1245. Does Complexity of Infection Prevention Bundles Matter in Colorectal Surgery? A Systematic Review and Meta-Analysis

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Session: 147. HAI: Surgical Site Infections
Friday, October 4, 2019: 12:15 PM

Background. Surgical site infection (SSI) prevention bundles in colorectal surgery are common. The optimal bundle composition and impact of increasingly complex and resource-intensive bundled interventions on SSI remain unclear.

Methods. (1) A systematic review and meta-analysis of randomized and observational trials with post-pre implementation data for colorectal SSI prevention bundles to study their effect on superficial, deep, and organ-space SSI. (2) A meta-regression to determine whether the bundle size (number of different bundle elements) affects SSI. (3) A correlation analysis to identify individual bundle elements with greatest SSI reduction. We used the METAN, METAPEE, and METAREG packages in STATA SE 15 for analysis.

Results. We included 38 studies in the systematic review, and 29 studies (49,589 patients) in the meta-analysis. Bundle composition was highly variable, ranging from 3–13 guideline-recommended elements per bundle. Meta-analyses showed bundles to be associated with relative risk reductions of 43% for any SSI (RR 0.57 [95% CI 0.48–0.67]; 44% for superficial SSI (RR 0.56 [95% CI 0.42–0.75]; 33% for deep SSI (RR 0.67 [95% CI 0.45–0.98], and 37% for organ/space SSI (RR 0.63 [95% CI 0.49–0.81]). On meta-regression, bundle size, especially ≥2 elements, was significantly associated with SSI reduction for any SSI (P = 0.04) and for superficial SSI (P = 0.005). Individual bundle elements correlated with strongest SSI reductions were mechanical bowel prep with combined with oral antibiotics (R = 0.68, P = 0.0028) and pre-operative chlorhexidine/gluconate showers (R = 0.49, P = 0.04) for organ/space SSI. Protocol-induced separate instrument trays and glove ± gown change prior to surgical wound closure (R = 0.55, P = 0.009), and standardized postoperative wound dressing change at 48 hours (R = −0.39, P = 0.005) correlated with highest superficial SSI reductions.

Conclusion. Complex colorectal bundles with ≥10 clinical guideline-recommended prevention elements are associated with higher reductions in any SSI and in superficial SSI. Further research should evaluate how complex SSI prevention colorectal bundles can be implemented and sustained with high fidelity in the clinical setting in a cost-effective manner.

Disclosures. All authors: No reported disclosures.