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Antibiotic regimen and the timing of prophylaxis are important for reducing surgical site infection after elective abdominal colorectal surgery.

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Source

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Abstract

Abstract Background: Surgical site infections (SSIs) cause morbidity after elective colorectal surgery, and antibiotic prophylaxis can decrease SSIs. The aim of this study was to determine compliance with an antibiotic administration protocol, including regimen, initial dose timing, and re-dosing, and determine the risk of SSI associated with each. We hypothesized that appropriate antibiotic administration reduces the risk of SSI. **Methods:** Retrospective review from a prospective database of a random sample of patients undergoing elective abdominal colorectal procedures with anastomosis. Antibiotic regimens, initial dose timing (IDT), and re-dosing were evaluated. Appropriate regimens covered gram-positive cocci, gram-negative bacilli, and anaerobes. The IDT was considered proper if completed within 30 min prior to incision; re-dosing parameters were determined pharmacokinetically for each agent. The main outcome was SSI. Sequential logistic models were generated: Model 1 assessed antibiotic administration factors, whereas Model 2 controlled for patient and clinical factors, including disease process, patient characteristics, intra-operative factors, and post-operative factors. **Results:** Six hundred five patients (mean age 59.7 [standard deviation 17.8] years, 42.8% male) were included. The most common diagnoses were cancer (38.8%) and inflammatory bowel disease (22.0%). Seventy-six patients (12.6%) had superficial or deep incisional SSI, and 54 (8.9%) had organ/space SSI. Regimens included cefazolin + metronidazole for 219 patients (36.2%), cefoxitin for 214 (35.4%), and levofloxacin + metronidazole for 48 (7.9%). One hundred fourteen patients (18.8%) received other/nonstandard regimens, and ten had no documented antibiotic prophylaxis. Fifty-five patients (9.1%) received insufficient coverage, whereas 361 patients (59.7%) had proper IDT, and 401 regimens (66.3%) were re-dosed properly. In Model 1, the use of other/nonstandard regimens (odds ratio [OR] 2.069; 95% confidence interval [CI] 1.078-1.868) and early administration of the initial prophylaxis dose (OR 1.725; 95% CI 1.147-2.596) were associated with greater odds of SSI. After adding clinical factors in Model 2, both of these factors remained significant (OR 2.505; 95% CI 1.066-5.886 and OR 1.733; 95% CI 1.017-2.954, respectively). **Conclusions:** Appropriate antibiotic selection and timing of administration for prophylaxis are crucial to reduce the likelihood of SSI after elective colorectal surgery with intestinal anastomosis.

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