

# Antibiotics alone can be a safe, effective treatment for children with appendicitis

December 16 2015

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Using antibiotics alone to treat children with uncomplicated acute appendicitis is a reasonable alternative to surgery when chosen by the family. A study led by researchers at Nationwide Children's Hospital found that three out of four children with uncomplicated appendicitis have been successfully treated with antibiotics alone at one year follow-up. Compared to urgent appendectomy, non-operative management was associated with less recovery time, lower health costs and no difference in the rate of complications at one year.

"Families who choose to treat their child's [appendicitis](#) with [antibiotics](#), even those who ended up with an appendectomy because the antibiotics didn't work, have expressed that for them it was worth it to try antibiotics to avoid surgery," said Peter C. Minneci, MD who led the study published online Dec. 16 in *JAMA Surgery* with Katherine J. Deans, MD. The pair are co-directors of the Center for Surgical Outcomes Research and principal investigators in the Center for Innovation in Pediatric Practice in The Research Institute at Nationwide Children's. "These [patients](#) avoided the risks of surgery and anesthesia, and they quickly went back to their activities."

"Surgery has long been the 'gold standard' of care for treating appendicitis because by removing the appendix we eliminate the chance that the appendicitis will ever come back," said Dr. Deans. "However, early in our careers we noticed that patients with appendicitis who were placed on antibiotics overnight until their surgery the following morning felt better the next day. So, Pete and I asked ourselves: do they really

need to have surgery?"

In the first study conducted and published in the United States examining non-operative management for appendicitis, they enrolled 102 patients age 7 to 17 who were diagnosed with uncomplicated acute appendicitis at Nationwide Children's between October 2012 and October 2013. Participants had early/mild appendicitis, meaning that they experienced abdominal pain for no more than 48 hours; had a white blood cell count below 18,000; underwent an ultrasound or CT scan to rule out rupture and to verify that their appendix was 1.1 centimeter thick or smaller; and had no evidence of an abscess or fecalith, which is hard stone-like piece of stool.

Thirty-seven families chose antibiotics alone and 65 opted for surgery. Those patients in the non-operative group were admitted to the hospital and received IV antibiotics for at least 24 hours, followed by [oral antibiotics](#) after discharge for a total of 10 days. Among those patients, 95% showed improvement within 24 hours and were discharged without undergoing surgery. Rates of appendicitis-related medical care within 30 days were similar between the groups with two patients in the non-operative group readmitted within 30 days for an appendectomy. At one year after discharge, three out of four patients in the non-operative group did not have appendicitis again and have not undergone surgery.

Appendicitis, caused by a bacterial infection in the appendix, is the most common reason for emergency abdominal surgery in children, sending more than 70,000 young people to the operating room each year. Although many of these cases are severe and require surgery, there are a good number that would be candidates for treatment with antibiotics alone, Dr. Minneci said.

"We believe that the results of our study reflect the effectiveness of offering non-operative management to patients and their families in

clinical practice. The patient choice design allows the patient and family's preference to be aligned with their choice of therapy," said Dr. Deans. "Most parents are concerned about having surgery, in general. They're also very concerned about anesthesia. Some parents are very concerned about appendicitis coming back. It's really a matter of aligning your preferences, your values, what you think is most important to you, with the treatment that is best for you and your family."

For example, explained Dr. Minneci, if the family is so afraid of a recurrence that they visit the Emergency Department every time their child has abdominal pain, then their child will likely undergo increased imaging and eventually undergo an appendectomy. In that case, letting them choose an appendectomy upfront may be better for the child.

According to the study results, patients who were transferred to Nationwide Children's from other institutions expressed concerns about the distance and time necessary to come back if the appendicitis recurred. These families opted for surgery more often. Patients whose families spoke primary languages other than English were more likely to choose antibiotics as a course of treatment due to cultural values to avoid [surgery](#) if at all possible.

Both researchers, who are also Assistant Professors of Surgery and Pediatrics in The Ohio State University College of Medicine, say further studies are needed to see if the results they saw in this study apply in other health systems, and emphasize that the perceptions of both patient-families and surgeons can impact the study results. Their intention is to follow all the children in this study as long as possible to see if those treated with non-operative management continue to thrive.

**More information:** Minneci PC, Mahida JB, Lodwick, DL, Sulkowski JP, Nacion KM, Cooper JN, Ambeba, EJ, Moss RL, Deans KJ. The effectiveness of patient choice in non-operative versus surgical

management of uncomplicated acute appendicitis. *JAMA Surgery*. 2015 Dec 16 [Epub ahead of print].

Provided by Nationwide Children's Hospital

Citation: Antibiotics alone can be a safe, effective treatment for children with appendicitis (2015, December 16) retrieved 29 April 2024 from <https://medicalxpress.com/news/2015-12-antibiotics-safe-effective-treatment-children.html>

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