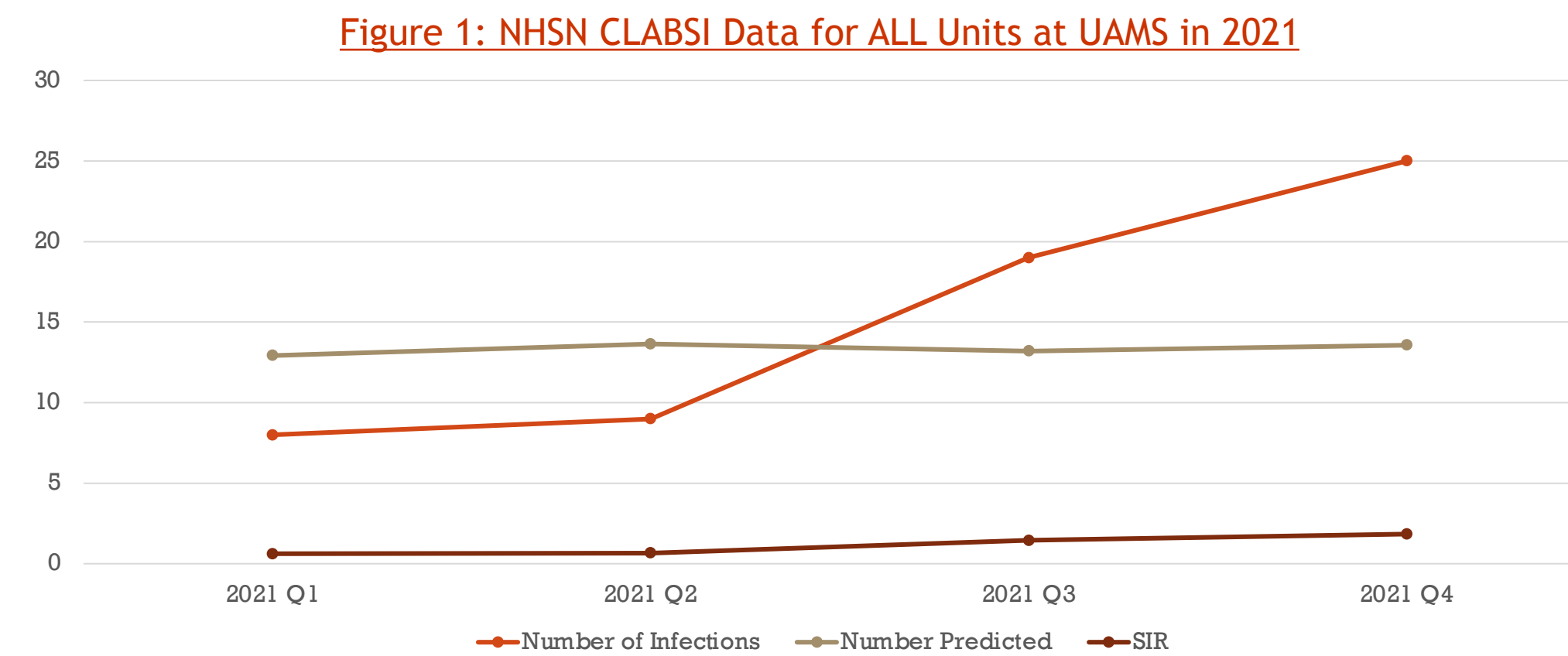
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## ABSTRACT

