

# Can Acute Uncomplicated Diverticulitis Be Safely Treated Without Antibiotics?



## TAKE-HOME MESSAGE

Antibiotic use in patients with acute uncomplicated diverticulitis is associated with an increased length of hospital stay but does not reduce overall or individual complication rates.

## METHODS

### DATA SOURCES

The authors searched MEDLINE, EMBASE, Scopus, the Cochrane Library, the Web of Science database, and conference abstracts from 1946 to June 2017 for relevant studies that included terms such as “diverticulitis AND antibiotics.” The search strategy was limited to human studies in English. The authors also manually searched the references of included articles and performed a search of the gray literature with Google.

### STUDY SELECTION

Abstracts were screened independently by 2 reviewers for studies meeting the following inclusion criteria: adult patients (defined as  $\geq 18$  years) who had computed tomography–proven acute uncomplicated diverticulitis and studies with greater than or equal to 5 subjects enrolled. Acute uncomplicated diverticulitis was defined as Ambrosetti’s classification of mild diverticulitis, Hinchev’s 1a (confined pericolic inflammation) classification, or Hinchev’s 1b (confined pericolic abscess) classification.<sup>1,2</sup> Primary outcomes included treatment failure, recurrence, abscesses, strictures, perforations, fistulas,

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Editor’s Note: This is a clinical synopsis, a regular feature of the *Annals’* Systematic Review Snapshot (SRS) series. The source for this systematic review snapshot is: **Mocanu V, Dang JT, Switzer N, et al. The role of antibiotics in acute uncomplicated diverticulitis: a systematic review and meta-analysis. *Am J Surg*. 2018;216:604-609.**

## Results

Comparison of antibiotics versus conservative management in acute uncomplicated diverticulitis.

Outcome	No. of Studies (No. of Participants)	Odds Ratio (95% CI)	$I^2$ , %
Major complications (recurrence, treatment failure, abscess, bleeding, fistula, perforation, stenosis, elective or emergency surgery)	6 (2,153)	0.72 (0.45–1.16)	72
Treatment failure (recurrence within 1 mo)	2 (583)	0.43 (0.15–1.27)	16
Recurrence after 1 mo	6 (2,153)	0.77 (0.55–1.09)	24

CI, Confidence interval.

The search strategy identified 1,767 references, of which 8 studies (n=2,469 patients) were identified as meeting the inclusion criteria. Of these, 843 patients (36.2%) were treated with antibiotics and 1,626 (63.8%) were not. The mean age was 58.3 years, 61.6% of patients were women, and 31.6% had a previous episode of diverticulitis. All studies were conducted in various parts of

northern Europe: Sweden (4 studies), the Netherlands (2 studies), Norway (1 study), and Finland (1 study). Two studies were randomized controlled trials, 2 were prospective cohort studies, 3 were retrospective cohort studies, and 1 was a retrospective case-control study. Publication years ranged from 2009 to 2017, with study populations of 161 to 623 patients.

and bleeding. Secondary outcomes included hospital length of stay, need for emergency surgery, or elective surgery. Any disagreements were settled by consensus, with the addition of a third reviewer if necessary.

### DATA EXTRACTION AND SYNTHESIS

Data were extracted by one reviewer, with accuracy assessed by a second one. Outcomes associated with acute uncomplicated diverticulitis treatment with and without antibiotics were evaluated through meta-analyses. Study quality was assessed with the Cochrane Risk of Bias tool for randomized trials and the Methodological Index for Non-Randomized Studies tool for nonrandomized trials. Heterogeneity was assessed with the  $\chi^2$  test and  $I^2$  statistic.

The overall complication rate was 18.7%, with no significant difference between groups (Table). Subgroup analysis by specific complication types also did not differ. However, patients treated without antibiotics were discharged from the hospital 1 day sooner (mean difference -1.1 days; 95% confidence interval -1.8 to -0.4 days).

### Commentary

Diverticular disease is one of the most common diseases of the large intestine and is a major cause of both health care visits and inpatient hospitalizations.<sup>5</sup> Nearly half of all patients older than 60 years have colonic diverticula, with 10% to 25% developing diverticulitis.<sup>4</sup> Newer studies have found an

increasing incidence of diverticulitis among younger patients as well.<sup>3</sup> The cornerstone of management for acute uncomplicated diverticulitis has traditionally consisted of antibiotic therapy and bowel rest.<sup>3</sup> However, antibiotics are associated with potential adverse events, including gastrointestinal symptoms, allergic reactions, and *Clostridium difficile* infection, as well as increasing bacterial resistance to antimicrobials. Consequently, a number of recent studies have challenged the notion that antibiotics improve outcomes in acute uncomplicated diverticulitis.<sup>5-7</sup>

This systematic review and meta-analysis found that the use of antibiotics was not associated with a reduction in complications, treatment failure, or recurrence, but did lead to an increase in hospital length of stay. However, it is important to consider several limitations of this review. Only 2 studies were randomized, whereas the majority were prospective or retrospective studies. This could have resulted in selection bias in the nonrandomized studies because patients with less severe disease may have been more likely to be treated without antibiotics. Additionally, only 6 of the 8 studies directly compared antibiotics with no antibiotics. Some studies also included patients with more severe disease (eg, abscesses <5 cm not requiring surgical intervention), which may have altered the complication rates. Moreover, there was no description of patient comorbidities (eg, diabetes mellitus, hypertension, renal disease) and most patients were otherwise healthy because

those with immunosuppression, pregnancy, and significant metabolic disorders were excluded from the majority of the studies. Although there was minimal statistical heterogeneity among studies of treatment failure or recurrence after 1 month, there was significant statistical heterogeneity with respect to the studies of major complications. Finally, all studies were performed in northern Europe (ie, Scandinavia and the Netherlands), so it is unclear whether this would generalize to the North American population.

Although the current results suggest that antibiotic use in patients with acute, uncomplicated diverticulitis is not associated with a reduction in complication rates or recurrence, additional randomized controlled trials are recommended to further clarify the need for antibiotics in this group.

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4. Warner E, Crighton EJ, Moineddin R, et al. Fourteen-year study of hospital admissions for diverticular disease in Ontario. *Can J Gastroenterol*. 2007;21:97-99.
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