Prospective Study of the Impact of Switching From an Open IV Infusion System to a Closed System on Rates of Central Venous Catheter-Associated Bloodstream Infection in Mexican Hospitals. SHEA meeting, Philadelphia, USA, April, 17th - 20th - 2004

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Background: To ascertain the effect of switching from an open infusion system (phase one) to a closed system (phase two) on rates central vascular catheter (CVC)-associated bloodstream infection (BSI) in four intensive care units (ICUs) in Mexico.
Methods: A prospective time-series cohort trial was undertaken in adult patients admitted to four tertiary-care ICU's, who had a CVC in place for at least 24 hours. Rates of CVC-associated BSI during a period of active surveillance with an open system (one port, externally-vented semi-rigid plastic bottles) were compared to rates after switching to a closed system (two ports, non-vented collapsible plastic bags).
Results: Between September 2002 and November 2003, 1164 ICU patients with CVCs were enrolled. Patients during each study phase were similar with respect to gender, severity-of-illness score, underlyng diseases, and length of stay of central venous catheter. Compliance with CVC care was similar during the two study phases. Handwashing compliance was above 75% during both phases of the study.
There was a total of 4,584 CVC days during phase one and 3,995 CVC days during the phase two. The rate of CVC-associated BSI (laboratory confirmed bloodstream infection [LCBI], and Clinical sepsis [CSEP]) during phase one was higher than during phase two (16.97 versus 3.00 BSIs per 1000 CVC-days, RR = 0.18, 95% CI = 0.10-0.32, p= 0.0000). The rate of CVC-associated BSI (LCBI) during phase one was higher (7.83 versus 1.25 BSIs per 1000 CVC-days, RR = 0.16, 95% CI = 0.06-0.41, p= 0.0000).
Conclusion: Adoption of a closed infusion system resulted in 82% reduction in the rate of CVC-associated BSIs. The effect on reduction of morbidity and mortality and cost-savings will be reported separately.