Central line associated bloodstream infections (CLABSIs) are associated with significant clinical and economic impacts. A large portion of central venous lines (CVLs) placed at the University of Arkansas for Medical Sciences are placed by resident physicians. A formal education session focusing specifically on aseptic technique for residents has not been utilized so far. Literature review and expert opinion was used to guide development of a multi-modal resident education session. The session consisted of a PowerPoint presentation, a video tutorial, and a CVL insertion checklist. More than 50% of the time was allotted to a hands-on session led by residents demonstrating how to aseptically place a CVL under the supervision of an Infection Preventionist. A Likert scale was utilized to assess the level of confidence residents had regarding eight CLABSI prevention metrics both before and after attending the session. Additionally, residents were polled to assess their preferred teaching modality. 66 internal medicine residents and 18 internal medicine-pediatrics residents participated in the study over a five-week period. The results were assessed for statistical significance with a two-tailed Mann-Whitney U-test. Responses were received from 54 residents prior to the simulation lab session, and from 56 residents after the simulation lab session. The total resident response rate was 66.67%. A statistically significant improvement in resident confidence was found in all eight surveyed CLABSI prevention metrics. The majority of responding residents found workshop style sessions, peer-to-peer teaching and educational videos to be the most useful modalities to deliver information. Attendance of a two-hour multimodal resident-driven educational session improved the confidence of residents in their knowledge and implementation of CLABSI prevention metrics. Participants preferred learning via workshop style sessions and educational videos. We recommend a multi-modal approach to resident education, and the consistent involvement of an Infection Preventionist. We hope to expand our curriculum to involve residents in other departments and explore the variation in preferred learning modalities and its overall impact on hospital CLABSI rates

## BACKGROUND

A CLABSI is a laboratory confirmed infection where a CVL is in place for >2 calendar days prior to a positive culture (not related to infection at another site) and is also in place the day of or day prior to culture. CLABSIs have been shown to significantly increase morbidity/mortality, healthcare costs, and patients' length of stay. The Centers of Medicare and Medicaid Services implemented the Hospital-Acquired Conditions Initiative in 2008 to decrease the rates of multiple hospital acquired conditions, including CLABSIs. As the SARS CoV-2 pandemic broke out across the United States in 2019, there were spikes in CLABSI rates. We postulated that impaired resident education was a strong contributing factor that we could address. Our goal was to improve resident knowledge about the CLABSI Prevention Bundle, and to assess their preferred teaching modality so we can tailor future teaching modules during the pandemic



## DESIGN

- The mandatory multi-modal curriculum included a PowerPoint presentation, an educational video directed by residents, review of a CVL Insertion Checklist and an EPIC walk-through of a standardized procedure note.
- The teaching session catered to various learning styles, utilized peer-to-peer teaching and focused most on hands-on training of sterile technique supervised by an Infection Preventionist.
- A Likert scale was utilized to assess the level of confidence residents had regarding eight CLABSI prevention metrics both before and after attending the session. Residents were also polled to assess their preferred teaching modality.
- 66 internal medicine residents and 18 internal medicine-pediatrics residents participated in the study over a five-week period.
- The results were assessed for statistical significance with a two-tailed Mann-Whitney U-test.

## RESULTS

- Responses were received from 54 residents prior to the simulation lab session, and from 56 residents after the simulation lab session.
- The total resident response rate was 66.67%
- A statistically significant improvement in resident confidence was found in all eight surveyed CLABSI prevention metrics.

Figure 2: CLABSI Numbers Since the Project was Initiated in February 2022 – October 3, 2022.

