

# A Prevention Initiative to Reduce Healthcare-Associated Bloodstream Infections in a Spanish University Hospital

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## Background

Bloodstream infections are one of the main adverse effects of healthcare in Spain. In our hospital, we have reported that the mean incremental cost of patients who develop bacteremia during admission was €15,526 per discharge, representing an annual increment in hospital cost of €1,108,190 in 2005-2012. Moreover, we have also observed that only 15.4% of episodes of our bacteremia occur in intensive care units, with most of these infections (67%) occurring in conventional units [Riu2017; Sentís2018]. Therefore, we started several initiatives to reduce healthcare-associated bloodstream infections in our center. Our objective is to describe one of these initiatives, which is the implementation of the intravascular therapy team (ITT) in our center and its effect on the observed healthcare-associated bloodstream infections.

## Method

This retrospective analysis evaluated the incidence of healthcare-associated bloodstream infections in a University Hospital of 520 beds from January 2014 to June 2019. The ITT was implemented in 2017. This is a multidisciplinary team with 2 specialists in infection control and 2 specialists in intravascular therapy (Figure 1). We evaluated the annual incidence rate of healthcare-associated bloodstream infections (number of bacteremia episodes/ 1000 days of hospital stay) and its relation with the interventions carried out by the multidisciplinary team.

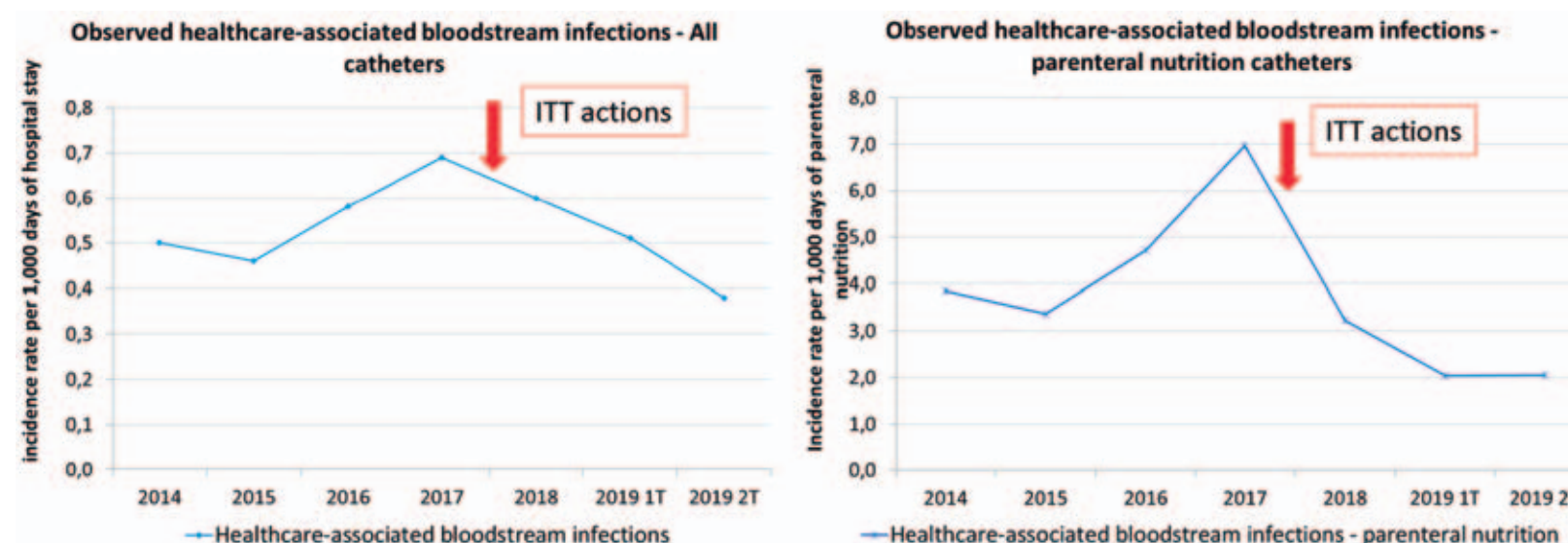
Figure 1



## Result

The annual incidence of healthcare-associated bloodstream infections (episodes/ 1000 days of hospital stay) was: 2014, 0.50; 2015, 0.46; 2016, 0.58; 2017, 0.69; 2018, 0.60; 1<sup>st</sup> quarter 2019, 0.51; and 2<sup>nd</sup> quarter 2019, 0.38; respectively. The highest incidence of bacteremia was observed in 2017 when the ITT started the following actions: 1) follows a clinical protocol to improve the appropriateness in the utilization of new devices such as PICC and Medline; 2) continuous training of healthcare professionals, particularly in young staff; 3) feedback with hospitalization units; and 4) proactive surveillance of venous access manipulation and maintenance. The interventions were designed, implemented and evaluated by the ITT and were well accepted by healthcare professionals. As abovementioned, after the implementation of the ITT, the incidence of healthcare-associated bloodstream infections decreased. It was particularly relevant for parenteral nutrition catheters (episodes/ 1000 days of parenteral nutrition) (Figure 2).

Figure 2. Incidence rate of healthcare-associated bloodstream infections before and after the implementation of implementation of the intravascular therapy team (ITT) in a University Hospital in Barcelona, Spain



## Conclusion

The implementation of the ITT in our center has allowed us to considerably reduce the incidence of healthcare-associated bloodstream infections. From our experience, the interventions related to a systematic evaluation, education, and feedback are key to obtain and maintain this improvement.

## References

- <sup>1</sup>Riu M, et al. Incremental cost of nosocomial bacteremia according to the focus of infection and antibiotic sensitivity of the causative microorganism in a university hospital. *Medicine (Baltimore)*. 2017; 96(17): e6645.
- <sup>2</sup>Sentís A, et al. Risk of hospital readmission and associated factors after a positive sample for a multidrug-resistant microorganism. *European Journal of Public Health*. 2018; 0 (0), 1–6. doi:10.1093/eurpub/cky262.