Impact of the COVID-19 pandemic on NYS central line-associated bloodstream infection (CLABSI) rates

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Introduction

A central line is an intravenous catheter that is placed into a vein and terminates near the heart.
A CLABSI occurs when bacteria or fungi enter the patient’s central line and then enters into their bloodstream.
CLABSi can be prevented by practicing proper insertion and maintenance techniques.
Up to one in every four patients with a CLABSi dies.
37 of 50 United States are required by law to report hospital acquired infections (HAIs), including CLABSi, to National Healthcare Network System (NHSN).
From 2018 to 2019 there was a national decrease in CLABSi by 7%
NYS CLABSi showed a 24% improvement comparing 2018 rates to 2019

Discussion

The analysis compared New York State (NYS) data pre and post the COVID-19 pandemic. NYS data shows that all reportable hospital acquired infection rates have declined between 2015 to 2019. When comparing the pre-pandemic rates to the post pandemic rates, there was an increase in medical, surgical and medical surgical ward central line associated bloodstream infections. There was a decrease in colon, hysterectomy and fusion surgical site infections, coronary, surgical, pediatric and neonatal intensive care units. There was no change in hip replacement surgical site infections and medical intensive care unit central line associated bloodstream infections.

The comparison of pre and post pandemic CLABSI infection rates is displayed in Table 1. There was statistical significance for an increase in CLABSi in NYS medical wards from a rate per 1000 central line days of 0.78 pre-pandemic to 1.00 in the post pandemic period (P= 0.02263). Medical and surgical ICUs did not experience a significant change in CLABSi. For the medical ICU there was no change from 0.91 to 0.91 and for the surgical ICUs a decrease from 1.03 to 0.88. The medical surgical and surgical wards both had an increase in CLABSi rates that were not statistically significant however may have clinical significance. The medical surgical rate increased from 0.61 to 0.67 and the surgical rate increased from 0.72 to 0.76. The pediatric ICUs, neonatal ICUs and pediatric wards in NYS all showed a decrease in CLABSi from the pre-pandemic period to the post pandemic period. The pediatric ICU rate decreased from 1.24 to 1.14, the neonatal ICU rate decreased from 1.31 to 1.18 and the pediatric ward rate decreased from 1.28 to 0.90.

Potential Factors contributing to CLABSi during the pandemic:
- Delayed or deferred care
- Workflow redesigns
- Infection prevention practices
- PPE and supply shortages
- Human factors (e.g., staff fatigue, avoidance of exposure)
- Prone positioning

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There has been no better time to have studied public health than amidst the COVID-19 pandemic

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