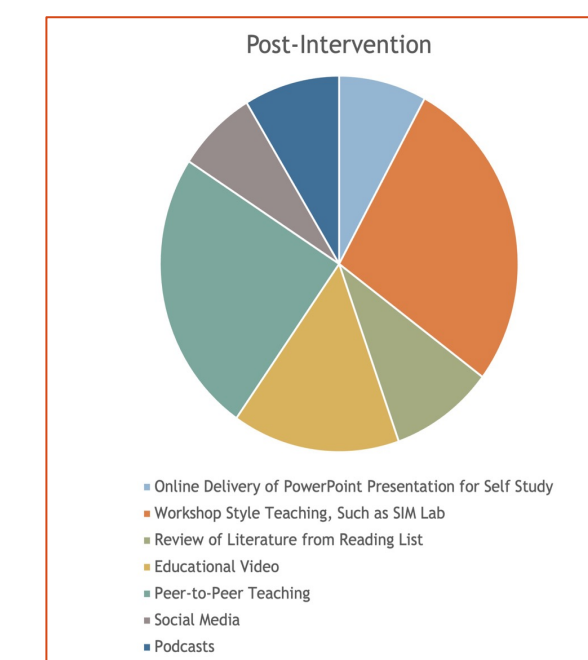
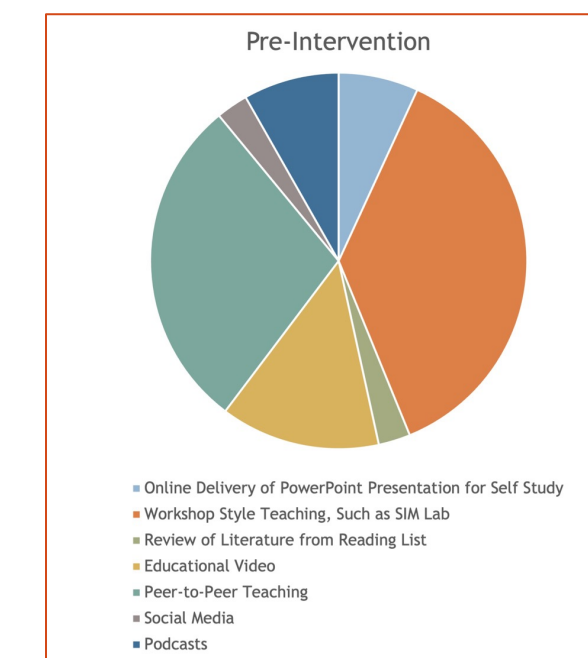
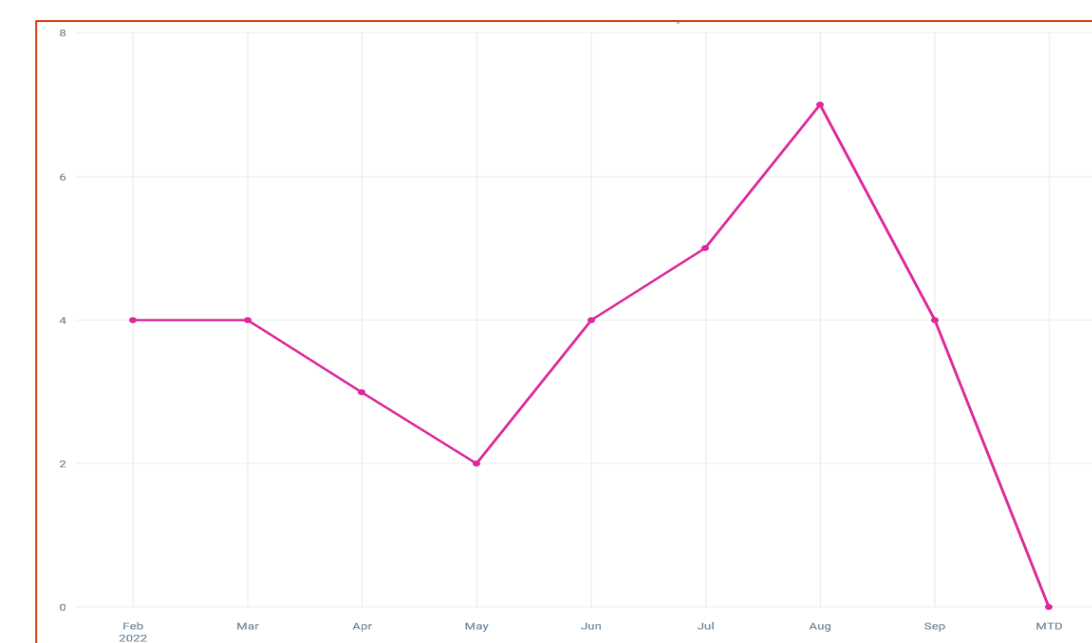


