Multidisciplinary effective intervention to reduce of central-line related blood stream infection

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Background/Aims: Central line catheter is important medical device, but it could be preceding infection and risk of central line-associated bloodstream infection (CLABSI). A common health-care associated infection, CLABSI results in high cost and mortality, so various efforts to reduce CLABSI have been tried.

Methods: We reviewed and analyzed the data of CLABSI rate and days from the insertion to the removal of temporary central line catheter between January 2018 and June 2021 in the intensive care unit of a single tertiary hospital. Sequentially, three interventions to reduce the CLABSI rate were introduced to all patients using central line catheter. Each period was defined duration when was introduced only maximal barrier precaution from June 2019 to September 2019 as period 1, duration when was added alarming on electrical medical records from October 2019 to March 2020 as period 2, and the last duration when was introduced chlorhexidine gluconate bathing from April 2020 to June 2021 as period 3. One-way ANOVA was used to test the CLABSI rate, and CLABSI rate was shown using time-series design.

Results: Five-thousand one hundred seventy-six patients were reviewed. Two-thousand twenty-six patients (39.1 %) were female and median age was 62.0 [IQR 49.0;73.0] years. The median duration of catheter insertion was 5.0 [IQR 3.0;9.0] days. A total of 74 CLABSI occurred during the study period, and the mean CLABSI cases based on 23,392 catheter-day were 3.9±2.0 CLABSI rate per 1000 catheter-days. The mean CLABSI rate was 2.4±3.6 per 1000 catheter-day during period 1, 2.5±2.4 per 1000 catheter-day during period 2, and 2.0±1.7 per 1000 catheter-day during period 3. The CLABSI rate showed a gradual decrease in the 3 post-intervention periods with the interventions as comparing pre-intervention period (Figure 1)(P = 0.008)

Conclusions: In our study, multidisciplinary interventions rather than one effort were associated with reduction of CLABSI rates.

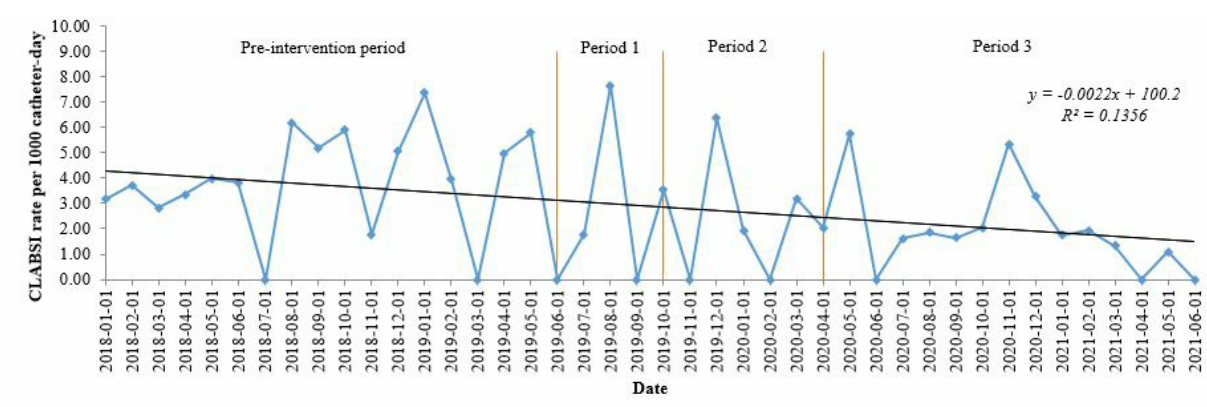

Figure 1. Trend of central line-associated bloodstream infection according to the interventions