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BACKGROUND

Healthcare-associated infections (HAIs) are the most common complication of hospital care and are one of the top 10 leading causes of death in the United States. Critical care patients are at high risk for HAIs related to invasive devices, compromised health status, and invasive procedures.

Intranasal mupirocin has been shown to be an effective method of decolonization associated with a decreased risk of HAIs; however, concerns exist for driving antibiotic resistance with this method. Alcohol is emerging as a suitable alternative, but fewer studies have been conducted on this intervention.

In October 2022, a performance improvement project was implemented, whereby nares decolonization with 62% ethyl alcohol swabs was performed every shift on all adult critical care patients.

PURPOSE

This study investigated whether nurse-driven alcohol nasal antisepsis every 12 hours in the adult ICU population could *mitigate the risk of the following HAIs* over 12 months when compared to the previous practice of no nasal decolonization method:

- **MRSA Bacteremia** (lab-identified event, blood specimens only)
- **CLABSI** (central line-associated bloodstream infection)
- **IVAC/PVAP** (infection-related ventilator-associated condition/possible ventilator-associated pneumonia)

METHODS

We implemented a nurse-driven intervention of decolonization of the anterior nares every 12 hours on all adult ICU patients for the duration of their ICU stay. Using a single 62% ethyl alcohol swab per the manufacturer's instructions, both anterior nares will be cleaned using a circular motion for 30 seconds each.

Hospital infection preventionists collected data using surveillance definitions from the National Healthcare Safety Network (NHSN) and analyzed changes in rates and standardized infection ratios (SIRs) for MRSA Bacteremia LabID Events in the ICUs and facility-wide, CLABSIs in the ICUs, and IVACs/PVAPs in the ICUs.

RESULTS

Pre-intervention data is shown for 1st quarter 2020 through 2nd quarter 2022, a 30-month period. Intervention period began 3rd quarter 2022.

HAIs and LabID Events are based on NHSN surveillance definitions.

