

Continuing postoperative antibiotic prophylaxis to prevent surgical site infection: is common practice justified?

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A systematic review and meta-analysis supports 2016 WHO recommendations against postoperative continuation of antibiotic prophylaxis

Around one in six in-hospital prescriptions for antibiotics is for surgical antibiotic prophylaxis, often continued for several days after surgery to prevent infection (1). However, it is not at all certain whether such a practice has any advantage over immediate discontinuation. In fact, data suggest that a single preoperative antibiotic dose, coupled with further intraoperative doses when indicated, could well be as effective as continued postoperative prophylaxis (2, 3). Furthermore, the latter regimen exposes patients to the risks associated with prolonged antibiotic use, including development of resistance, *Clostridioides difficile* infection and acute kidney injury. In 2016, a review of available evidence on the impact of different antibiotic prescribing practices on surgical site infection risk led the World Health Organization (WHO) to strongly recommend against postoperative continuation of antibiotic prophylaxis (4). Despite these recommendations, however, prolonged antibiotic prophylaxis after surgery remains common practice worldwide, even in the face of concerns over antibiotic resistance and other adverse effects (1).

To update the evidence underlying the WHO's recommendations, researchers performed a systematic review and meta-analysis of randomised controlled trials (RCTs) conducted between 1990 and 2018 to compare postoperative continuation of antibiotic prophylaxis with its immediate discontinuation. A review of 52 RCTs involving 19,272 patients found no conclusive evidence that patients derive benefit from continuing antibiotic prophylaxis after surgery over immediate discontinuation, supporting the WHO recommendations. Additionally, the review suggested that continuing antibiotic prophylaxis after surgery was only effective in preventing surgical site infection if the timing of pre- and intraoperative antibiotic use was inadequate. No additional benefit in reducing surgical site infection was seen over immediate discontinuation if best practice standards were followed.

Comment

This study did not find evidence of benefit from continuation of perioperative antibiotic prophylaxis postoperatively and therefore supports the WHO guidelines. It is, however, limited by the lack of standardised best practices in the RCTs included. Similarly, outcomes such as costs and adverse events could not be assessed due to inadequate reporting. Future studies to further evaluate antibiotic continuation after surgery should pre-specify adverse event monitoring, along with standardising preoperative and intraoperative antibiotic use. Given the lack of evidence for advantages of postoperative prophylaxis, it is unlikely that those kind of studies will be conducted. Improved awareness and education about best practices among both patients and practitioners are necessary in order to encourage stewardship efforts between surgeons.

References

1. Versporten A, Zarb P, Caniaux I, *et al*. Antimicrobial consumption and resistance in adult hospital inpatients in 53 countries: results of an internet-based global point prevalence survey. *Lancet Glob Health* 2018; **6**: e619–29.
2. Regimbeau JM, Fuks D, Pautrat K, *et al*. Effect of postoperative antibiotic administration on postoperative infection following cholecystectomy for acute calculous cholecystitis: a randomized clinical trial. *JAMA* 2014; **312**: 145–54.
3. Imamura H, Kurokawa Y, Tsujinaka T, *et al*. Intraoperative versus extended antimicrobial prophylaxis after gastric cancer surgery: a phase 3, open-label, randomised controlled, non-inferiority trial. *Lancet Infect Dis* 2012; **12**: 381–7.
4. WHO. Global guidelines for the prevention of surgical site infection. Geneva: World Health Organization, 2018. Available at: <https://apps.who.int/iris/bitstream/handle/10665/250680/9789241549882-eng.pdf?sequence=8>. Accessed 26 October 2020.