

## Clinical Research Proposal

**Title:** The association of Body Mass Index with perforation of the appendix in Puerto Rican children

**Authors:** Carmen T. Ramos Irizarry, MD

### **Background:**

Appendicitis continues to be the most common pediatric surgical emergency, with excellent clinical outcomes achieved when treatment begins prior to perforation. The diagnosis of perforated appendicitis in children continues to pose challenges; too many children present with already complicated (perforated) appendicitis either after a lengthy period of symptoms or with a relatively asymptomatic presentation. Once the appendix is perforated, its management can be difficult, with complication rates after surgical treatment reported as high as 58% in some studies. Complications following perforated appendicitis lead to serious morbidity and potential mortality. Therefore, it is critically important to find ways to decrease the frequency of perforation.

In Puerto Rico, the prevalence of appendicitis and its contributing factors to perforation have not been systematically studied. Preliminary data from a private Children's Hospital in Puerto Rico for the year 2008 showed alarming perforation rates of 59% in children ages 2-20 years, with 62% of these children being at risk for overweight or obese. This perforation rate does not compare with the actual benchmark in the United States, which is steady at a 33% rate. It has been suggested that body habitus could be influential in the diagnosis of appendicitis since a thick fat abdominal pannus could obscure the physical findings that could easily be elicited in a thin body. This has the potential to mislead the physician in the assessment and could lead to delays in diagnosis.

### **Objectives/Specific Aims**

Aim 1: To describe the demographical and clinical characteristics of the study group

Aim 2: To compare the demographic and clinical characteristics between patients with perforated appendicitis and patients with non-perforated appendicitis.

Aim 3: To estimate the Odds Ratios for the risk of appendiceal perforation by demographical and clinical factors adjusting for potential confounding factors: age, gender, co-morbidities, type of insurance, residency zone, time to diagnosis, time to treatment, and number of physician examiners prior to diagnosis.

### **Methods:**

This study will be a retrospective analysis of children ages 2-20 years with the diagnosis of appendicitis in two pediatric hospitals in the San Juan metro area. The study sample will include all patients with the diagnosis of appendicitis admitted between January 1, 2000 – December 31, 2008. **Inclusion criteria:** all Puerto Rican children ages 2-20 years with the diagnosis of appendicitis and all children who underwent appendectomy in that period. **Exclusion criteria:** all children younger than 2 years and older than 20 years of age. Using a binomial test for  $P_0=40\%$  and  $P_1=50\%$  with a two sided alpha of 0.05 and a power of 80%, the required sample is 900 medical charts adjusting for other independent variables in the logistic regression ( $R^2=0.10$ ).

### **Anticipated Results**

We expect to find higher odds of perforation of the appendix in those children who are obese or overweight after adjusting for confounding factors.

### **Discussion/Significance**

The proposed study addresses an important public health problem in Puerto Rico: the prevalence and morbidity of appendicitis and its association with body mass index in children. If the aims of the proposal are achieved, the scientific community will gain a better understanding of the role of overweight and obesity in appendicitis, as well as the identification of potential factors that could be delaying the diagnosis of appendicitis in children. It is an innovative study that has not been reported elsewhere in the literature.