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Long-term reduction rate in catheter-related bloodstream infections

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Background: Catheter-related bloodstream infection (CRBSI) accounts for 10% to 20% of hospital-acquired infections and is associated with both increased ICU stay and mortality. Rates of CRBSI may be modified by clinical care during insertion and utilization of central venous catheters (CVCs). As such, the incidence of CRBSI has been proposed as a quality indicator.

The aim of the present report is to evaluate the long-term results of the implementation of the strategies for prevention of CRBSI.

Standardized questionnaire for the evaluation of CRBSI was implemented to the ICU in UMC Ljubljana in 2010. Standardized questionnaire is filled for each insertion of CVC. All catheter days are recorded. After the observation period we evaluated the rate of CRBSI in different ICUs. At the end of the observation period we started with the implementation of strategies for prevention of CRBSI. Part of this strategies was also participation in PROHIBIT study. After the end of PROHIBIT study we continue to perform regular surveillance of CRBSI in ICUs on daily basis together with ICU staff. Analysis of the date is done twice yearly and data are returned to the ICUs. Additional education or interventions are performed as needed according to the results.

Material/methods: For each CVC the standard questionnaire was completed. Data about CVCs (location, CD etc) and CRBSI were collected from the standard questionnaire. Additional microbiological results were collected for each patient with CVC and positive blood cultures. Data were calculated for each ICU and for the hospital yearly.

Results: In 2010 the mean incidence of CRBSI in our institution was 5.6 CRBSI/1000 catheter days (CD). After the implementation of strategies for prevention of CRBSI the incidence dropped dramatically in all ICU, but there were still some differences between ICUs. The lowest combine incidence for all ICUs was 0.35 CRBSI/1000 CD. After the end of PROHIBIT study the incidence has

risen slightly (0.75 CRBSI/1000 CD) but after the implementation of regular surveillance the incidence dropped again and was 0.32 CRBSI/1000 CD in 2015 for the ICUs. In 2015 and 2016 we included data from regular wards as well. Data are presented in the Table.

Table. Incidence of CRBSI from 2011 to 2016

Year	N ^o CD	CR-BSI/1000 CD
2011	20629	1.8
2012	22098	0.9
2013	20858	0.4
2014	21446	0.8
2015	37034*	0.65
2016 (until 30.6.2016)	26421	0.57

*Additional data from regular wards

Conclusions: Our experience in prevention of CRBSI shows it is possible to maintain low rate of CRBSI also after the study period without big expenses but with regular surveillance with feedback information and action according to the results. Regular education and practical workshops are also a part of our prevention program.