

Title: Component Testing as a Predictor of Outcomes of Peanut Oral Food Challenges

Authors: A.T. Lang, MD, L.C. Balmert, PhD, M. Weiss, J. A. Pongracic, MD, and A.M. Singh, MD

Background/Rationale: Peanut component testing (PCT) has become an important clinical tool in the diagnosis of peanut allergy and has been reported to provide higher diagnostic accuracy in distinguishing sensitization from true allergy. However, less research to date has investigated the value of PCT to predict outcomes of peanut oral food challenges (OFCs).

Objective: To determine the relationship of peanut component testing to OFC outcome in a US-based cohort.

Methods: We performed a retrospective chart review of 198 patients who underwent peanut OFC at Ann & Robert H. Lurie Children's Hospital of Chicago between January 2012 and August 2017. 184 patients had results of PCT prior to OFC. Simple logistic regression models were performed to determine associations between PCT results and outcomes of OFCs.

Results: The median age at OFC was 4 years (IQR 2-7), and 119 (60%) were male. Sixty-eight (34%) patients reacted to peanut OFC. Patients with Ara h2 ≥ 0.35 kU/L were more likely to react to OFC (OR 5.91, 95% CI 2.93-11.89, $p < 0.001$), but 19 patients (37%) with positive Ara h2 did not react. Among those positive for only Ara h8 or Ara h9 ($n=21$), 86% had no reaction. Patients with IgE < 0.35 kU/L to all components were more likely to tolerate peanut (OR 0.50, 95% CI 0.26-0.93, $p=0.028$). We found no differences in other clinical or demographic factors between children who did or did not react to OFC.

Conclusions: PCT can be useful to predict peanut OFC outcome and may help guide clinicians in recommending OFC to patients. Our data supports the use of component testing in the evaluation of peanut allergy, but OFC is still required to make a definitive diagnosis.