

**Critical Review Form
Therapy**

PGY-2

Hjern F, Josephson T, Altman D, Holmström B, Mellgren A, Pollack J, Johansson C. Conservative treatment of acute colonic diverticulitis: are antibiotics always mandatory? Scand J Gastroenterol. 2007 Jan;42(1):41-7.

Objectives: "to assess whether there was any difference in outcome if patients with AD [acute diverticulitis], with special reference to mild cases, were treated with or without antibiotics." (p. 42)

Methods: This retrospective observational study was conducted in the Department of Surgery in Danderyd Hospital in Stockholm, Sweden. Patients with a diagnosis of acute colonic diverticulitis were identified using the computerized hospital registry. Only patients with diverticulitis confirmed on CT scan were included; patients with a diagnosis based only on clinical findings, and those requiring immediate surgery due to signs of peritonitis were excluded. All CT scans were re-evaluated by an "experienced radiologist," and classified as showing mild or severe diverticulitis.

Patients were all initially treated conservatively with IV fluids and restricted oral intake, and the decision to start antibiotics was made at the discretion of the treating surgeon. Treatment failure was defined as the need for immediate surgery in all patients, or the addition of antibiotics to the treatment regimen in those patients treated initially without antibiotics. All patients were followed after discharge to monitor for episodes of recurrent diverticulitis, hospital readmission, or need for subsequent surgery. A questionnaire was also sent to all patients still living concerning time to recovery after hospital discharge, hospital readmissions, and need for subsequent surgery.

A total of 448 patients with a diagnosis of diverticulitis were identified, of whom 131 were excluded due to lack of CT confirmation. An additional 6 patients required immediate surgery, leaving 311 patients in the final cohort. Of these, 193 patients were initially treated conservatively without antibiotics, while 118 were treated conservatively with antibiotics.

Guide		Comments
I.	Are the results valid?	
A.	Did experimental and control groups begin the study with a similar prognosis (answer the questions posed below)?	
1.	Were patients randomized?	No. This was a retrospective, observational study in which the decision to use or withhold antibiotics was made at the discretion of the treating attending

		surgeon based on clinical factors and lab findings. There is a therefore a high risk of selection bias , and a high likelihood that patients will not be balanced with respect to known and unknown confounding factors .
2.	Was randomization concealed (blinded)? In other words, was it possible to subvert the randomization process to ensure that a patient would be “randomized” to a particular group?	N/A.
3.	Were patients analyzed in the groups to which they were randomized?	Yes. Patients were analyzed based on whether or not they were initially given antibiotics to treat acute diverticulitis (intention to treat analysis). For patients who were initially not given antibiotics, the subsequent need for antibiotics was considered a treatment failure.
4.	Were patients in the treatment and control groups similar with respect to known prognostic factors?	No. Patients were similar with respect to age, gender, previous history of diverticular disease, and the presence of comorbidities. Patients in the antibiotics group were more likely to be febrile, had higher CRP and WBC levels on admission, and were more likely to have "severe" diverticulitis on CT scan.
B.	Did experimental and control groups retain a similar prognosis after the study started (answer the questions posed below)?	
1.	Were patients aware of group allocation?	Yes. This was a nonrandomized study and the decision to administer antibiotics was at the treating surgeon's discretion. It is possible that performance bias on the part of the patients would affect the outcomes
2.	Were clinicians aware of group allocation?	Yes. It is possible as a result that some form of performance bias on the part of the clinicians could influence the outcomes. This is particularly true give that one sign of treatment failure was the initiation of antibiotics in the no antibiotic group; such a decision is quite subjective.
3.	Were outcome assessors aware of group allocation?	Yes. The outcomes included the results of a questionnaire filled out by the patient months after hospital discharge. Significant observer bias could have affected the results.
4.	Was follow-up complete?	No. In-hospital follow-up, and hence treatment failure results, were available for all patients. Only

		248 patients (80%) answered and returned the questionnaire (attrition bias).
II.	What are the results (answer the questions posed below)?	
1.	How large was the treatment effect?	<ul style="list-style-type: none"> • In the no antibiotics group, 7 of 193 patients were started on antibiotics during hospitalization and none required surgery, for a failure rate of 4%. • In the antibiotics group, 3 of 118 patients required surgery during hospitalization, for a failure rate of 3%. <ul style="list-style-type: none"> ○ There was no statistically significant difference in failure failure rates during hospitalization between the two groups, with a relative risk (RR) was 1.4 (95% CI 0.38 to 5.4). • Hospital length of stay was shorter in the no antibiotics group: mean of 3 days vs. 5 days ($p < 0.001$). • Of 186 patients in the no antibiotics group treated successfully, 53 (28%) had further events during follow-up: 51 required readmission while two underwent surgery. • Of 115 patients in the antibiotics group treated successfully, 33 (29%) had further events: 32 were readmitted and 14 required surgery. <ul style="list-style-type: none"> ○ There was no statistically significant difference in further event rates during follow between the two groups, with a RR of 0.99 (95% CI 0.69-1.4).
2.	How precise was the estimate of the treatment effect?	See above.
III.	How can I apply the results to patient care (answer the questions posed below)?	
1.	Were the study patients similar to my patient?	No. This study included only patients admitted to a surgical service with a diagnosis of diverticulitis. Many of our patients with mild diverticulitis are discharged home on oral antibiotics. Additionally, this study was conducted in Sweden, with a relatively homogenous Caucasian population, which may have different rates of obesity and medical comorbidities that could affect outcomes.

2.	Were all clinically important outcomes considered?	No. The authors considered only the need for antibiotics (in the no antibiotics group) or surgery during initial hospitalization, hospital length of stay, or the need for readmission or surgery in follow-up. They did not consider complications of antibiotic therapy, complications of surgery, cost, patient satisfaction, or quality of life.
3.	Are the likely treatment benefits worth the potential harm and costs?	Uncertain. This is a very interesting observational study whose primary limitation is the significant imbalance between the groups. It does seem to indicate that most patients selected for treatment without antibiotics based on clinical criteria will do well when treated without antibiotic administration. Further randomized controlled trials will be needed to further evaluate the safety of this change in treatment.

Limitations:

1. **The method of follow-up (aside from the questionnaire) is not provided. Since only 80% of patients responded to the questionnaire, but all patients were included in the analysis of follow-up outcomes, it would be important to know how this was performed.**
2. **This was not a randomized trial. It was a retrospective observational study with the decision to use antibiotics based on clinician discretion. This resulted in a significant imbalance in baseline characteristics between the two groups, making comparison of outcomes between the groups impossible to interpret.**
3. **Due to the observational nature of the study, blinding to treatment allocation was not employed.**
4. **The authors only report p-values for some of the outcomes, and do not present any measures of efficacy or 95% confidence intervals.**
5. **There was significant loss to follow-up of about 20% (attrition bias).**
6. **It is likely that the racial make-up and prevalence of comorbidities is different in this Swedish population than we see in the US (external validity).**

Bottom Line:

This retrospective, observational study demonstrated a low failure rate with the management of acute diverticulitis without antibiotics of around 3%. None of the patients treated without antibiotics required surgery. The risk of long-term

complications (a composite of need for hospital readmission or surgery) was similar between groups treated with and without antibiotics. The lack of randomization and observational nature of the study make the comparison between the groups difficult to interpret. as patients chosen to receive antibiotics were overall much sicker. Further prospective, randomized clinical trials will need to be conducted to further evaluate the safety and efficacy of managing diverticulitis without antibiotics.