Figure 3: Preferred Method to Learn about CLABSI's and Infection Prevention

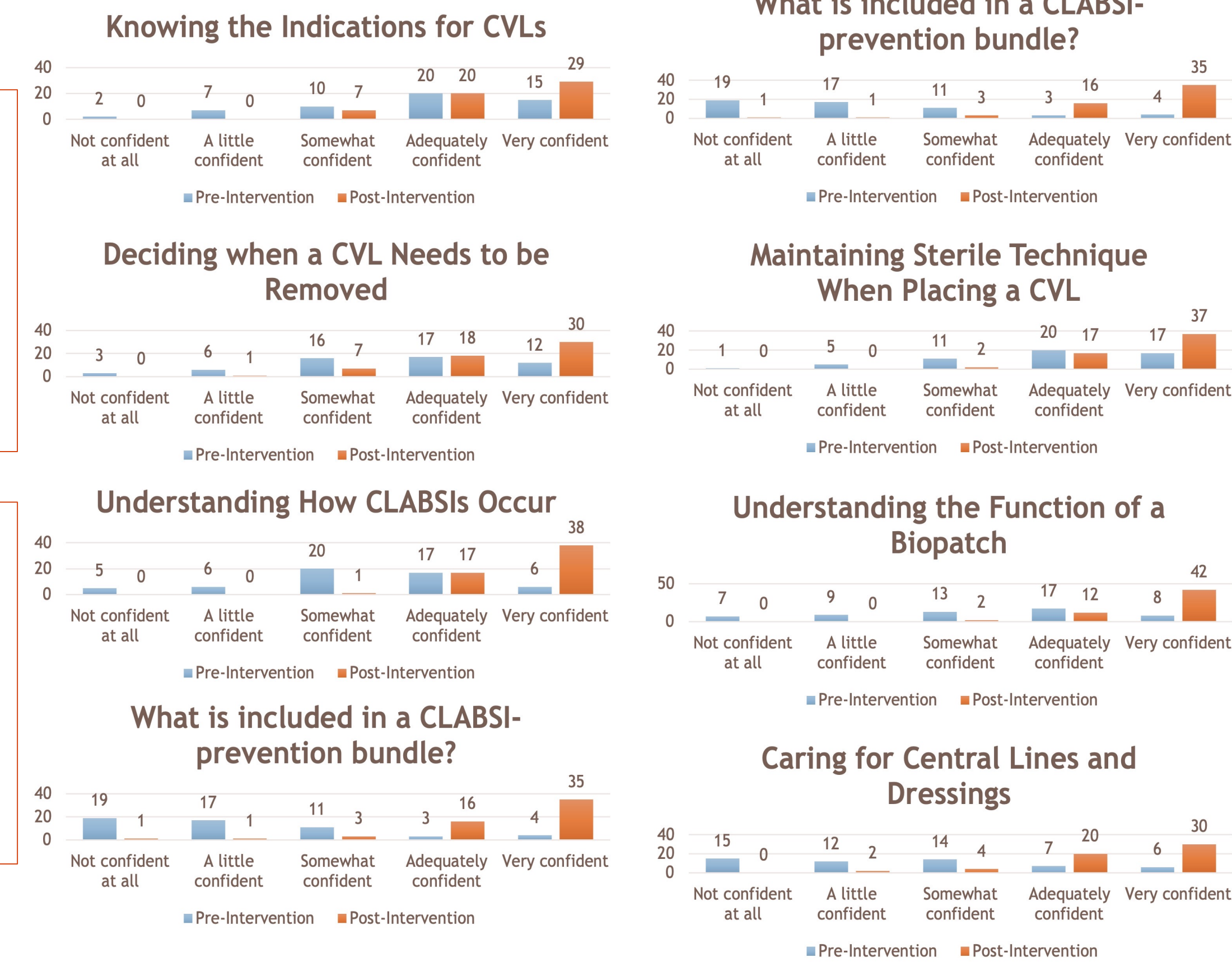


Figure 4: Level of Confidence of Residents Regarding 8 CLABSI Prevention Metrics Pre- and Post-Multi-Modal SIM Lab Session

## CONCLUSIONS

- Attendance of a two-hour multimodal resident-driven educational session improved the confidence of residents in their knowledge and implementation of CLABSI prevention metrics.
- Participants preferred learning via workshop style sessions and educational videos.
- Peer to peer teaching was also very important in delivering resident education, which was affected by the online delivery of training modules during the SARS CoV-2 pandemic

## ACKNOWLEDGEMENTS

We would like to acknowledge Brad Fugere for his contribution to the production of the educational video that was utilized as an essential element of the multi-modal curriculum. Please scan the QR Code to view the video:

