O198
Oral Session
Healthcare - associated infections - from analysis to interventions

THE PROHIBIT (PREVENTING HOSPITAL-ACQUIRED INFECTIONS BY INTERVENTION AND TRAINING) INTERVENTION TRIAL - RESULTS OF A CLUSTER-RANDOMIZED EUROPEAN MULTI-CENTER STUDY ON THE REDUCTION OF CENTRAL LINE-RELATED BLOODSTREAM INFECTIONS

T. Van Der Kooi[1], M. Wolkew itz[2], B. Van Benthem[3], S. De Greeff[3], H. Grundmann[4], W. Zingg on behalf of the PROHIBIT study group[5]

[1]Centre for Infectious Disease control, National Institute for Public Health and the Environment (RIVM), Bilthoven, Netherlands ; [2]Dept. of Medical Biometry and Medical Informatics, Institute of Medical Biometry and Medical Informatics, Freiburg, Germany ; [3]Centre for Infectious Disease Control, National Institute for Public Health and the Environment (RIVM), Bilthoven, Netherlands ; [4]Medical microbiology, University of Groningen, Groningen, Netherlands ; [5]Division of Infectious Diseases, University hospitals of Geneva, Geneva, Sw itzerland

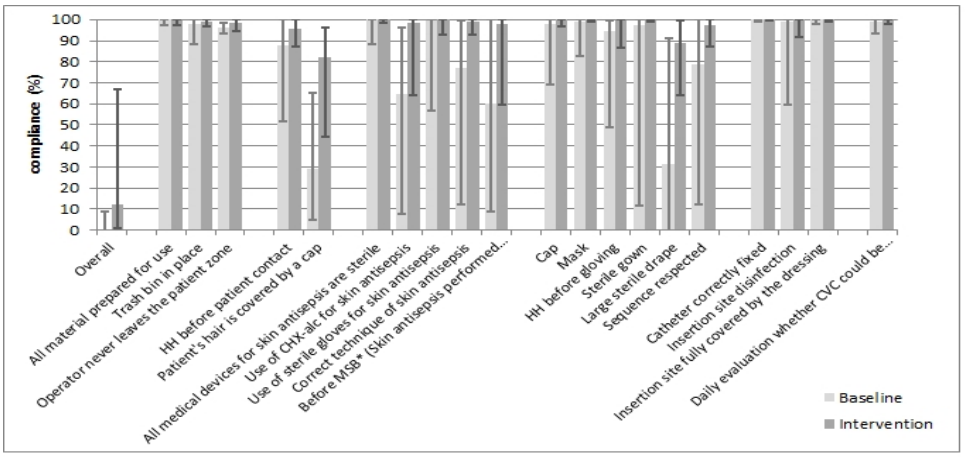
Objectives: Differences in the incidence of central line-related bloodstream infections (CRBSIs) among European hospitals are due to a range of varying factors such as case mix, infection control practices, and organizational culture. The PROHIBIT study aims at inventorying and analysing national and local infection prevention activities in Europe and to test tw o interventions of proven efficacy in CRBSI reduction.

Methods: Betw een January 2011 and June 2013, one or more intensive care units of fourteen hospitals from 11 European countries w ere randomized to implement one or both of the follow ing interventions: 1) the WHO hand hygiene strategy; and 2) a CRBSI prevention strategy based on a successful central venous catheter (CVC) bundle programme of the University of Geneva hospitals. Randomization follow ed a stepped-w edge design: after a baseline period of 6 months, every quarter, three hospitals w ere randomized to one of the three intervention arms (hand hygiene [HH] alone, CVC bundle alone, and both interventions together). The last hospitals started intervention in July 2012. Primary outcome w as CRBSI, secondary outcomes w ere compliance w ith hand hygiene and the CVC bundle.

Results: In total, data w ere collected from 35,831 catheters accumulating 262,377 CVC days and 382 CRBSIs. CRBSI incidence at baseline and in the intervention period w ere 2.4/1000 CVC days (interhospital range 0.0–8.1) and 0.9/1000 (range 0.0–3.8), respectively. This reduction w as significant (relative risk [95% CI]:0.39 [0.32-0.48]).

Cox regression analysis, accounting for patient and CVC characteristics and modeling hospital as clusters, revealed that the HH intervention alone (hazard ratio (HR) [95% CI]: 0.46 [0.24-0.86]) and both interventions combined (HR: 0.50 [0.30-0.84]) significantly reduced CRBSI . The CVC bundle alone only resulted in a non-significant trend tow ards CRBSI reduction (HR: 0.63 [0.37-1.06]). The baseline incidence density in this group w as ≤1.0

The mean baseline CVC bundle compliance of 3.3% (range 0.0 – 47.2) increased to 38.7% (0.0–83.8) for the hospitals that had implemented the CVC bundle (alone or in combination). In the HH hospitals the baseline bundle compliance rose from 6.0% (0.0 – 37.5) to 26.2% (0.0–55.6). The figure show s the median compliance and interquartile range w ith the overall CVC bundle and the individual items for all hospitals. The mean baseline HH compliance w as 46.8% (range 16.9-62.7) and improved to 60.6 (34.7-89.6) for hospitals that implemented the HH campaign alone or in combination w ith the CVC bundle. These hospitals show ed a slightly larger increase in HH than the CVC hospitals, increasing from 51.3 (46.0–66.9) to 62.2 (44.1-84.7).



Conclusion: Our findings confirm variations of CRBSI incidence densities among ICUs in European hospitals. HH and HH in combination w ith a CVC bundle w ere independently associated w ith CRBSI reduction, particularly in hospitals w ith higher baseline rates.