

Is the efficacy of antibiotic prophylaxis for surgical procedures decreasing?

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Antibiotic prophylaxis regimens are becoming less effective at preventing surgical site infections following colorectal surgery, researchers at the Center for Disease Dynamics, Economics & Policy and Princeton University determined through a systematic review of available literature. The researchers also found that the efficacy of antibiotic prophylaxis in preventing infection following appendectomy, cesarean section, and transrectal prostate biopsy (TRPB) procedures has remained statistically unchanged, although this analysis was challenged by small sample size.

Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, [researchers](#) identified 74 randomized control trials for final analysis to assess trends in the efficacy of antibiotic prophylaxis regimens in preventing infection following four surgical procedures.

Of the 74 randomized control trials selected, 9 were for appendectomy, 11 were for cesarean section, 15 were for TRPB, and 39 were related to colorectal surgery. When considering several currently recommended prophylactic antibiotic interventions for each procedure, the overall proportion of infection was 3 percent for appendectomy, 4.1 percent for [cesarean section](#), and 1.2 percent for TRPB. These infection rates did not change significantly overtime.

Prophylactic [antibiotics](#) used for colorectal surgery included cefoxitin, cefotetan, and cefazolin plus metronidazole. Between 1980 and 2005,

the overall infection rate for colorectal procedures and all prophylactic drug treatments was 14 percent. During that time, there was a statistically significant increase in infection rate from about 10 percent in 1980 to about 25 percent in 2005. This trend remained significant even after adjusting for the type of surgery and antibiotic used. The researchers called for additional research to determine how antibiotic prophylaxis recommendations should be modified to address declining antibiotic efficacy for colorectal surgery.

"There were over 300,000 colorectal surgeries performed in the United States last year. An increase in [infection](#) rates and a decline in the efficacy of prophylaxis may be a reflection of growing antibiotic resistance, which needs to be tackled urgently," according to CDDEP director and study co-author, Ramanan Laxminarayan.

The study titled, "Is the efficacy of antibiotic prophylaxis for surgical procedures decreasing? Systematic review and meta-[analysis](#) of randomized control trials" was published on November 12, 2018 in *Infection Control and Hospital Epidemiology* and is available online here.

More information: Sumanth Gandra et al, Is the efficacy of antibiotic prophylaxis for surgical procedures decreasing? Systematic review and meta-analysis of randomized control trials, *Infection Control & Hospital Epidemiology* (2018). [DOI: 10.1017/ice.2018.295](https://doi.org/10.1017/ice.2018.295)

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