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## **COST-EFFECTIVENESS OF CLOSED-INFUSION-SYSTEM ON RATES OF CENTRAL VASCULAR CATHETER-ASSOCIATED BLOODSTREAM INFECTION IN BRAZIL**

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### **Objective:**

Evaluate effect of switching from an open infusion system (one port, externally-vented glass bottles) (phase one) to a closed-system (two ports, non-vented collapsible plastic bags) (phase two) on rates of central vascular catheter (CVC)-associated bloodstream infection (BSI) in three adult intensive care units (ICUs) in one Brazilian Hospital.

### **Methods:**

A prospective before/after study was undertaken in patients who had a CVC in place for at least 24 hours. Rates of CVC-BSI during a period of active surveillance on phase one were compared to phase two.

### **Results:**

Between 3/04 and 5/05, 1127 ICU patients with CVCs were enrolled.

Patients during each study phase were similar with respect to gender (P, 0.9365), severity-of-illness score (P, 0.3369), Diabetes (P, 0.0818), Hypertension (P, 0.1068), Angina pectoris (P, 0.1291), Cancer (P, 0.1030), Renal impairment (P, 0.3796), Hepatic failure (P, 1.000), Thoracic Surgery (P, 1.000), Trauma (P, 0.3856), Previous Infection (P, 0.7744) and Stroke (P, 1.000). Compliance with CVC care (99.47% vs 99.98%; RR, 1.01; 95% CI, 0.96-1.05; P value, 0.8136) and hand hygiene compliance (65.41% vs 63.94%; RR, 0.98; 95% CI, 0.91-1.05; P value, 0.5139) was also similar.

4,237 CVC-days were collected during phase one, and 4,097 during phase two. The rate of CVC-BSI (laboratory confirmed BSI [LCBI], and Clinical sepsis [CSEP]) during phase one (30/4237) was higher than during phase two (13/4097) (7.1 versus 3.2 BSIs per 1000 CVC-days, RR, 0.45; 95% CI, 0.23-0.86; p, 0.01).

A previous local study determined CVC-BSIs extended ICU LOS 23.63 days, with extra costs of \$7,906.17. Assuming a CVC-associated BSI rate of 7.1 per 1000 CVC-days in phase one, 29 BSIs would have during phase two, but we had only 13 BSIs, saving 16 BSIs. The calculated savings were \$126,499, and 378 ICU days.

### **Conclusion:**

Adoption of a closed-system reduced CVC-BSI rates, related cost and LOS.