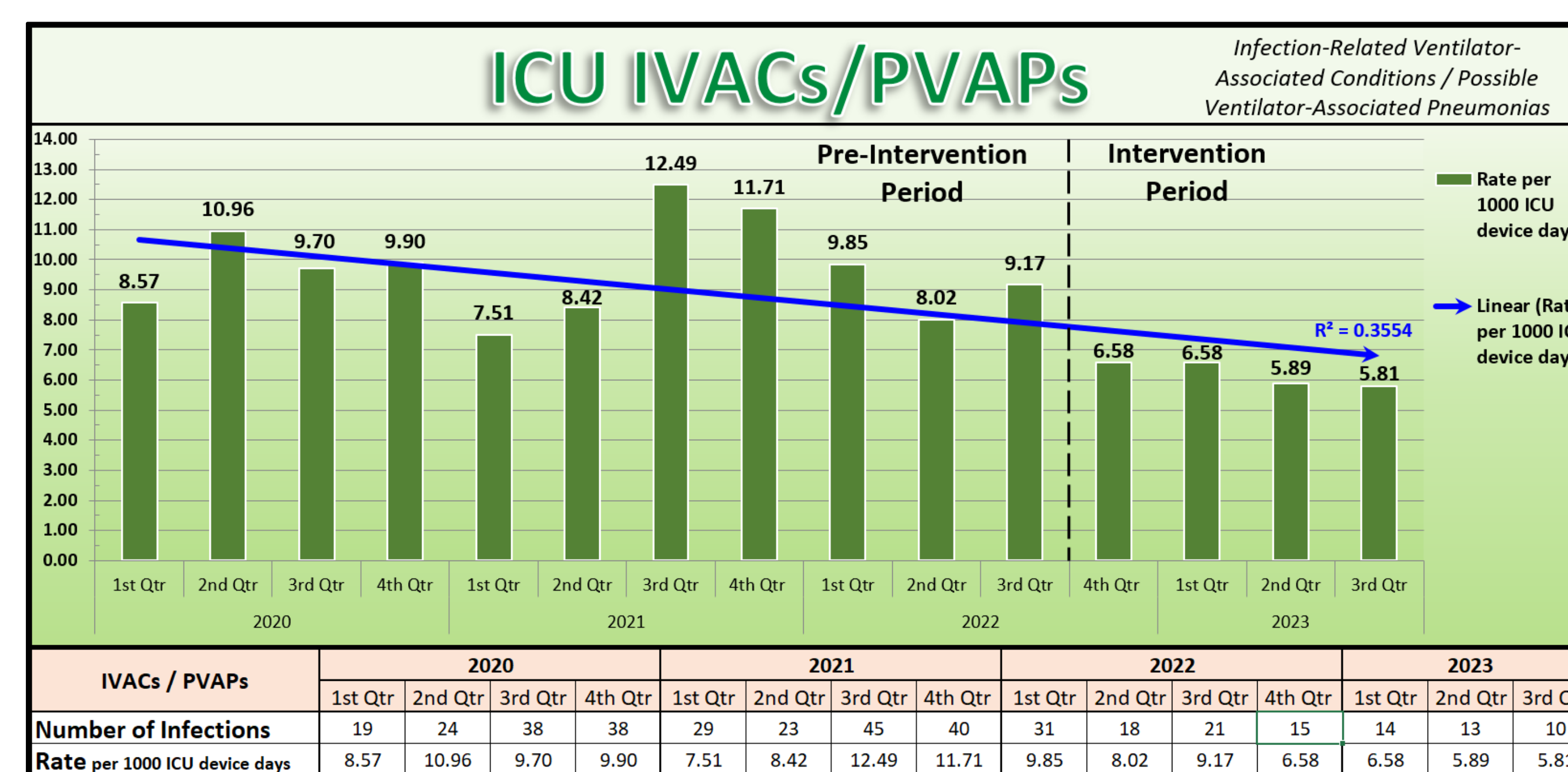
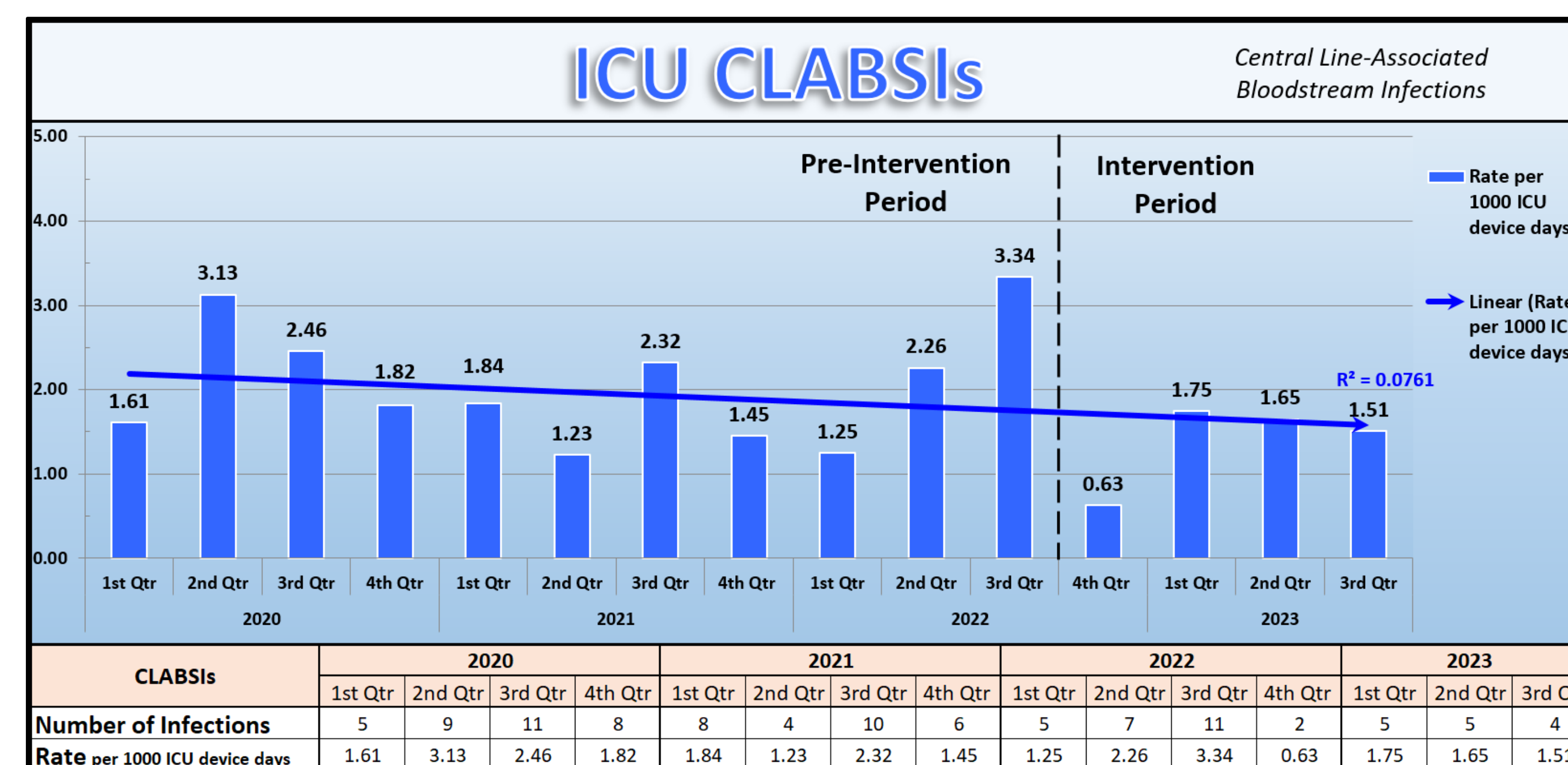
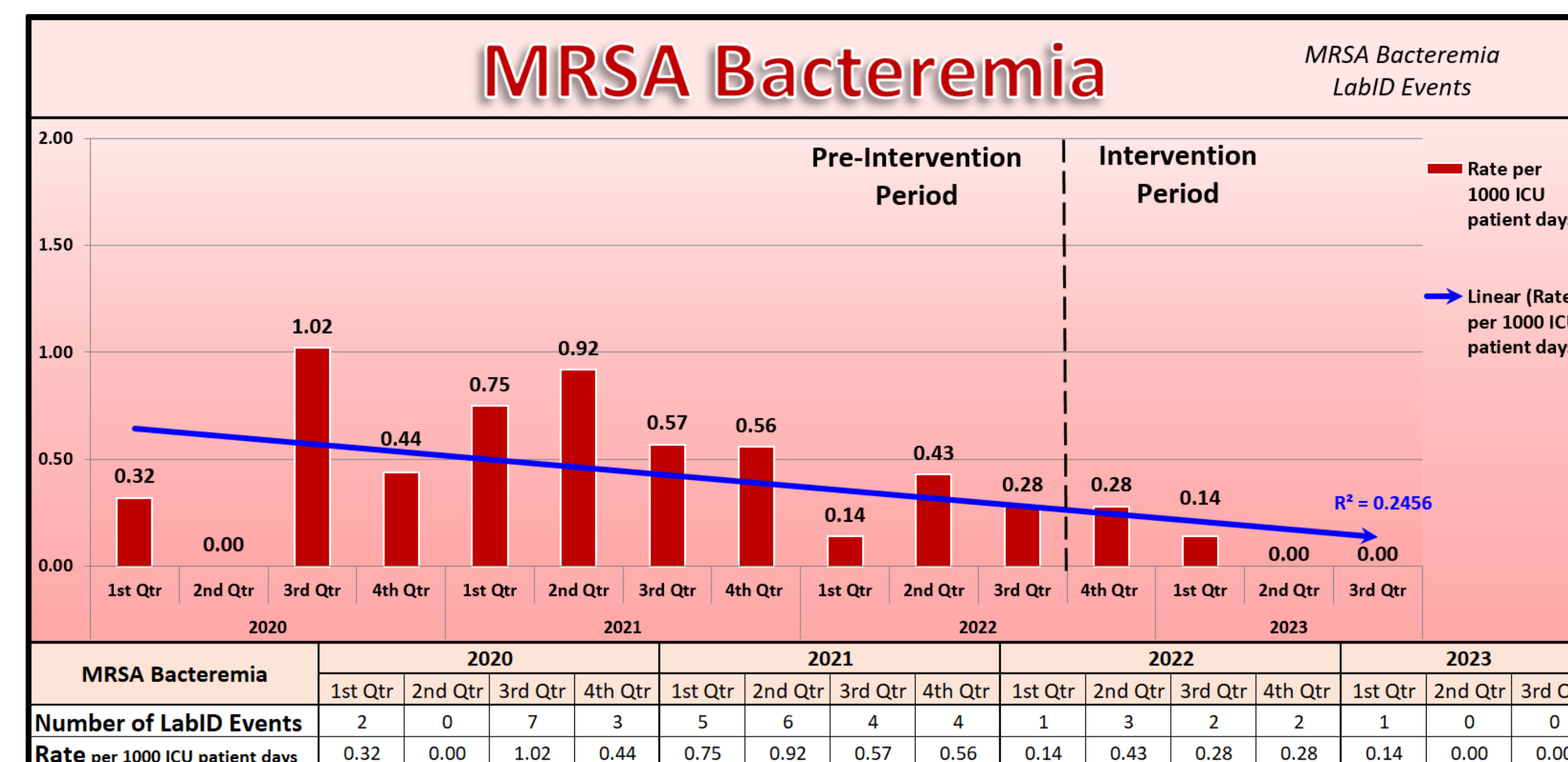


