Bundled approach to reduce surgical site infections in colorectal surgery

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A multidisciplinary program (called a "bundle") that spanned the phases of perioperative care helped reduce surgical site infections (SSIs) in patients undergoing colorectal surgery (CRS) at an academic medical center.

SSIs are associated with increased complications, length of hospital stay, readmission rates and health care costs. Efforts that have used systematic approaches, called bundles, that aim to incorporate best practices across the phases of perioperative care have had varied success.

The authors evaluated an SSI bundle implemented at an academic medical center in 2011 and examined during a study period that stretched from 2008 through 2012 so before and after outcomes could be assessed. Elements of the bundle included evidence-based and commonsense measures, including educational materials, disinfecting showers before surgery, antibiotics and wound care. The study included 559 CRS cases (346 cases before the bundle and 213 after the bundle was implemented). Matched prebundle and postbundle groups each had 212 patients.

The bundle was associated with reduced superficial SSIs (19.3 percent vs. 5.7 percent) and postoperative sepsis (8.5 percent vs. 2.4 percent). No significant differences were seen in deep SSIs, organ-space SSIs, wound disruption, length of stay, 30-day readmission or variable direct costs. During the postbundle period, superficial SSIs were associated with a 35.5 percent increase in variable direct costs ($13,253 vs. $9,779)

and a nearly 72 percent increase in length of stay (7.9 days vs. 4.6 days).

"Further study is needed to assess whether the bundle can be effective with wider application and what level of compliance with bundle measures is needed to achieve good results." Jeffrey E. Keenan, M.D., of the Duke University Medical Center, Durham, N.C., and colleagues wrote in their *JAMA Surgery* article.

Ira L. Leeds, M.D., M.B.A., and Elizabeth C. Wick, M.D., of Johns Hopkins University, Baltimore, write: "For colorectal surgery, the leading harm is surgical site infections, but strong initiatives to reduce these have stalled because of a lack of clear evidence to support that improvement is possible."

"A series of recent studies, including the study by Keenan et al in this issue of *JAMA Surgery*, support that colorectal surgical site infection is a preventable harm with adherence to published evidence, best practice guidelines and culture change," they continue.

"These studies demonstrate ways in which the field is naturally placed to develop high-reliability organizational models that build up from patient care units rather than conventional efforts that typically come down from administrative institutional mandates," they conclude.

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