Antibiotics alone are a successful treatment for uncomplicated acute appendicitis in kids

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Using antibiotics alone to treat children with uncomplicated acute appendicitis is a reasonable alternative to surgery that leads to less pain and fewer missed school days, according to a pilot study. The research, led by a team at Nationwide Children's Hospital and published online April 12 in the *Journal of the American College of Surgeons*, is the first prospective study on nonoperative management of acute appendicitis in pediatric patients in the United States.

Researchers enrolled 77 patients age 7 to 17 who were diagnosed with uncomplicated acute appendicitis by a surgeon in the Emergency Department at Nationwide Children's Hospital between October 2012 and October 2013. Participants had 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 cm thick or smaller; and had no evidence of abscess or fecalith, which is hard stone made of calcified stool.

Thirty patient families chose antibiotics alone and 47 opted for surgery. Those in the non-operative group were admitted to the hospital and received IV antibiotics for at least 24 hours, followed by oral antibiotics for a total of 10 days after discharge. Among those patients, 93 percent showed improvement within 24 hours. Three patients ultimately underwent an appendectomy when the symptoms failed to resolve, but none experienced an appendix rupture.

"Based on the current study, children with uncomplicated appendicitis
are good candidates for non-operative management," says Katherine J. Deans, MD, who led the study with Peter C. Minneci, MD. The pair are co-directors of the Center for Surgical Outcomes and principal investigators in the Center for Innovation in Pediatric Practice in The Research Institute at Nationwide Children's.

Appendicitis, caused by a bacterial infection in the appendix, is the most common reason for emergency abdominal surgery in children, sending more than 80,000 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 says.

"About 20 percent of the kids with appendicitis who came here had uncomplicated appendicitis, which is what I would expect to see at any major children's hospital," he says, adding that the results from their study are similar to those from a series of European studies performed in adults that have found that in most cases, appendicitis doesn't require surgery at all.

To study the option further, Drs. Deans and Minneci are coordinating efforts by 10 other pediatric hospitals in the Midwest Pediatric Surgical Consortium to enroll as many 800 children over the next few years in similar trials.

"With our pilot project, we started with the group of patients who would be most likely to have success with an antibiotics-only approach and would be least likely to be harmed, but the next step is to try to slowly add some of the patients who were excluded in the preliminary study to see how well they do," Dr. Minneci says. "It may get to the point that nonoperative management becomes the initial therapy for all appendicitis, but we won't know that until we do further studies."
As with the pilot project, future studies will follow a patient-choice model, meaning participants will not be randomized to one treatment group or the other.

"Patients are more likely to participate in research if they are able to make a choice and not be randomized to one of the two treatment options," Dr. Minneci says. "That is something that's different about this trial."

The notion of involving parents and patients in the decision-making process is under study in a related project led by Drs. Deans and Minneci. Funded by a $1.6 million grant from the Patient-Centered Outcomes Research Institute (PCORI), the researchers are studying the impact of using a novel computer application that engages patients and families as critical decision makers in choosing the therapy that is best for them. The interactive tool offers information about the causes of appendicitis, treatment options and what to expect during and after each kind of treatment. In this study, some participants will receive an iPad with the app to complement their discussions with a surgeon and the others will only talk with the surgeons.

"Through the pilot study, we have learned about the important questions, concerns and values the families have with regard to both operative and nonoperative management of acute appendicitis," Dr. Deans says. "Understanding those concerns prompted us to do the PCORI study, which is really about improving shared decision making with parents and families."
