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Objectives:

The study aimed at (i) assessing the costs of CVC-associated BSI and, (ii) calculating the cost-effectiveness ratio of the closed system vs. open infusion system.

Methods:

A 2-year prospective case-control study was undertaken at four Intensive Care Units in a teaching clinic in Milan. Patients with BSI (cases) and patients without BSI (controls) were matched for admission departments, gender, age, and severity. Costs were estimated by using a micro-costing approach, i.e. by going through patients. Incremental costs were measured as the difference between implementing the two infusion systems. Effectiveness was measured in "number of BSI per 1000 CVC days".

Results:

Forty-three cases were compared to 97 controls. The mean age was 62.1 and 66.6 years for cases and controls respectively (P: 0.143), 56% of cases and 57% of controls were females (P: 0.922). The mean LOS was 17.41 and 8.55 days for cases and control (P<0.001). On average, total costs were € 18,241 and € 9,087 for cases and controls (P< 0.001). The extra cost for drugs was € 843 (P<0.001), for supplies € 133 (P: 0.116), for lab tests € 171 (P:0.000), for specialist visits €15 (P:0.019) and for hospital stay € 7,180 (P<0.001).

The closed system was a dominant strategy. It resulted more effective (3.5 vs. 8.2 BSI per 1000 CVC days), while the higher acquisition cost was off set by savings.

Conclusions:

CVC-associated BSI represent a relevant cost to hospitals. Closed systems can significantly reduce the incidence of infections, without posing additional burden on hospital budgets.