

# PEDIATRIC ONCOLOGY AND PEDIATRIC MEDICINE

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## A pre-operative clinical scoring system to distinguish perforation risk with pediatric appendicitis

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**Importance:** Appendicitis is a common, potentially serious pediatric disease. An important factor in determining management strategy [whether/when to perform appendectomy, duration of antibiotic therapy/hospitalization, etc.] and predicting outcome is distinguishing whether perforation is present.

**Objective:** The objective was to determine efficacy of commonly assessed pre-operative variables in stratifying perforation risk in children with appendicitis.

**Design:** A retrospective analysis of consecutive cases was performed.

**Setting:** The setting was a large urban hospital pediatric emergency department.

**Participants:** 448 consecutive cases of CT [computerized tomography]-confirmed pediatric appendicitis during a 6-year period in an urban pediatric ED [emergency department]: 162 with perforation and 286 non-perforated.

**Main Outcome(s) & Measure(s):** To determine efficacy of clinical and laboratory variables with distinguishing perforation outcome in children with appendicitis.

**Results:** Regression analysis identified 3 independently significant variables associated with perforation outcome and determined their ideal threshold values: duration of symptoms >1 day; ED-measured fever [body temperature >38.0°C]; CBC WBC absolute neutrophil count >13,000/mm<sup>3</sup>. The resulting multivariate ROC [receiver operating characteristic] curve after applying these threshold values gave an AUC [area under curve] of 89% for perforation outcome [p<0.001]. Risk for perforation was additive with each additional predictive variable exceeding its threshold value, linearly increasing from 7% with no variable present to 85% when all 3 variables are present.

**Conclusions:** A pre-operative scoring system comprised of 3 commonly assessed clinical/laboratory variables is useful in stratifying perforation risk in children with appendicitis. Physicians can utilize these factors to gauge pre-operative risk for perforation in children with appendicitis, which can potentially aid in planning subsequent management strategy.

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