

## **We aimed to quantify the effectiveness of central-line bundles (insertion or maintenance or both) to prevent these infections” Ista et al(2016).**

### Abstract:

**BACKGROUND:** Central-line-associated bloodstream infections (CLABSIs) are a major problem in intensive care units (ICUs) worldwide. We aimed to quantify the effectiveness of central-line bundles (insertion or maintenance or both) to prevent these infections.

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**METHODS:** We searched Embase, MEDLINE OvidSP, Web-of-Science, and Cochrane Library to identify studies reporting the implementation of central-line bundles in adult ICU, paediatric ICU (PICU), or neonatal ICU (NICU) patients. We searched for studies published between Jan 1, 1990, and June 30, 2015. For the meta-analysis, crude estimates of infections were pooled by use of a DerSimonian and Laird random effect model. The primary outcome was the number of CLABSIs per 1000 catheter-days before and after implementation. Incidence risk ratios (IRRs) were obtained by use of random-effects models.

**FINDINGS:** We initially identified 4337 records, and after excluding duplicates and those ineligible, 96 studies met the eligibility criteria, 79 of which contained sufficient information for a meta-analysis. Median CLABSIs incidence were 5.7 per 1000 catheter-days (range 1.2-46.3; IQR 3.1-9.5) on adult ICUs; 5.9 per 1000 catheter-days (range 2.6-31.1; 4.8-9.4) on PICUs; and 8.4 per 1000 catheter-days (range 2.6-24.1; 3.7-16.0) on NICUs. After implementation of central-line bundles the CLABSI incidence ranged from 0 to 19.5 per 1000 catheter-days (median 2.6, IQR 1.2-4.4) in all types of ICUs. In our meta-analysis the incidence of infections decreased significantly from median 6.4 per 1000 catheter-days (IQR 3.8-10.9) to 2.5 per 1000 catheter-days (1.4-4.8) after implementation of bundles (IRR 0.44, 95% CI 0.39-0.50,  $p < 0.0001$ ;  $I^2 = 89\%$ ).

**INTERPRETATION:** Implementation of central-line bundles has the potential to reduce the incidence of CLABSIs.

FUNDING: None.

Reference:

Ista, E., van der Hoven, B., Kornelisse, R.F., van der Starre, C., Vos, M.C., Boersma, E. and Helder, O.K. (2016) Effectiveness of insertion and maintenance bundles to prevent central-line-associated bloodstream infections in critically ill patients of all ages: a systematic review and meta-analysis. *The Lancet. Infectious Diseases*. February 18th. .

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