Introduction:
Catheter-related bloodstream infection (CRBSI) is a common serious infection associated with increased mortality in intensive care units (ICU). One of the most important strategies to prevent CRBSI is to minimize the duration of central venous catheterization. We built a medical team consisting of doctors, nurses, and pharmacists in ICU to discuss whether patients needed central venous catheter (CVC) in terms of monitoring hemodynamics and administering drugs, and recommend catheter removal to attending physicians every day in April 2019. The purpose of this study is to evaluate whether our team-based approach could shorten the total duration of catheterization and reduce CRBSI.

Methods:
This was a retrospective historical control study conducted from April 2018 to October 2019 in the ICU of a tertiary care hospital in Japan. Every patient admitted to the ICU during the study period was eligible if they were inserted CVC. Patients were divided into 2 groups: Conventional (from April 2018 to March 2019) or Intervention (from April 2019 to October 2019). We set the primary endpoint as onset of CRBSI. The secondary endpoints included the duration of central venous catheterization, the length of ICU stay, and hospital mortality. CRBSI was defined as bloodstream infection in patients with CVC, not related to another site.

Results:
We included 428 patients: 259 in the Conventional group and 169 in the Intervention group. The reduced, though nonsignificant, tendency of CRBSI was observed in the Intervention group (hazard ratio, 0.341 (95% confidence interval, 0.074-1.557; p = 0.213)). The Intervention group was significantly associated with reduced duration of central venous catheterization (5 days vs 7 days; p < 0.01). No difference was observed in the length of ICU stay and in-hospital mortality between groups.

Conclusion:
The team-based approach to assess CVC necessity could shorten the duration of central venous catheterization and might reduce CRBSI.