Figure 1. Surveillance data for healthcare-related MRSA bacteremia, CLABSIs, and IVACs/PVAPs. From University Medical Center of Southern Nevada, 2023.

CONCLUSIONS

Four quarters of intervention data rates were analyzed, compared to the pre-intervention period, and a linear trendline was added leading to the intuitive conclusion that improvement occurred as infection rates decreased. High variability around the regression line produced a low R-squared value in each model, indicating that the downward trend in rates, though significant, may not be easily explained by the intervention alone.

LIMITATIONS

Nonstationarity exists with a downward trend in each data set's respective means prior to the intervention, which can lead to an overestimation of the intervention's impact. This may be due to a bias in the baseline data, which was collected during the COVID-19 pandemic. Device days were elevated during this time and patients infected with COVID-19 are shown to be at increased risk for HAIs.

Nurses received initial online education regarding the intervention, but no long-term knowledge assessment has been performed.

There is no available information regarding intervention compliance.

RECOMMENDATIONS

1. The intervention was expanded to include intermediate care (IMC) units in April 2023 based on the following: initial promising results, positive feedback from staff and patients, and zero reported adverse reactions or safety incidents.
2. The intervention will continue, including the addition of the IMC units, and progress will be monitored.
3. Educational opportunities to be sought with staff.
4. The electronic health record will be leveraged to provide reports of nurse compliance with the charting of the intervention.

REFERENCES

References are available upon request.

